THE

PHARMACEUTICAL JOURNAL

ESTABLISHED 1841.

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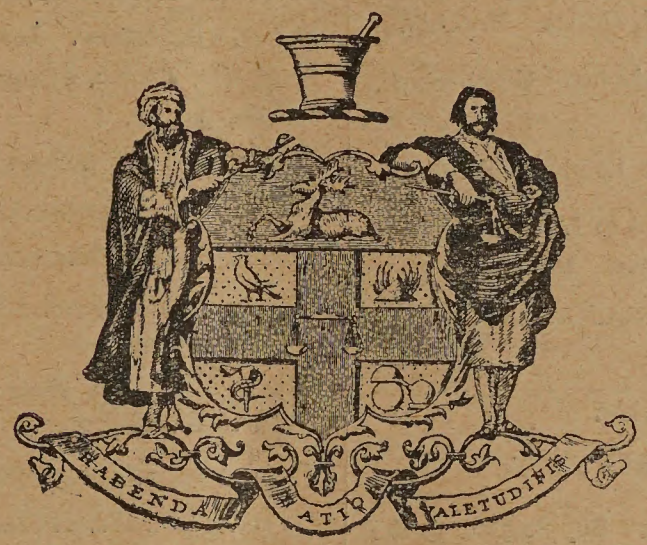

VOLUME LX.

FOURTH SERIES—VOLUME VI.

JANUARY TO JUNE, 1898.

LONDON:

PHARMACEUTICAL SOCIETY OF GREAT BRITAIN,

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CONTRACTIONS OF TITLES.

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

Amer. Journ. Pharm. = American Journal of Pharmacy. Philadelphia. Monthly.

Annalen = Justus Liebig's Annalen der Chemie. Liepzig. Monthly.

* *Apot.-Zeit.* = Apotheker-Zeitung. Organ of the Deutsche Apotheker-Verein. Berlin. Twice a week.

* *Apot. Zeit. Rep.* = Repertorium der Pharmacie. Supplement to the Apotheker-Zeitung.

* *Archiv* = Archiv der Pharmacie. Berlin: J. Greiss. Monthly.

* *Berichte* = Berichte der deutschen chemischen Gesellschaft. Berlin. Once or twice a month.

* *Brit. Med. Journ.* = British Medical Journal, London. Weekly.

Bull. com. = Bulletin commercial. Supplement to L'union pharmaceutique. Paris: Pharmacie centrale de France. Monthly.

* *Can. Pharm. Journ.* = Canadian Pharmaceutical Journal. Toronto. Monthly.

Chem. News = Chemical News. London. Weekly.

Chem. Zeit. = Chemiker Zeitung. Cöthen. Twice a week.

Chem. Zeit., Rep. = Chemisches Repertorium. Supplement to the Chemiker Zeitung.

* *Comp. rend.* = Comptes rendus des séances de l'Académie des Sciences. Paris: Gauthier-Villars. Weekly.

Deuts. Am. Apot. Zeit. = Deutsch Americanische Apotheker Zeitung. New York.

Int. Photo. Monats. = Internationale Photographische Monatschift fur Medzin. Düsseldorf. Monthly.

* *Journ. Chem. Ind.* = Journal of the Society of Chemical Industry. Monthly.

* *Journ. de pharm.* = Journal de pharmacie et de chimie. Paris: G. Masson. Twice a month.

Journ. Pharm. Elsass-Loth. = Journal der Pharmacie von Elsass-Lothringen. Strassburg. Monthly.

Journ. Zahnheil. = Journal für Zahnheilkunde. Berlin.

Med. Press = Medical Press and Circular. London: A. A. Tindall. Weekly.

Mod. Med. = Modern Medicine and Bacteriological Review. Battle Creek, Mich., U.S.A. Monthly.

Mon. scient. = Moniteur scientifique. Paris. Monthly.

Münch. med. Woch. = Münchener medicinische Wochenschrift. Munich. Weekly.

Nouv. rem. = Les nouveaux rémèdes. Paris. Twice a month.

Pediat. = Pediatrics. London and New York. Weekly.

Petit Mon. Pharm. = Petit Moniteur de la Pharmacie. Paris. Fortnightly.

Pharm. Centralh. = Pharmaceutische Centralhalle Dresden. Weekly

Pharm. Post = Pharmaceutische Post. Vienna. Weekly.

Pharm. Woch. = Pharmaceutische Wochenschrift. Berlin. Weekly.

Pharm. Zeit. = Pharmaceutische Zeitung. Berlin: J. Springer. Twice a week.

Pharm. Zeits. für Russ. = Pharmaceutische Zeitschrifte für Russland. St. Petersburg. Weekly.

Photo. Arch. = Photographisches Archiv. Düsseldorf. Monthly.

* *Proc. Chem. Soc.* = Proceedings of the Chemical Society. London. About twice a month.

Répertoire = Répertoire de pharmacie, archives de pharmacie et journal de chimie médicale réunis. Paris. Monthly.

Scient. Amer. = Scientific American. New York. Weekly.

Schweiz. Woch. = Schweizerische Wochenschrift für Chemie und Pharmacie. Zurich. Weekly.

Therap. Monats. = Therapeutische Monatshefte. Berlin.

Union Pharm. = L'union pharmaceutique. Paris: Pharmacie centrale de France. Monthly.

Wien. Klin. Rund. = Wiener Klinische Rundschau. Vienna: A. Hölder.

Zahn. Rund. = Zahnaertliche Rundschau. Berlin.

Zahntech. Reform. = Die Zahntechnische Reform. Berlin: R. F. Funcke.

INDEX TO VOLUME VI.

(FOURTH SERIES.)

B

C

D

E

F

I

M

N

Q

R

S

T

U

V

W

X

Y

Z

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THE
PHARMACEUTICAL JOURNAL
VOLUME LX. (FOURTH SERIES, VOLUME VI.)

LONDON: SATURDAY, JANUARY 1, 1898.

Progress in 1897.

THROUGHOUT the past year the subject of organisation has occupied a prominent position in the proceedings of every section of the craft to which recognised definite existence was given by the Legislature in 1868. In various ways a sense of the necessity of corporate action has been manifested more generally, and greater attention has been directed by chemists and druggists throughout the kingdom to making such action the means of protecting and promoting their interests. This tendency has been evident in the formation of numerous local associations, in the attempt to unite such bodies in a federation, in the movement intended to counteract unreasonable trade competition, and in the desire that has been expressed for extended representation in the body entrusted with the administration of the Pharmacy Acts. All these circumstances may be regarded as indications of advance towards the autonomy that the founders of the Pharmaceutical Society desired to establish, and that was rendered possible by the Pharmacy Act of 1868. Disposition to advance in that direction may therefore be taken as the characteristic feature of the past year. The Council of the Society—representing the sentiments of the body at large—having taken the steps requisite for obtaining amendment of the Pharmacy Act that will give full recognition to the principle of self-government, all persons holding the compulsory qualification will be placed in a position of equality in regard to membership of the Society, which holds—on behalf of the State—the control of pharmacy in Great Britain. This action of the Council affords opportunity for supplementing the compulsory examination of all persons entering the business, by amalgamation of the whole trade and thus consummating the wishes of the founders of the Society. To what extent that desirable object may be achieved will depend upon the support given to the Bill when introduced into Parliament; that will be matter for future record. But in any case the attempt made, whether attended by success or failure, will mark the past year as one of the most notable in our pharmaceutical history.

Alteration of the Bye-Laws.

One of the most important transactions of the past year has been the alteration of the Bye-laws relating to the examination and the fee for qualification under the Pharmacy Act, 1868. In pursuance of a desire very generally expressed for improvement in that part of the examination which is intended as a test of fitness to enter upon study of the subjects comprised in the qualifying examination, it was proposed that, in future, the scope of that part of the examination should be extended, and that certificates of approved examining bodies should be accepted in lieu of the examination previously conducted by the Pharmaceutical Society. It was also proposed that the fee for registration under the Act should in future be ten guineas. A draft of the proposed new Bye-laws, approved by the Council at its meeting in March, was confirmed at two subsequent meetings, and at a special general meeting of members of the Society in May. These formalities had to be repeated subsequently in order to embody a change of the time when the increased fee should become payable, and the new Bye-laws were ultimately approved and confirmed by the Privy Council in November. One practical effect of the new Bye-laws will be to place the First examination for the practice of pharmacy more on a level with the Preliminary examinations required for entrance to other occupations and, if the passing of this examination before apprenticeship were made the rule, a decided advance would be made towards realising the desire to attract young men of better general education into the calling. There would then be a better prospect of maintaining for pharmacists the credit of being the most educated among the traders of the country. That object is desirable not only for securing the confidence of the public, but also as the best means of protecting the interests of pharmacists. The increased fee for the qualifying examination is not in excess of what is required for qualification in other capacities and it is necessary to provide for the cost of registration for life, as well as the increasing expenditure incurred in the administration of the Pharmacy Act and other work incidental thereto which is for the benefit of all registered persons. On all these points the views entertained by the Council met with very general approval throughout the country. Registered chemists naturally perceived that they would not be kept out of the trade by the proposed increase of the qualification fee, and that if it had such an effect in the future, any consequent limitation would not unduly relieve their successors from the imminence of having to eat one another in order to exist. Resolutions in favour of the scheme contemplated in the new Bye-laws were passed at several public meetings of the trade, and though some few speakers at the special general meeting expressed different opinions, they related to matters which were irrelevant, and met with no support of any consequence.

Historic truth perhaps requires the statement that in one quarter a spasmodic but ineffectual attempt was made to create opposition under the mistaken apprehension that "journalistic enterprise" was in danger, and for a short time a shocking example was afforded of the terrible possibilities of possession by a single idea. Excited "journalistic enterprise" dressed up a lay figure with many sensational labels of "unfair competition," "iniquitous demand," "Society extravagance," "lavish expenditure," "private indulgences," "funds dissipated," "bankruptcy," "official injustice," and similar stage tinsel, uttering an hysterical invocation to "strike a blow for justice"; but as the sticks and shoddy showed through, the bogey frightened no one very much and, during the early days of November, it shared the fate of other simulacra. The attempt to supply opinions to be echoed without the trouble of thought, like ready-made clothes or quack medicines, that do not

require fitting or dispensing, did not succeed, and "journalistic enterprise" subsided harmlessly into its old familiar groove.

Annual Meeting.

In the report presented by the Council at the anniversary meeting in May, reference was made to the reduction of the balance on the Journal account, which represents the cost of the Journal to the Society, as showing a satisfactory realisation of the improvement anticipated last year. The financial effect of the recent changes in the conduct of the School of Pharmacy had not then become evident, though the number of students had given satisfactory proof of a demand for sound technical education in preference to knowledge hastily gained for the purpose of passing an examination. In connection with the Society's educational work, mention was made of the useful assistance to be derived from attendance at the Libraries and Museums in London and Edinburgh, of the appointment of a Manchester scholar, of the establishment of the Burroughs Scholarship, and of a grant made for the purchase of a materia medica cabinet and specimens for the use of students at Liverpool. With some increase in subscriptions to the Benevolent Fund, there had been a slightly larger expenditure as annuities and grants, but the Fund had become considerably richer by the generous bequests of the late Geo. Nind, G. Dudgeon, and A. H. Thomas.

From the examination returns it was shown that in the exercise of the Society's public functions as an examining body 504 persons had been admitted to registration under the Act out of 1450 recorded entries during the year 1896. The expenditure for prosecutions again showed a large adverse balance over the amount of penalties recovered from offenders and costs allowed, and the case of the Society *v.* Fox was referred to as illustrating the great difficulties encountered in the administration of the Pharmacy Act.

In commenting on the several paragraphs of the Council report, Mr. Hills expressed approval of the capital expenditure for the erection and equipment of premises better adapted for the purposes of the Society, and he supported the view put forward in that respect at the previous anniversary by Mr. Carteighe. In reference to the Journal, the President spoke of his predecessor's hopeful anticipations and the general desire of members as having been fully realised and of the probability of further improvement. Speaking of the difficulty experienced in carrying out the provisions of the Pharmacy Act in Scotland in consequence of the sheriff's assumption that "some private interest" was involved, Mr. Hills showed how much such conditions conduce to the encouragement of offenders. Lastly, in regard to the desire expressed for a change in the constitution of the Society, by which all registered chemists would be eligible as members, the necessity for making that desire known to members of Parliament, so as to secure their interest and thus supporting the action of the Council, was insisted upon as indispensable.

Meetings of the Council.

At the first two meetings of the Council the business transacted was chiefly of a routine character, but at the meeting in March the important subjects of the Preliminary examination, and a proposed increase of the fee for qualification, were brought forward. It was then decided that the production of certificates of approved examining bodies covering a wider area should be substituted for the examination hitherto conducted by the Pharmaceutical Society. It was also decided that in future the fee payable in respect of the qualifying examination should be ten guineas, and that the requisite alteration of the Society's Bye-laws should be made. At the same meeting the amended Bye-laws were read in conformity with the provisions of the Pharmacy Acts.

At the Council meeting in April, an amendment of the proposed alteration of the Bye-laws was agreed to, which necessitated a repetition of the first reading, and resolutions passed by the Nottingham and Cambridge Chemists' Associations, the Liverpool Students' Association, and the Chemists' Assistants' Association, approving of the action taken by the Council were read by the President. A special meeting of the Council was held on April 28 for the second reading of the amended Bye-laws, and they were confirmed at the meeting in May.

At the meeting of the newly constituted Council in June, Mr. Walter Hills was re-elected President; Mr. Newsholme was elected Vice-President, and Mr. Hampson was re-elected Treasurer. A resolution was passed that a congratulatory address should be sent to Her Majesty the Queen on the occasion of her Diamond Jubilee.

At the meeting in July the President drew attention to the subject of eligibility for membership of the Society and to the desire which had been expressed that it should extend to all registered chemists and druggists, pointing out that on several occasions the Council had taken steps for obtaining the requisite amendment of the Pharmacy Act without receiving the support necessary for the purpose, and that if Parliament was to be approached in the coming session active support throughout the country would be indispensable.

At the same meeting the President reported the result of his communication with the Privy Council in reference to alteration of the Bye-laws. The adoption of their Lordships' suggestion that the increase of the fee for qualification should not come into operation until 1900, so as not to apply to any persons but those commencing a three years' apprenticeship after the approval of the new Bye-laws, involved repetition of the formalities of confirmation at three meetings of the Council, and by a special general meeting of members of the Society held for that purpose in August.

At the meeting in November Mr. Bottle, speaking on behalf of his colleagues, congratulated the President on the honour conferred upon him by Her Majesty the Queen in the presentation of a medal to be worn in commemoration of the sixtieth anniversary of her reign, a distinction which might be regarded as recognising the good service rendered by the Society since the grant of the charter at the commencement of that period.

On the presentation of the report of the General Purposes Committee relating to the appointment of local secretaries, the President directed attention to the fact that in many instances no nominations had been sent in, and in the discussion of the subject much regret was expressed at the apparent want of interest in the work, to be done by the Society's local secretaries. It was suggested that the present system did not ensure a sufficiently intimate relation between local secretaries and the London centre, for which purpose a re-arrangement adapted to existing conditions might be desirable.

Draft Pharmacy Bill.

At the December meeting of the Council, a draft of the Bill, relating mainly to the extension of membership of the Society, was submitted for approval and the reasons for limiting the scope of any application to Parliament at the present moment were fully stated by the President. As the draft had been prepared by a committee, including those members of Council who have hitherto, on the one hand, advocated a more comprehensive measure and, on the other hand, opposed extension of membership, the unanimous agreement which it met with from the Council was, therefore, very natural, and it is remarkable that this unanimity should have excited the displeasure of anyone, so far as to be characterised as "deadly," unless

lament for the absence of disagreement instigated that objection and the grotesque fancy that members of Council sit in the committee rooms under the shadow of a suppositious Upas tree which disables them from performing the duty for which they are elected and acting, to the best of their judgment, in the best interest of their own constituency and also of the trade at large. The unanimity with which the draft Bill was adopted by the Council was the result of consideration for facts—viz., that it would in no degree depreciate the qualification of pharmaceutical chemists or curtail their special privileges—that chemists and druggists are now as much entitled to share the responsibilities and privileges of administrative work as pharmaceutical chemists—that they have expressed a desire to have their present disability removed—that their co-operation is necessary in order to secure the hearing of any claim for the redress of grievances affecting the entire trade and, as Mr. Atkins pointed out—that the Bill is free from any conceivable ground for opposition. Both Mr. Harrison and Mr. Storrar admitted that unless the object of this Bill were realised to such an extent that the Society represented the trade as a whole, asking for greater things would be like ploughing the sands, and the fault would not be with the Council or the Society but with the members of the trade who failed to join in helping forward the objects which all should have at heart and support.

The Registers in 1897.

The report presented to the Council by the Registrar in February showed that at the end of 1896 there were 15,166 persons qualified under the Pharmacy Act, 1868, and of that number 2253 also held the higher qualification of pharmaceutical chemist under the Pharmacy Act of 1852.

Of the number of persons on the Register of chemists and druggists, nearly one-third were conneoted with the Society, 2159 as members, and 1682 as associates in business, showing an aggregate increase in these two grades of 132 as compared with the numbers in 1892. This increase was due to the large number of persons joining the Society as associates counterbalancing the decrease in the numbcr of members. At the end of 1896 there were also 984 associates not in business and 846 students.

The proportion of registered persons connected with the Society at that time is shown by the following table with their respective qualifications :—

Pharmaceutical Chemists.	Chemist and Druggists.	Society. Members.	Society. Associates.	Unconnected.
2253	—	1584	—	669
—	1868. 3921	575	—	3346
	8992		1682	6326
			984	
2253	12,913	2159	2666	
15,166		4825		10,341

A comparison of these data with those representing the conditions formerly prevailing is of interest in connection with the proposed alteration in regard to membership of the Society, as it shows the changes that have taken place in the relative proportions of pharmaceutical chemists and chemists and druggists. Taking a period of twenty years, the differences are as follow :—

	1876.	1896.	Differences.
Pharmaceutical chemists	2,321	2,253	−68
Chemists and druggists	10,857	12,913	+2,056
	13,178	15,166	+1,988

These changes may be regarded as natural consequences of compulsory qualification and of the conditions prevailing when the Pharmacy Act, 1868, was passed. The decline in the number of pharmaceutical chemists continued only to 1892, when it amounted to 116, and during the following four years there has been a small but steady increase, reducing the difference between the numbers in 1876 and 1896 to 68. The rate of increase during the period of four years has, however, been much smaller than that of chemists and druggists, or in the ratio of 1 to 12·5.

Membership of the Society.

Passing now to the relations existing between the Society and the whole body of registered persons, comparison of the registers at the two periods shows that there has been a considerable increase in the number of persons connected with the Society, but a slight reduction in the proportion they bear to the entire body.

1876.

		Society. Members.	Society. Associates.	Unconnected.
Pharmaceutical chemists	2,321	2,062	—	259
Chemists and druggists.....	10,857	839	1,520	8,498
	13,178	2,901	1,520	8,757
		4,421		

1896.

		Society. Members.	Society. Associates.	Unconnected.
Pharmaceutical chemists	2,253	1,584	—	669
Chemists and druggists.....	12,913	575	2,666	9,672
		2,159	2,666	10,341
		4,825		

The number of persons connected with the Society in 1896 was larger by 404 than it was in 1876, but it will be seen that this increase was entirely due to the number of persons joining the Society as associates. As a consequence of that addition and the reduction in the number of pharmaceutical chemist members as well as chemist and druggist members, the relative proportions of those connected with the Society and holding different grades of qualification has, in the course of the past twenty years, undergone very great alteration, so that in 1896 the associates outnumbered the members of the Society by 507 and the pharmaceutical chemist members by 1082.

These circumstances are of considerable importance in their bearing on the position of the Society as an organisation representing the entire body of legally qualified chemists and druggists. They have naturally attracted the attention of the Council, and on several occasions provision has been made for extending the scope of membership, so as to afford persons who have obtained qualification under the Pharmacy Act, 1868, opportunity to take a more active part in the work of the Society. The justice of such an arrangement will be apparent when it is considered that by the Statute of 1868 the powers and action of the Pharmaceutical Society in regulating affairs were compulsorily extended to the entire body, instead of applying only to affairs connected with the voluntary qualification of pharmaceutical chemist. After the passing of that Act membership of the Society became a duty rather than the privilege it had been while it was the only criterion of pharmaceutical qualification. In fact, from the point of view of the Society's Charter, the logical sequence of the Act was that eventually every registered person should be a member and have full representation. The popular estimate of the import of membership, formed during the early period of the Society's existence, should in itself be an inducement to take that position, as well as the opportunity of taking part in the management of affairs and, on the other hand, the acknowledged sufficiency of the compulsory examination to prevent incompetent persons from being placed on the Register—a guarantee that the object of the Act is realised in that respect—justifies the recognition of the Minor qualification as a basis of membership. This view of the matter is well stated by Mr. Currie at page 20.

Regard for the superior qualification of pharmaceutical chemist—though not to be considered merely a matter of sentiment—cannot reasonably be urged as a reason for not admitting to membership of the Society persons holding only the Minor qualification. The title of pharmaceutical chemist is protected by the Act of 1852 and it secures exemption from jury service: it is a guarantee—so far as examination can be—that the holder is possessed of more extended and complete knowledge and skill as a pharmacist and it is, in those respects, altogether independent of membership. But the eligibility of pharmaceutical chemist members of the Society as members of Council, is an additional advantage which is not now in accord with existing conditions, though it is a respectable tradition and has probably been productive of good results in the past. The mistake of supposing that there is any necessary connection between membership of the Society and the Major qualification, that does not also exist in the case of the Minor qualification, was shown in the article in last week's Journal. For more than thirty years a large proportion of the members have not been pharmaceutical chemists. But omitting from consideration those members of the Society who hold that position in virtue of having been in business before 1868, the Society now comprises little more than two-thirds of the pharmaceutical chemists. With them is a larger number of persons, holding the Minor qualification, as associates in business and much more than half as many associates not in business. From a financial point of view they contribute more to the support of the Society than the pharmaceutical chemist members and, on that account, as well as by reason of their numerical preponderance, the argument in favour of their admission to membership claims attention.

The apprehension that the interests of pharmaceutical chemists might be prejudiced if the Council were largely constituted of members holding the Minor qualification, is quite inconsistent with past experience. They have never yet been represented so fully in the Council as the Act makes provision for, notwithstanding their preponderance of voting power, and there is no reason for thinking that the members of Council, of that grade, have been less careful of the interests of pharmaceutical chemists than their colleagues. Moreover, election as a member of Council would, as Mr. Carteighe pointed out, still be influenced by considerations whether the candidates were men who would devote themselves to advancing the craft. Even the election of members of the Society is subject to the discretion of the Council and, under the proposed new constitution it would not be necessarily a matter of course in the case of every registered person.

Administration of the Pharmacy Acts.

The number of cases of alleged infringement reported to the Registrar during the past year was somewhat less than in 1896. The total number, however, exceeded three hundred. Each case was duly investigated, and those in which definite evidence of infringement could be obtained were laid before the Council for the necessary authority to proceed for the recovery of the penalties incurred.

In England a very large proportion of the offenders did not attempt to contest their liability, but purged their offences by paying the penalties claimed without going into court. In cases heard before the County Court Judges at Nottingham, Preston, Bradford, Leicester, Edmonton, and Bloomsbury, judgment was obtained for the penalties claimed with costs, but at the Bow County Court Judge French gave another illustration of his strange antagonism to the Act of 1868, by giving judgment for the defendant in a case where an unqualified assistant in sole charge of a branch shop was sued for a penalty in respect of a sale of laudanum. The evidence given on behalf of the Society was uncontradicted, and it was, to a lay mind, absolutely conclusive, but the Judge was of opinion that the attention of the defendant should have been directed to the offence immediately after the sale was made. There is, however, no provision requiring this to be done, and the action was instituted many months within the time limit prescribed by the Statute. The Society's counsel protested against the action of the Judge, but without avail.

A further illustration of the difficulties encountered in endeavouring to administer the provisions of the Act may be instanced in a case heard before Judge Lushington at Reading. It having been reported to the Society that a dealer in garden requisites, etc., was exposing weed-killer in his window, a purchase was made from an unqualified person in defendant's shop which, upon analysis, was found to contain arsenic sufficient to poison 2000 persons. At the hearing of the case it was admitted that neither the defendant nor any person employed in the shop had any qualification to sell poison, the defence relied upon being that the weed-killer had originally been procured for the private use of the defendant, that it was never intended for sale, that defendant did not sell by his own hand, and that he was not liable for the act of a servant who had sold the tin without authority. In the course of the evidence it transpired that defendant had several branches, and that he had a partner who managed the Reading business, which was carried on in the name of the defendant. After a hearing which lasted several hours, His Honour, in giving judgment, stated that an important point of a law had to be decided. Upon a review of the evidence he was content to hold that the defendant did not intend to sell the tin in question. As to the meaning of the word "sell," he held that it meant the physical act of sale. On the question of partnership he was of opinion, having regard to the decision of the House of Lords in the London and Provincial Supply Association case, that partnership was on the same lines as a corporation. He therefore reluctantly gave judgment for the defendant, but willingly gave leave to appeal.

The issues involved being of grave importance to the public and to registered persons, an appeal was entered, which came on for hearing before Mr. Justice Hawkins and Mr. Justice Channell sitting as a Divisional Court in the Queen's Bench. The case was ably argued on behalf of the Society by Mr. Vaughan Williams, and the judges expressed their concurrence with his views that a master, whether he was a member of a partnership or not, would be liable under the Pharmacy Act for offences committed by his servant if there was reasonable ground for supposing that such servant was acting under the ostensible or implied authority of his master. Having regard, however, to the fact, as stated in the notes of the County Court Judge, that the tin of weed-killer in question had been sold by the shopman without any authority, and that the defendant never intended it for sale, the judges dismissed the appeal with costs.

In Scotland convictions were obtained in twenty-three cases, but the Society continues to be much hampered by the action of some of the Sheriffs, who, taking advantage of the power conferred upon them by the Summary Procedure Acts, inflict merely nominal penalties, the result practically being to fine the Society for administering an Act of Parliament passed in the interest of the public.

Treasury Prosecution.

There have been but few prosecutions under Section 17 of the Act of 1868, and the only proceedings to which attention need be directed were those at the instance of the Treasury against a homœopathic practitioner for the sale of a preparation known as Wallace's Specific No. 1 without complying with the regulations

required to be observed in the sale of poisons in Part 1 of the Schedule. The case was heard before Mr. Lushington at Bow Street Police Court in February last. Formal evidence of the purchase having been given, Dr. Luff gave particulars of his analysis, and stated that the bottle handed to him contained aconitine, the quantity present being such, that one-sixth of the contents might prove fatal, and a whole bottle would probably mean certain death. For the defence it was submitted that the preparation was not considered a poison. It was admitted that aconitine was present, but only in infinitesimal quantities. The magistrate said it was evident the mixture contained more than an infinitesimal quantity of poison, and inflicted a fine of £5 and £10 10*s.* costs on the first, and £5 and 2*s.* costs on the second summons.

The defendant subsequently obtained a patent for his specific, and presumably acting under the impression that he was thus outside the Act, continued to sell the preparation without observing any of the formalities required by the Statute. Evidence of this fact having been submitted, the Treasury took out four summonses, charging him with selling aconitine to a person unknown to the vendor, without labelling it with his name and address or the word "poison," and without entering the sale in the poison book.

At the hearing Dr. Luff again gave evidence, and stated that the mixture was very similar to that which was found in the previous case, but the percentage of aconitine was somewhat higher, being 1/23rd of a grain to the fluid ounce. In his opinion there was no reliable chemical test for aconitine. All the authorities recognised that the physiological test was the only one that could be relied upon. He had tested it upon his tongue and had experimented on mice. After a long hearing the magistrate adjourned the case in order that Dr. Luff might make some of the Specific in accordance with the specification, and analyse its contents.

At the adjourned hearing Dr. Wynter Blyth and a clergyman gave evidence for the defence to the effect that the Specific was not poisonous. Dr. Luff was then recalled, and stated that he had prepared the compound according to the directions given in the defendant's specification and analysed the contents, with the result that he found practically the same quantity of aconitine as in the bottle which formed the subject of the prosecution.

Mr. Lushington, in giving his decision, said that notwithstanding the conflict of evidence, he could not doubt that the preparation contained a poisonous dose of aconitine. He therefore convicted the defendant on each summons, and ordered him to pay penalties and costs amounting to sixty-two pounds six shillings.

The Society's Library.

From the Library in London an increased number of volumes has been lent during the past year, the increase being amongst provincial borrowers. The attendances in the Reading Room have not been quite as numerous as in previous years; there have been, however, nearly four thousand signatures in the attendance book. The number of volumes added by donation and purchase is about 200, and among the more important may be mentioned, in botany, the concluding part of the 'Flora of British India,' edited by Sir Joseph Hooker since its commencement, about twenty-five years since; a new volume of the 'Flora Capensis,' under the editorship of Mr. Thiselton-Dyer, in continuation of the work of Harvey and Sonder; the 'Flora of Somerset,' by R. P. Murray, and a complete set of the Annual Reports of the Missouri Botanical Garden from 1890 to 1897. In chemistry, the principal additions, irrespective of the ordinary periodicals, are the General Index to the first twenty volumes of the *Analyst*, including also the first volume of the 'Proceedings of the Society of Public Analysts,' and Guareschi's 'Einführung in das Studium der Alkaloide,' a German translation by H. Kunz-Krause, from the Italian. In pharmacy and materia medica have been added the second edition of the 'Arzneimittel welche in dem Arzneibuch für das Deutsche Reich nicht enthalten sind,' issued by the Deutscher Apotheker-Verein; the second volume of Binz's 'Lectures on Pharmacology,' translated by Dr. Percy Latham, and issued by the New Sydenham Society; the second edition of Kanny Lall Dey's 'Indigenous Drugs of India'; the fifth edition of Mr. Harwood Lescher's 'Recent Materia Medica'; 'Die neuen Arzneidrogen aus dem Pflanzenreich,' by Carl Hartwich, and 'Die Arzneimittel der organischen Chemie,' by Dr. Hermann Thoms. Of works in other subjects there are a new edition of Brannt's 'Treatise on Animal and Vegetable Fats and Oils,' in two volumes; the final volume of 'The Asclepiad,' by the late Sir Benjamin W. Richardson; the third volume of Murray and Bradley's 'New English Dictionary on Historical Principles,' and a number of volumes from the library of the late Mr. W. Dawson Savage, of Brighton, which latter have been useful in filling up several gaps occurring in both the London and Edinburgh libraries.

From the Library in Edinburgh about 1200 volumes have been lent out during the year, of which 209 were to provincial readers. The Library has also been largely made use of for purposes of reference. Upwards of sixty volumes have been added during the year, including Coblentz's 'Handbook of Pharmacy,' Piesse's 'Art of Perfumery,' 5th edition, Taylor's 'Manual of Medical Jurisprudence,' 12th edition, and several duplicate volumes from the Bloomsbury Square Library. The most important matter relating to the Edinburgh Library during the year has been the transference of the Library and Reading Room from the ground floor to the first floor. The old Board Room, with a splendid outlook and excellent light on the north side of the Society's House, has been newly fitted up for the purpose and supplied with electric light. The new Library was opened on November 26, 1897, and the new arrangement is a decided improvement on the old plan, from the point of view of the comfort and convenience of those visiting the Library for purposes of reference or reading. The Society's collection of books is also seen to much greater advantage in the new bookcases.

Museum.

The materia medica collection illustrating the vegetable drugs employed in British pharmacy has been re-arranged in accordance with the lectures given in the Society's School, and on the plan adopted by the late Professor Maisch of classifying drugs according to their character into roots, barks, leaves, fruit, etc. This alteration seems to have given general satisfaction, the specimens being more easily found and compared with one another. Continued interest in the work of the Museum is taken by members and correspondents abroad. A large number of herbarium specimens of Malay medicinal plants illustrating his work on the subject have been forwarded by Mr. H. N. Ridley, M.A. Dried medicinal plants from Central Africa have been presented by Dr. Kerr Cross, and Dr. T. G. Nicholson; from South Africa, by Mr. J. Medley Wood, and African poisons by Drs. Foulerton and Kerr Cross. Professor Planchon, of Montpellier, has contributed others, as well as living specimens of medicinal plants. Messrs. Schimmel and Co. and Mr. Haensel have contributed products connected with essential oils, and numerous donations have been received from correspondents at home. The well-known richness of the Museum has led to various applications from abroad for material for scientific researches. It may also be noted that the collection of microscopical slides belonging to the Society has been revised and added to, and taken under the supervision of the Curator.

Pharmaceutical Work in 1897.

Organisation and Education.

A general survey of the past year's work in pharmaceutical circles leads the observer to the conclusion that the period of twelve months just expired has been marked by a fair display of activity in all matters of pharmaceutical interest. Organisation has been very much in the air, and the dry bones have been stirred to an extent that has probably never been exceeded at any former period. The number of local pharmaceutical associations has been increased to fifty-two, and, without exception, all have done useful work. Not that this implies the reading of an enormous number of cut-and-dried papers, which is probably the least satisfactory way of turning the energies of active workers to account, but subjects of pressing and direct importance to the craft have been deliberated upon, and there has been a marked tendency for the leading associations to unite forces as far as practicable. The object to be aimed at by associations has been clearly indicated by the Vice-President of the Pharmaceutical Society in his Nottingham address; complete local organisation, supplemented by a system of federation, being urged upon chemists and druggists by Mr. Newsholme. Whether in response to his appeal, or to the conjunction of that with other forces at work, local organisation has since proceeded apace, and the close of the year finds us with the path clearly defined along which further progress in this matter must be effected. Awakening has also taken place in regard to the need for systematic training for pharmaceutical students, and it has been a cause for great satisfaction that so many important districts have fallen in with the suggestion originally thrown out in these pages, that a conference should be held at which delegates from the various bodies interested in elementary pharmaceutical education should meet and agree upon a joint line of action for their respective districts. Excellent work is now being done at Nottingham, Sheffield, Plymouth, and elsewhere, in carrying on classes for pharmaceutical students, but there appears to be a lack of system in some cases, and, pending the time when a compulsory curriculum shall prevail in pharmacy as in medicine, it seems extremely desirable that an identical voluntary curriculum should be planned and agreed upon, so that each year the newest comer in the ranks of students may be able to enter upon a well-arranged three years' course of study and practical work, the same course prevailing in whatever part of the country he may be.

Practical Pharmacy.

Turning now to the more technical work done during the year and recorded in these pages, attention may first be directed to the experiments conducted to test the keeping properties of AQUA CHLOROFORMI, B.P. by Peter Boa, who found that the official preparation remains free from alteration for a much longer period than if it contained spirit; then, J. R. Hill pointed out that practice differs considerably in regard to what is supplied in Edinburgh when BELLADONNA PLASTER is prescribed, whilst only in one case out of seven was the official plaster supplied; W. B. Thomson, referring to the great variety found to exist in the composition of BLAUD PILLS, suggested that it would appear reasonable to cease indulging in further theories as to the precise behaviour of the intestinal processes towards foreign substances, and rather see that the state of combination is exactly such as will meet the indications suggesting its use. E. W. Lucas communicated a classification of the OINTMENTS OF THE B.P. which was the outcome of an attempt to improve several of those preparations; P. W. Squire next published the details of experiments in the preparation of UNGUENTUM HYDRARGYRI NITRATIS, and described methods which result in satisfactory products, whilst T. Maben subsequently criticised Mr. Squire's suggestions, and an interesting discussion on the subject followed. R. C. Cowley, in a note on VINUM COLCHICI, showed that a proof spirit menstruum extracts more alkaloid from colchicum corms than acetic acid or sherry; J. H. Pearson contributed a note on GLYCERINUM AMYLI, in which he recommended the addition of a minute quantity of powdered tragacanth to prevent separation of liquid from the mass; Farr and Wright dealt with various pharmacopœial processes in a paper on the DETERMINATION OF ALKALOIDS; and W. Martindale comprehensively summarised what is known about the properties of the more generally employed PRESERVATIVES OF PHARMACOPŒIAL PREPARATIONS. C. J. H. Warden described a simple DRYING BOX FOR PILLS, and also treated of the use of STEAM COILS FOR EVAPORATION; W. S. Glass experimented on the preparation of ESSENCE OF GINGER, obtaining results differing from those of Thresh and showing that African ginger yields the highest percentage of oleo-resin and the strongest essence; George Coull dealt at length with the LATIN OF PHARMACY, and Joseph Ince supplemented that paper, while later he contributed some notes on the PROSODY OF LATIN PHARMACY. Later, N. H. Martin attacked some DANGERS TO PHARMACY in connection with quack medicines and synthetic products; Professor Remington published the results of experiments in which ACETIC ACID was used as a menstruum in place of alcohol, and showed that properly made vinegars might advantageously replace tinctures in many cases. George Sinclair, in a paper on PROGRESS IN PHARMACY, dealt with the development of so-called "elegant" pharmacy; J. Barclay examined several samples of the COCA WINE of commerce, and suggested that a wine prepared from coca leaves should be made up to the required strength by the addition of cocaine; Professor Lewin published the results of experiments on the manufacture of SUPPOSITORIES; and J. C. Hyslop read a usefu paper on PHARMACY ARRANGEMENT.

Conference Papers.

The Glasgow Conference produced a variety of papers of pharmaceutical interest. Dr. J. Attfield showed that ASAFETIDA is the more correct form of the word usually spelt "asafœtida," or the same with the "s" doubled; Farr and Wright contributed a further paper on the pharmacy of CONIUM MACULATUM, and Dr. W. Findlay sent a preliminary note on the action of preparations of hemlock supplied by those investigators, in which he showed that the mixed alkaloids are more toxic than coniine or conhydine alone. J. C. McWalter, in some observations on ORGANOTHERAPY, referred to the fact that compressed tablets of various animal glands have not proved altogether satisfactory in practice, and he expressed the opinion that purified glycerin extracts of the glands will probably be found more efficacious; Umney and Swinton's note on CITRONELLA OIL was devoted to the points of difference between the oil imported from Ceylon and that distilled in England, the former being alleged to contain a sesquiterpene, further investigation of which was promised;

T. Dunlop, having found that price is no criterion of the value of SUMATRA BENZOIN, recommended that the Siam product should alone be employed for pharmaceutical purposes; Dr. G. G. Henderson proposed the medicinal use of soluble combinations of arsenic with acid tartrates of the alkaline metals, compounds analogous to tartar emetic but with the antimony replaced by arsenic, and specially advocated the employment of SODIUM ARSENIO-TARTRATE. Leo Atkinson, in a discourse on PHARMACEUTICAL ETHICS, came much nearer to his subject than is customary with authors of papers on the same topic, and gave utterance to much that is worthy of careful consideration by all pharmacists at the present day; R. Brodie's note on EASTON SYRUP embodied a proposal to substitute quinine hydrochloride for the phosphate ordered in the B.P.C. Formulary; C. Tyrer pointed out that the official characters and tests for HYPOPHOSPHITES are unsatisfactory and indefinite, and described a volumetric method for the quantitative determination of those compounds, based on their reducing action on copper sulphate. F. C. J. Bird, having found that heavy white MEDICINAL PETROLEUM frequently contains notable traces of sulphur, showed how the presence of that impurity can be readily detected; G. C. Druce reviewed the salient features of the SCOTTISH FLORA; C. A. Seyler gave the results of the examination of commercial ALKALOIDAL TINCTURES, which had been found to possess great diversity in strength; W. G. Stratton called attention to the fact that PLATINUM APPARATUS may be damaged or destroyed if phosphates be heated in it in the presence of carbon, and in a second paper the same author showed that the amount of citric acid present in LIQUOR BISMUTHI is sometimes greatly in excess of the quantity specified, whilst a marked deficiency of bismuth was also observed in certain cases. Dr. S. Rideal, in a paper on DISINFECTANT SOAPS, expressed the opinion that an olein soap is preferable as a general basis to one containing stearic or palmitic acid, and that superfatted soaps are useless for disinfecting purposes, since the free fat hinders the action of the disinfectant; Dr. Gordon Sharp emphasised the fact that great confusion has been caused by want of care in naming the MYDRIATIC ALKALOIDS; and J. Bosisto contributed a brief note on KINOS, in which he showed that the question whether the scarce official kino can be effectively replaced by other commercial varieties is answered to some extent from Victoria, Australia, where various kinos are produced, and one—that from *Eucalyptus rostrata*—is obtainable in large quantities as a beautiful ruby-red gum, entirely soluble in water or spirit.

Later Work.

Papers subsequently published include one by Dr. T. D. Reed, on SELENIUM IN COMMERCIAL SULPHUR, and another by the same author on SULPHUR PRECIPITATUM, in both of which it is shown that pure products can be readily obtained if required; J. C. Umney has shown that SODIUM IODIDE as prepared by the principal manufacturers deviates to a marked extent from the official standard; Dr. C. O. Hawthorne has published an instructive lecture on the nature and purpose of the BRITISH PHARMACOPŒIA, more especially intended for students; A. C. Abraham insists on the necessity of greater ACCURACY IN PHARMACEUTICAL EXPRESSION, both in the Pharmacopœia and elsewhere; and J. H. Beal furnishes a much needed reminder of the real purpose of pharmaceutical legislation, in his concise paper on the relation of the pharmacist to PHARMACY LAW. Then, White and Braithwaite have dealt with the difficulty experienced in making medicated SUPPOSITORIES of uniform size, weight, and strength, whilst also devising a novel mould for preparing suppositories in the cold; Professor J. R. Green has given his experience of the condition of PHARMACEUTICAL EDUCATION in the United States, contrasting it favourably with what obtains in Great Britain; B. F. McIntyre describes a useful process for the COLD CONDENSATION of malt extract and other liquids liable to ferment; and formulæ have been published for numerous ANTISEPTIC DRESSINGS and similar surgical accessories. A. Wathes, in a paper on STANDARDISATION, expresses the opinion that the process is quiet feasible in certain cases, though samples of presumably standardised preparations purchased by him prove that it is not carried out in many instances. More recently still, J. R. Hill has shown that SEIDLITZ POWDERS are too frequently sold which deviate from the official standard as regards weight, or contain appreciable quantities of lime, being apparently made with inferior cream of tartar; Farr and Wright have published the results of excellent work on some of the OFFICIAL EXTRACTS, and shown that alcoholic extracts are vastly superior to those at present in general use; W. Martindale appeals to students in a convincing manner, in his address on the use of the FIVE SENSES in PHARMACY; Dr. Gordon Sharp finds that preparations supposed to be made from CEREUS GRANDIFLORUS have really been made from *Opuntia decumana*, and he concludes, as the result of physiological experiments, that both are worthless as drugs. Dr. T. F. Dewar and James Jack have attempted to show how the use of the METRIC SYSTEM in prescriptions may be facilitated; W. Kirkby publishes a formula for fluid extract of SENECIO JACOBÆA; R. D. Gibbs has invented a useful TABLET COMPRESSOR for use at the dispensing counter, and last but not least, the General Medical Council has finally decided upon all the matters of principle involved in the publication of the new BRITISH PHARMACOPŒIA, and the book will be issued within a comparatively few weeks.

Progress of the Journal.

During the past twelve months the *Pharmaceutical Journal* has been steadily developed on the lines indicated in the first issue for 1897 (see p. 12). It has become more and more apparent as months and years have passed that the changes initiated some time ago commend themselves to the general body of readers, and the few who have always been averse to any appreciable alteration in the style and matter of the paper have acknowledged the right of the majority to have their own organ conducted on lines of which they approve. With the beginning of the year the special requirements of students were met by the institution of "The Students' Page," and as events have since proved, it has been one of the most popular and useful features that could have been introduced. Advanced students have also been catered for in various ways, including the much-needed articles on "Practical Pharmacography." The illustration of those articles has been made a special feature, and satisfactory drawings of several important drugs have been published for the first time. All the drawings of crude drugs have been done by a skilled artist, working under the personal supervision of Mr. E. M. Holmes, to whom the Editor is greatly indebted on that account, and the material has, of course, been supplied from the invaluable collection in the Society's Museum. There has been no falling off in the quality or quantity of the scientific papers and abstracts published in the Journal, technical matters of interest to the craft have received their full share of attention, whilst the business requirements of readers have been fully met. The increasing pressure on the correspondence columns reveals, more forcibly perhaps than is otherwise possible, the increasing interest taken in the Journal by its proprietors, the supporters of the Society, and other readers, and at the close of an exceptionally busy year the chief compensation of those responsible for the conduct of the paper is the knowledge that all the efforts made to interest and improve have been duly appreciated.

Chemistry in 1897.

CHEMISTRY has made steady progress during the year, as might be expected from the number of zealous workers who are striving to solve the many chemical problems that daily occur. In this country at all events, notwithstanding our shortcomings in reaping the advantages of the results of investigations which, frequently emanating from us, are worked out by our Continental friends, we are not retrogressing in physical and inorganic chemistry, whatever may be the opinion as to our position in applied organic chemistry.

Liquefaction in Fluorine.

Moissan and Dewar, continuing the researches of Dewar at low temperatures and utilising the intense cold which is produced at the temperature of boiling liquid oxygen, have succeeded in obtaining fluorine, which was isolated by Moissan in 1886, in the form of a mobile yellowish liquid at $-185°$ C. In its liquid form it is almost inert to the many substances, such as glass, silica, etc., on which it has so powerful an action in its gaseous condition.

Researches on Argon.

Argon certainly now remains undisputed as being an elementary gas, and appears to be present in many natural gases. Schloesing has found it in fire-damp and Regnard in the blood, whilst Villard has succeeded in combining it with water to form a crystalline hydrate. Argon, like helium, has been found by Ramsay and Collie to be a most inactive element. Lord Rayleigh has met with helium in the natural gases issuing from the Bath springs to the extent of 1·2 per 1000 volumes, and Olszewski having failed to liquefy it, Dewar has demonstrated how helium can be obtained from the same source in large quantities by his method of liquefaction of the other gases at a low temperature. Dewar has also suggested the method of liquefaction of gases as a means of detecting the impurities that may be contained in air. Arising from the investigations which were made in the isolation of argon, Lord Rayleigh points out how he is unable to corroborate the statement of Sir Humphry Davy that nitrogen dissolved in water is oxidised by electrolysis. If nitrogen could have been oxidised in this manner, argon could have been isolated without difficulty on a large scale.

Metallic Carbides.

Moissan has obtained by direct synthesis a definite crystalline iron carbide of the formula Fe_3C, identical with steel, by the action of the heat of the electric furnace on pure iron and the carbon of sugar, whilst Bone and Jerdan have caused the direct union of carbon with hydrogen at a temperature of 1200° C., forming methane without any acetylene or other unsaturated hydrocarbons. The dangers of calcium carbide as a source of acetylene can be avoided according to Vivian Lewes if the carbide is pure, and is kept perfectly dry, and if proper storage of the carbide is ensured. In this connection Bone and Cain point out that acetylene forms an explosive mixture when mixed with one-fifth to one-fourth of its own volume of oxygen.

The Benzene Formula.

Professor Collie has attacked the benzene formula—that fascinating source of interest to many chemists—and has suggested a conception of its construction that may throw a new light on the constitution of many benzene derivatives. The space formula for benzene, as it is termed by its author, combines the hypothesis of the ordinary formula and of the centric formula for benzene, together with the hypothesis that there are two distinct sets of three hydrogen atoms, and that when one set is inside, the other set is outside the molecule. Matthews has since stated that this new space formula for benzene satisfies unexplained modifications in the hexa-halogen addition compounds.

Purple of Cassius.

The purple of Cassius has been investigated by Antony and Lucchesi, who have been enabled to prepare similarly coloured compounds by adding either cuprous chloride, mercurous chloride, or mercurous chloride and barium sulphate to auric chloride. Inasmuch as the purple precipitates so obtained contain free gold, it is concluded that the original purple of Cassius, which is made by adding a tin salt to auric chloride, is a mechanical mixture consisting of stannic acid coloured with metallic gold. This is one of the views which has been previously held as to its composition.

Potassium, Silver Nitrate, etc.

A simple instrument has been devised by Newth for the detection of potassium by the flame reaction that absorbs all those portions of the spectrum which usually make the indigo prism fallacious as a test when potassium salts are admixed with salts of lithium, strontium, calcium, etc. Warden has drawn attention to a method of precipitating silver nitrate by strong nitric acid, which has been adopted at the Calcutta Medical Depôt to prepare lunar caustic free from copper, also to the apparent action of light in inducing crystallisation of stannous iodide.

Atomic Weight of Carbon.

From the Davy Faraday Research Laboratory doubts have been thrown by Scott on the methods adopted by Stas, Dumas and others in the determination of the atomic weight of carbon, which, it is asserted, is by no means one of those most accurately known, and that careful revision of it is imperative.

Cinchonine and Cinchonidine.

In the chemistry of natural drugs many investigations have been made which are of some interest. Koenigs startled the quinologists by the statement that on the supposition that cinchonine and cinchonidine are stereo-isomeric, he had been enabled to convert five per cent. of the former into cinchonidine by the very simple method of boiling with potash in amylic alcohol. Moreover, Shaw subsequently reported that he had been fortunate enough to effect this change to the extent even of 12 per cent., so if this be correct, quinine manufacturers should have no difficulty in converting a part of the comparatively worthless cinchonine into the more valuable drug cinchonidine. These statements, however, have not been confirmed by Paul and Cownley, who carried out the process exactly as described by Koenigs, and they suggested that the cinchonidine found by Koenigs was more probably due to the known difficulty of separating the cinchona alkaloids and of obtaining them in a state of purity.

Hyoscine and Scopolamine.

Schmidt and Hesse have still to settle the question between them as to the individuality of commercial scopolamine hydrobromide, for whilst Hesse maintains that it consists of hyoscine and atroscine, which are stated to be natural to the root, Schmidt alleges that it is composed of scopolamine and *i*-scopolamine, the latter, which is officially inactive, having been produced in the process of the extraction of the alkaloids. But as L. Merck points out, the real question now between Hesse and Schmidt as to hyoscine and scopolamine is merely a question of name, both agreeing to Hesse's original formula of $C_{17}H_{21}NO_4$, and Merck's opinion from the results of careful extraction of scopola root is more in accord with Hesse, and he believes that there are two natural isomeric bases which can be only differentiated by their optical activity.

Jaborandi and its Alkaloids.

Jaborandi and its alkaloids have received some attention, and we are approaching to a more definite understanding of the nature

of the alkaloids which are present in the various kinds of jaborandi leaves. The early expressed opinion that jaborandi contained only one alkaloid, to which the name pilocarpine was assigned, has been proved to be inaccurate, so that the problem now to solve is to ascertain what is pilocarpine? Paul and Cownley having shown that the several kinds of jaborandi leaves differ considerably in the amount of alkaloid they contain, and that the product obtained is probably always a mixture of two or more distinct alkaloids, and that the pilocarpine salts of commerce differ largely, not only in their physical properties, but also in their physiological action, Petit and Polonowsky have undertaken the study of the two alkaloids pilocarpine and pilocarpidine, and they conclude that the commercial salts of so-called pilocarpine are, for the most part, admixtures of pilocarpine and pilocarpidine, this being especially the case with the nitrate, which frequently contains 50 per cent. of pilocarpidine nitrate. They also state that pilocarpine and pilocarpidine are isomeric—Merck having previously failed to methylate pilocarpidine—and that the former is transformed into pilocarpidine by heating pilocarpine hydrochloride just above its melting point; moreover pilocarpidine is natural to the leaves.

Determination of Digitoxin.

Keller and Fromme have been working at the determination of digitoxin, which, according to Schmiedeberg, is the active principle of digitalis leaves. Fromme finds that the amount of pure digitoxin in digitalis leaves varies from 0·104 to 0·391 per cent.

Constituents of Rose Oil.

The confusion which has been caused by the application of various names to the constituents of rose oil (otto) and some other kinds of essential oil will be found fully described in the Journal (p. 416 *ante*), in which it is shown that an alcohol, $C_{10}H_{17}OH$, is a common constituent of rose oil, geranium oil, and of the various essential oils obtained from species of andropogon, and that the name geraniol, first given to the alcohol obtained from andropogon oil by Jacobsen in 1871, is more entitled to consideration than rhodinol, roseol, réuniol, etc.

Formaldehyde and its Polymer.

Formaldehyde is maintaining its value as an antiseptic as being more suitable for many purposes than other kinds of antiseptics, and Merck has prepared compounds of it with casein, gelatin, and starch. The difficulty of keeping a strong aqueous solution of formaldehyde without its undergoing conversion into its solid polymer, paraformaldehyde, has always retarded its general use. It has, however, been shown by Paul and Cownley how the solid polymer can be readily converted when required into its soluble form, and they suggest that the solid polymer should be manufactured for use as an antiseptic instead of the unstable formaldehyde. The soluble aldehyde which has been prepared from the para compound has been stated by one observer to be even more energetic as an antiseptic than the normally prepared formaldehyde. More information, however, is required on this point.

Synthetic Remedies.

Synthethic remedies are still being actively prepared in Germany, some of which may be found to possess the advantages claimed for them. Eucaine and eucaine B, for instance, are being favourably received as being less toxic than cocaine, whilst holocaine prepared from phenacetin and *p*-phenetidin has met with some measure of success as a substitute for cocaine. Eupthalamine, a new mydriatic, and orthoform, a non-toxic anæsthetic and powerful antiseptic, are among the more important bodies which possess pharmaceutical interest. Euquinine, the ethyl carbonic ester of quinine, is said to be without many of the disadvantages of quinine, and has been found therapeutically to be equivalent to half the quantity of quinine. It has only a slight bitter taste, and is said not to produce cinchonism. Symes has shown how the supposed inimical action of alcohol in pepsin digestion is modified in a membrane receptacle, so that an alcoholic liquid may be used for preparing solutions of pepsin for medicinal use.

Essential Oils.

J. C. Umney has done good work on the essential oils of fennel, J. C. Umney and Swinton on oil of citronella, and Braithwaite has improved Herschon's apparatus for use in the determination of aldehyde or of phenol.

Hydrolysis of Starch.

That there is a relation between the cupric reducing power and the specific rotatory power of the products of hydrolysis of starch by diastase was first asserted by O'Sullivan, the one being inversely proportional to the other for all stages of the reaction. The existence of this relation has since been denied by some Continental chemists, but after a searching inquiry by Brown, Morris, and Miller, it has been thoroughly confirmed. If a solution of such products shows a rotatory power departing from that demanded by its cupric reducing power, it may safely be assumed that an impurity is present. Rolfe and Defren find also that when starch is hydrolysed by dilute mineral acid, a similar relation holds, although the final product is not maltose, as is the case when the conversion is effected by diastase, but dextrose.

Colouring Principles of Tannin.

An investigation of the yellow colouring principles of various tannin matters has been carried out by A. G. Perkin, F.R.S.E. A crystalline yellow substance has been isolated from Cape sumach, the young leaves of *Colpoon compressum* or *Osyris compressa*, which has proved to be a new glucoside of quercitin, and to which the name osyritin has been given. Quercitrin and rutin from quercitron bark and rue respectively are other distinct glucosides of quercitin. Quercitrin yields on hydrolysis one molecule of rhamnose, rutin giving two molecules of the same sugar. Lowe's statement that the colouring matter of gambier catechu is identical with quercitin has been confirmed, and acacia catechu also appears to contain a very small proportion of the same substance. The coloured principle of Sicilian sumach, *Rhus coriaria*, is not quercitin as was formerly supposed, but myricetin, and an investigation of Venetian sumach, *Rhus cotinus*, indicates that its colouring principle is the same substance. The class of tannins found in seeds and fruits contains no member of the quercitin series. They contain, on the other hand, ellagic acid or ellagitannic acid, to which their yellow dyeing property is due. Members of the quercitin group occur in flowers, leaves, and stems, but only rarely in seeds and fruits, notable exceptions being Persian berries, which contain rhamnetin and quercitin, and parsley seeds, which contain apiin. The general results show that a very intimate relation exists between tannins and their accompanying colouring matters. The decomposition products, of which gallic and protocatechuic acids, phloroglucinol, and resorcinol are typical examples, are found to be the same in the case of the colouring matter as in the tannin.

Other Colouring Matters.

An exhaustive series of reactions upon apiin and its hydrolytic product—apigenin—has been made by the same author. Apigenin is found to be closely related to chrysin, the yellow colouring matter of poplar buds, and is very probably hydroxy-chrysin, its decomposition into phloroglucinol and para-hydroxy-acetophenone being then clear. Besides quercitin and its mono-methyl ether—rhamnetin, a third substance occurs in Persian berries named rhamnazin, that has been found to be a quercitin dimethyl ether.

Experiment shows that one methoxyl group is present in the catechol nucleus (using Herzig's formula for quercitin), but no knowledge has been gained as to the position of the other, except the fact that it is not in the phloroglucinol nucleus in the ortho position relatively to the carbonyl. Some new light has been thrown upon the constitution of the colouring matter of cochineal by Liebermann. By the direct oxidation of carmine with potassium persulphate he has obtained two substances to which he gave the names coccinic acid and cochinillic acid. The former proved identical with the oxyuvitic acid of Oppenheim and Pfaff, while the latter was found to be a cresol tricarboxylic acid. The positions occupied by the groups being methyl, 1; carboxyl, 2, 3, and 4, and hydroxyl, 5. The constitution of this nucleus is therefore established.

ALCOHOLIC FERMENTATION.

The views hitherto held with regard to the nature of the action of yeast upon sugar in the formation of alcohol will in future have to be modified. As long ago as 1858 Traube held that fermentation was the result of zymotic action, and later Hoppe-Seyler maintained the same theory. Lately E. Buchner has succeeded in producing alcoholic fermentation without the presence of yeast cells. He took pure beer yeast freed from adhering water and ground it with quartz, sand and kieselguhr, mixed this with a little water, and subjected it to hydraulic pressure, thus obtaining a strong solution of the soluble contents of the protoplasm.

This was made clear by filtration, and constituted a slightly opalescent liquid of specific gravity 1·0416. It gave of carbon dioxide on warming, and at 35° to 40° became coagulated. This liquid, when mixed with a strong solution of cane sugar, induced a strong alcoholic fermentation, during the progress of which no organism made its appearance in the liquid. Even when the yeast juice was contained in a parchment bag suspended in sugar solution it was found that carbon dioxide was given off from outside the bag, so that the fermentative enzyme to which this property is said to be due appears to be dialysable. The property of the liquid disappears with time; being surrounded with ice it became inactive in five days, although, curiously, it continues its activity over two weeks when mixed with sugar solution.

Rigorous tests have been applied to determine whether the property was due to the presence of fragments of protoplasm in the liquid, and it has been found that filtration through the Berkefeld filter produced no effect, while the presence of chloroform did not retard the fermentation. A 1 per cent. solution of sodium arsenite was also without effect. As these things destroy the action of living yeast it is evident any protoplasm unprotected by a cell-wall would be destroyed more rapidly, and there remains no doubt that the activity is due to a zymotic chemical substance and not a living protoplasm. It is important to notice that Professor J. R. Green, working precisely by the method of Buchner, with samples of English yeast, has been unable to confirm these results. No diminution of the specific gravity of the syrup or evolution of carbon dioxide sufficient to account for zymotic action could be observed in the course of several days, and it is, therefore, contended that these yeasts, at any rate, contain no alcohol-producing enzyme. This, however, cannot be taken as conclusive evidence of its non-existence, as Buchner himself failed to produce the enzyme from certain samples of yeast.

SYNTHESIS OF CITRIC ACID.

Among other points of interest may be mentioned a new synthesis of citric acid, which has been effected by W. T. Lawrence, who obtained ethyl citrate by the condensation of ethyl bromacetate with ethyl oxalyl-acetate in the presence of zinc.

NOTICES OF BOOKS.

HAM'S 'INLAND REVENUE YEAR-BOOK' for 1898 (London: Effingham, Wilson and Co., 11, Royal Exchange, E.C. 3*s.* and 4*s.* 6*d.*) will receive a warm welcome from everyone who has had occasion to consult its predecessors of former years, and Mr. E. Grant Hooper and his colleagues are to be congratulated on once more producing a capital work of reference. Following a compact scribbling diary, we find the usual information concerning the Royal Family, Ministers of State, Government Officials, Judges, statistics illustrating the progress of the nation, stamp duties, etc., etc. Then comes a concise digest of Inland Revenue laws, followed by a schedule of licences and information regarding income-tax, probate of wills, etc., concluding with an Inland Revenue directory. As pointed out on former occasions, perusal of the contents of the book enables one to see many things from the point of view of the Inland Revenue officials, and to those who may have occasion to devote careful consideration to any of the matters dealt with in the work the volume should prove invaluable. For all matters connected with the Inland Revenue it fills a similar position to that occupied by Whittaker's 'Almanack' with regard to affairs of more general importance.

THE 'TRANSACTIONS OF THE BRITISH INSTITUTE OF PREVENTIVE MEDICINE' (First Series) enable one to form a fair idea of the position that preventive medicine now occupies, and the extent to which the study of bacteriology has contributed to the results attained. The papers included in the volume have all been contributed by members of the staff of the Institute, and they are edited by the Director, Dr. Allan Macfadyen, an introduction being furnished by Lord Lister, Chairman of Council of the Institute. First, we have "A Contribution to the Study of Streptococcus Pyogenes," by William Bulloch, M.D., which is followed by a paper "On the so-called Pseudo-Diphtheria Bacillus and its Relation to the Klebs-Löffler Bacillus," by R. T. Hewlett, M.D., M.R.C.P., and Edith Knight, M.B. An interesting "Note on a Peculiar Movement of Certain Intra-cellular Particles in Yeast Cells," is contributed by Wm. St. C. Symmers, M.B.; a paper "On Micrococcus Gonorrhœæ and Gonorrhœal Infection," by Alex. G. R. Foulerton, F.R.C.S.; and one on "The Sterilisation of Milk," by A. Macfadyen, M.D., and R. T. Hewlett, M.D. The writers of the last-named paper point out that for a process of sterilisation to commend itself for general use, it must be possible to heat large quantities of milk quickly and uniformly in an apparatus that will enable the process to be readily and cheaply carried out. A new form of apparatus is described and illustrated, which is easily worked, rapid in action, and capable of dealing with unlimited quantities of milk. It can also be automatically cleaned and disinfected before use. A paper on "The Sterilisation of Water by Filtration," by Joseph Lunt, B.Sc., etc., is a record of results obtained with the Berkefeld Filter. A large number of experiments have shown that when the filtering medium is efficiently sterilised, this filter can give an absolutely sterile filtrate on the first day of use; it is essential, however, that re-sterilisation should be effected daily, if the filter is to be used continuously. The remaining papers are on "The Bacillus of Bubonic Plague, *Bacillus pestis*," by R. T. Hewlett, M.D., "Bacteria and Dust in Air," by A. Macfadyen, M.D., and Joseph Lunt, B.Sc., and finally, "On a Convenient Method of Preserving Living Pure Cultivations of Water-Bacteria, and on their Multiplication in Sterilised Water," by Joseph Lunt, B.Sc. The book, which is published by Macmillan and Co., Ltd., is a very creditable production, and its contents ought to interest many of our readers.

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RICHARD WILLIAM GILES.

THE death of RICHARD WILLIAM GILES has removed from the ranks of the Pharmaceutical Society one of its oldest members and one of the small group of pharmaceutical chemists whose Major certificates were recorded in the Register for 1896 as being numbered with two figures. The son of a Founder of the Society, who had in the early part of the century established at Clifton, a business which rose in celebrity even more rapidly than the locality in which it was situated, R. W. GILES, after apprenticeship to his father, became a student in the recently established School of Pharmacy at Bloomsbury Square, where he distinguished himself by taking prizes in chemistry, pharmacy, botany, and materia medica in the session 1847-48. His reminiscences of that period of his career were given in a recent number of the Journal.

His contributions to the Journal were numerous and important. Among the first was an elaborate historical paper on the Atomic Theory, read before the Bristol Chemists' Association, 1847; also a short notice on "Accidental Poisoning," 1849, which showed the interest he even then was taking in science and practical pharmacy. In another, suggested by a remark in the *Times*, expressing regret at the deficiency of competent chemists, he maintained the principle that pharmacy ought to occupy a much more honourable and scientific relation to the practice of medicine than it had hitherto done. The education of apprentices next engaged his attention. He defended the alleged apathy of assistants, and while urging them to higher exertion, hoped the day would come when greater facilities for study and research would be within their reach. A communication to the British Pharmaceutical Conference, on "Relation of Remuneration to Pharmaceutical Responsibility," reflected the uniform direction of his mind.

"Granted," he remarked, "that pharmacy is a trade, it is, nevertheless, a trade with exceptional responsibilities, and demanding exceptional qualifications which take it out of the category of ordinary trades."

"We also have a right to expect," was his conclusion, "that the importance of our duties; when conscientiously discharged, and the nature of the qualification which we are required to possess, should raise us in the social scale somewhat above the status of ordinary trades, and that the profession of pharmacy, instead of proving as it now does an obstacle to the honourable status of a gentleman, should be held to imply all those qualities which make the name of gentleman desirable."

He insisted in this carefully worded confession of belief on the claim of the pharmacist to better recognition, both as regards his place in science and in his social relationship. The subject was further considered in a letter on "Pharmaceutical Ethics."

Mr. GILES was a member of Council from 1853-56, and for some time a member of the Board of Examiners. On many occasions he appeared before the Society, to defend or propose some public course of action. He was a manly speaker, and marshalled his facts in a clear and consecutive manner—speaking without embarrassment, and with conviction, giving an impression of being perfectly in earnest. In stating his case he was uniformly successful, and details followed in due order. He was conspicuous in the part he took in prolonged discussions relating to the Poison Regulations, and in fact was a prominent speaker on any public question of importance which engaged the attention of the Society. On retiring from the Council in 1856 in order that other localities might be represented, he spoke at the annual meeting of what the Society had done in its collective capacity, and pointed out that much remained to be done by members as individuals by maintaining the credit of their position and performing their duties toward those who were to succeed them by not accepting as pupils those who were imperfectly educated.

Probably nothing was so characteristic of Mr. GILES as his undeviating assertion of the dignity of the pharmaceutical calling, based upon educational qualification. This was conspicuous throughout his public career, and was evidenced even in minor transactions. While at Clifton he had an encounter with a herbalist, who regularly supplied her customers with *Solanum nigrum* instead of *Atropa belladonna*. With unshaken pertinacity she maintained the verity of the specimen and evinced a profound contempt for the different opinion held by the pharmacist. The moral drawn by Mr. GILES deserves to be quoted, as it is but a variation of the constant expression of his views.

"I was entirely unsuccessful in convincing her, and there can be no doubt that the same practice will be continued at the proper season, year after year, so long as an unquestioning market is to be found. It does not, therefore, seem improper to call attention again to an old tale, not for the purpose of repeating the individual caution already given, but to apply the force of it to the whole system, and to conclude that pharmaceutists, who claim a dignity from the responsibility of their duties, cannot without criminal indifference transfer their trust to ignorant and irresponsible herbalists, but that they are required to distinguish carefully for themselves the species of the plants derived from such scources!"

It would not be just to the memory of Mr. GILES to omit a direct reference to his exceptional skill in a different branch of knowledge; he was a born accountant. Evidence of this was found in the record of his business transactions at Clifton; his receipts and expenditure—being entered with scrupulous accuracy, and in the most irreproachable handwriting. He has been known to rise from his bed at night in order to rectify an error which had occurred in the course of the daily takings, and he was able to say with truth that he could at any given time present the statement of his financial standing and produce a balance sheet. On this account his services were greatly in request, and he rendered essential service to the Great Western Railway and in cases of a private nature. We regret the removal of so distinguished a pharmacist, one who so faithfully exemplified in his own career that high standard to which he was anxious his associates should aspire.

ANNOTATIONS.

The Beginning of a New Year finds the world of pharmacy with a good record of useful work to its credit for the past twelve months. The interest taken in the various problems vexing the souls of British pharmacists has been as great as at any previous time, if not even greater, and the prospect at the present moment is therefore far from discouraging to anyone who has the best interests of the craft at heart. For, until a deep and abiding interest is taken by individual chemists and druggists in matters that immediately concern them, it is quite hopeless to attempt to make the influence of the whole body felt as it ought to be. Perfect organisation for defence of professional interests and improvement of the conditions of existence, requires first, that the units to be organised must be in a fit condition of mind, so as to be able to realise the need of defence and improvement. They must next bestir themselves and actively co-operate in all measures taken with the view of forwarding either or both of the specified aims, for the merely passive supporter is apt to become somewhat of a drag on the chariot of progress. Of course, passive assent to what the more progressive members of the craft are doing is preferable to active dissent, but in itself it counts for little, if anything, beyond a slight addition to the ranks of those who approve of what is being done. At the beginning of another year, therefore, it seems desirable to urge upon all active workers in pharmacy the necessity of first converting opponents, and then convincing passive friends of the need for a display of activity on their part.

Local Associations will be found to serve as the best rallying points, as—if properly constituted and conducted—there is no reason why they should not include the whole of the craft in the districts they respectively cover. There the supporters and antagonists of the Pharmaceutical Society, of the Proprietary Articles Trade Association, and of any other more general organisation, can meet on common ground, discuss their differences, and form that better opinion of each other which is an inevitable result of a more thorough understanding of other people. The first step towards a complete union of forces is to become convinced of the sincerity of those with whom one desires to work in unison; due allowance can then be made for personal peculiarities, minor differences can be sunk for the time being, and it becomes possible for persons with the most conflicting notions to work together with a single aim. Ardent supporters of the Pharmaceutical Society, for example, need not worry other people, in season and out of season, to join that body, on the ground that in no other way can their business and professional salvation be effected. They might rather appeal to them on the broader ground of the benefit of the craft, and persuade them to show their sympathy with progressive movements by joining some local organisation. The Pharmaceutical Society stands in no need of apologists, and education of the organising faculty will—indirectly and therefore more satisfactorily than in any other way—bring about the desired result in good time.

There are Fifty Local Associations in Great Britain at the present time, all active and prepared at short notice to deal with any matters of importance to the craft that may be brought before them for consideration. Moreover, most, if not all, of them are kept in close touch with each other through the medium of the Federation of Local Pharmaceutical Associations. The latter is an organisation that, by its very nature, cannot be expected to be ever prominent in the world of pharmacy, but at the same time it possesses an enormous power for good, and by stimulating the constituent associations to consider simultaneously questions of general importance to pharmacy, it has shown in a marked manner of late what it is capable of. There is no reason why many more local associations should not come into existence before the close of 1898, and by affiliation with the Federation each one will have it in its power to direct the attention of most of the thinking chemists and druggists in the country to any point that may be considered desirable. On the other hand, it will thus become possible to evoke general expressions of opinion more readily than has yet been possible. But to that end it is essential that the issues set before the various bodies should be identical, and those in charge of the meetings must prevent speakers rushing off at a tangent and raising side issues. The necessity of such uniformity and limitation will be evident to anyone who reads the reports published in the Journal of recent discussions on identical topics, which had evidently been pre-arranged with a view to simultaneous consideration throughout the whole country, but resulted in some instances in what perilously approached a fiasco.

To Support the New Pharmacy Bill is obviously the duty of all local associations, no one of which has yet found any reason to disagree with the provisions of that Bill. One or two associations have formally resolved to neglect no opportunity of facilitating the progress of the measure and, by implication, it may be assumed that others intend to act in a like spirit. The improvements offered by the Bill may seem slight, but they will at least give homogeneity to a body that is unfortunately distinguished at present by its heterogeneous nature. Reduction in the number of classes into which supporters of the Pharmaceutical Society are divided is an imperative necessity, as much to avoid confusion as to attract support from chemists and druggists who object to join the Society except on equal terms with pharmaceutical chemists. When that simplification has been effected, the only matter connected with the constitution of the Society which is calculated to cause serious disaffection in the ranks will be removed, and the one body which can claim to represent the chemists and druggists of this country in an efficient manner, will be placed in a position which will enable it to approach the Legislature with a greater prospect of obtaining satisfaction than has formerly been possible. Support to the Bill may also reasonably be looked for on the part of chemists and druggists not at present connected with the Society, whilst the pharmaceutical chemists who threaten obstruction will doubtless decide otherwise after reconsidering the matter.

Membership of the Society, it must be pointed out, is no qualification, though no one can become a member except he possesses a qualification. That, however, is in a very large number of instances, as in the case of chemist and druggist members and many pharmaceutical chemists, indicative neither of a special course of training nor of having passed a qualifying examination. And it is surely not contended that an individual who passes the Minor examination to-day is less worthy of becoming a member of the Society than an unexamined chemist and druggist who has secured registration merely by virtue of being in business on his own account before a certain date. Over and above this, it is frequently suggested and probably with good reason, that the Minor examination is now more difficult to pass than the Major was a few years ago. In addition, chemists and druggists in business on their own account are required to pay the same annual subscription to the Society as pharmaceutical chemists, and it is generally accepted nowadays that representation and other privileges should as far as possible accompany and be proportioned to taxation. This would afford another argument in favour of the proposed change, if such were needed. Reason and justice, then, alike point to the

desirability of entitling all chemists and druggists to become full members of the Society, and no petty prejudice should be allowed to stand in the way of this much-needed reform.

Another Direction in which local associations should direct their energies during the year is the improvement of facilities for the education and training of apprentices. It would be well if each association would pass resolutions to the effect that all apprentices ought to have passed the Preliminary examination before entering a pharmacy; that time should then be allowed in all cases for apprentices to attend lectures during the day; and that moral pressure should be put upon the youths to enter for a systematic three years' course of lectures and laboratory work, designed to furnish a substantial foundation upon which to base the studies to be undertaken prior to presenting themselves for the qualifying examination. Having passed those resolutions, the associations might then proceed deliberately to attack the problems involved, and it need not be long before success crowns the efforts put forth.

A Decrease in Rabies Among Dogs is announced by the Board of Agriculture. In the fifty-two weeks of the present year 154 cases of rabies among dogs were reported, as compared with 438 last year and 672 in the year before. The decline in the three years has, therefore, been very marked, the cases last year not being a quarter so numerous as those in 1895. Last week no case was reported, but in the three preceding weeks the numbers were one, seven, and two respectively, making ten for the month in the whole of England and Wales, or rather in such districts as are affected by the muzzling order. The cases of rabies have, therefore, been brought down very nearly to vanishing point. The number of stray dogs removed from the street is, however, still very large, and it is of stray dogs that dog owners have very strongly complained. Mr. Long, the Minister of Agriculture, has admitted the decrease in rabies, and has recently said that the question of giving local authorities wider powers to regulate the conditions under which dogs are kept and the seizure of stray ownerless dogs is now under his consideration, his hope being to make proposals to Parliament on the subject.

Pharmaceutical Examiners in London, observes *Meyer Brothers' Druggist*, a U.S. American organ, may not differ much from those in the United States in some respects, but they must be better natured. If this were not so, it is thought, the editor of an English drug trade paper would find life a burden after Professor McLeod had seen a representation of his countenance that appears in the pages of that paper. Such a caricature is probably hardly possible out of the City of London, and as our U.S. American contemporary remarks, though it may be art it is not of the kind appreciated by druggists. Fortunately for the esteemed professor's peace of mind and capacity for peaceful slumber at night, he is not likely to have the aforesaid caricature brought under his notice, and that is not to be regretted, even though the enterprising editor in question may fail to reap the reward of his doubtless well-meant endeavour to instruct candidates about to present themselves for examination.

"A Technical Offence" is the heading of a paragraph in a Leicester paper, which records the fact that Thomas Young, manager of the Enderby Co-operative Stores, who had been convicted of selling tincture of rhubarb deficient in spirit and saffron, had escaped on payment of the costs of the case. The certificate of Dr. Bernard Dyer, the county analyst, was as follows:—"I am of opinion that the sample contained the parts as under:—Extracted matters, 5·38 per cent.; proof spirit, 72; water, 22·6, and it was, therefore, deficient of proof spirit to the extent of 18 per cent., as compared with tincture of rhubarb properly made according to the directions of the British Pharmacopœia, which should contain at least 90 per cent. of proof spirit. It was also deficient in saffron." For the defence it was innocently stated that the object of the spirit in tincture of rhubarb is simply to preserve it from decomposition, and that, if there had been a contravention of the Act, it was a purely technical one, and one that did not prejudicially affect the purchaser. This particular tincture was obtained from the headquarters of the Co-operative Societies of the kingdom on June 3, and since then the bottle had been opened a number of times, and that was alleged to be the reason why part of the spirit had evaporated. The deficiency of spirit, it was also suggested, did not lessen the efficacy of the tincture (*sic*), and of course a promise was made that care would be taken in future that evaporation should not occur. In conclusion, we are informed that the Bench thought the theory of evaporation was correct, and suggested that a glass-stoppered bottle should be used in future, whilst those sapient magistrates contented themselves, as stated above, with ordering the defendant to pay the costs. That fact alone should render it unnecessary to inform our readers that the defendant is not a registered chemist.

A So-called "Chemist," not registered however, is reported in the same paper as having been fined two pounds, including costs, at Loughborough Police Court. This individual, Richard Parsons by name, keeps a shop at Shepshed, and had been warned against selling methylated spirit without a licence a year ago, but on October 20 he sold some to an agent of the Inland Revenue authorities. Defendant had since taken out a licence, and it was contended on his behalf that as he had properly labelled the bottle containing the incriminating spirit, that should be conclusive of the fact that he was not wilfully breaking the law. It was suggested to be rather a proof that he was acting *bonâ fide*, and that it bore out his explanation that he fully believed an ordinary spirit licence he held covered the sale of methylated spirit. This specious pleading, however, availed the defendant but little, for a fine of two pounds, including costs, was imposed. But it would be interesting to know whether he termed himself a chemist, and if so, why? Some local chemist should see to this matter.

The Death Roll of the past year has, happily, not to be accounted an abnormal one, so far as pharmaceutical mortality is concerned. Notable gaps have, however, been made by death in the ranks of active workers in pharmacy and the allied sciences. In Professor E. Russow, of Dorpat, and Professor Julius von Sachs, of Wurzburg, the Society has lost two distinguished Honorary Members, and botany its most eminent teachers. The untimely death of Dr. P. C. Plugge, a Corresponding Member, has also to be deplored. One regrets to have to record that the names of R. W. Giles and F. M. Rimmington have disappeared from the list of former members of the Council. Mr. Giles had also served on the Board of Examiners for England and Wales. Amongst other noteworthy deaths during the year are those of A. H. Squire; Pope Roach; W. Bower, a former Auditor of the Society and a man of considerable local influence; Thomas Earn, a Founder and a loyal member for fifty-six years; and the following local and divisional secretaries:—G. Nind (Wandsworth), who left two thousand pounds for the Benevolent Fund; E. S. Bradley (Ashbourne); E. H. Dyer (Honiton); W. Sarsfield (Durham); W. P. Hoare (Cromer); and D. Donald (Perth.)

ECONOMIC BOTANY IN 1897.

In the realm of economic botany considerable progress has been made, not only in popularising but also in proving the very great importance to the world at large of this practical side of botanical science. As in the previous years by far the largest amount of attention given to any one product has been directed to the sources of indiarubber, and this is likely to be the case so long as the demand goes on for the tyres of bicycles and the probable future development in the direction of motor cars.

Gutta-Percha.

The allied product, gutta-percha, has also come in for a share of attention, inasmuch as this substance is of scarcely less value than rubber itself, though its popular uses have decreased in recent years, and its scientific application as an insulating material for electrical wires does not so immediately appeal to the general public. It is satisfactory to know, however, that gutta-percha is still obtainable in quantities, though, of course, with the extension of telegraphs, telephones, and electric lighting the demand increases. Whether substitutes will ever take the place of true gutta, the best of which is furnished by *Dichopsis gutta*, is a question that can only be solved by time and the advances of chemical knowledge, but in this connection it will be interesting to quote the following note from the Director of Gardens and Forest Department, Straits Settlements, published in the *Kew Bulletin*. He says, "I have just been down to inspect the little factory where Mr. Arnaud makes his gutta-percha. . . . The leaves are imported in sacks dry from Borneo and Johore. Most of the trees are overcut in Singapore, and there are no more leaves left, I hear. The leaves and twigs cost four dollars and a half a picul (133 lbs.). They are then put damped with hot water into a rolling machine, two rollers worked against each other, which grind them to powder. The powder is thrown into tanks of water and shaken about. The gutta floats in the form of a green mealy-looking stuff, is lifted out by fine copper gauze nets, put in warm water and pressed into moulds. I have samples of the gutta as it comes from the leaves and the pressed out finished article. It is really a very curious little manufactory; I do not know how long it will last, on account of the difficulty of procuring leaves, which must, I think, sooner or later stop the trade." From Mr. Ridley's opinion, the prospect of this article as a trade product does not seem encouraging, but it opens a field for research in many directions that might become profitable. It is interesting and satisfactory to know, on the authority of Mr. Ridley, as recorded in the *Kew Bulletin* for 1897, p. 337, that in connection with the destruction of gutta trees that at one time prevailed "the tree always comes up again when cut down. It can be cut to within six inches of the ground, and will then throw up shoots. Were it not for this, there would hardly be a single specimen in the country. It grows slowly in this manner, but never fails to come up again."

New Tanning Materials.

The subject of new tanning materials has from time to time cropped up as one possessing considerable importance. As a proof of this we need but point to the interest which centred a few years ago around the canaigre, the root of *Rumex hymenosepalus*, and in connection with which a Foreign Office report on the trade and agriculture of California issued during the past year states that the value of canaigre as a tanning agent, etheir alone or in connection with other tannins has been proved beyond question. For light leathers it gives great tensile strength, and is far better for split leather than gambier, oak, or hemlock. It is a quick tanner, and the yellow colour absorbed by the hide in the process of tanning is considered highly desirable for certain leathers. The sliced and dried tubers, containing an average of 30 per cent. of tannic acid, are worth from £8 to £9 per ton. A yield of from 7 to 10 tons per acre would give 2½ to 3½ tons of the dried product, for which there is a constant demand in Europe and America. In consequence of the rapidity of the growth of this plant in countries suited to its cultivation it has been recommended to the notice of farmers of small means. Next to the introduction of new tanning substances that of new dyes is perhaps of the greatest importance, notwithstanding that the fact must always be borne in mind of the brisk competition that has to be met with those of the coal tar series. In this connection may be mentioned extract of "Tengah" bark, which has come before the notice of Kew and reported upon as likely to be of value to dyers, producing either a grey colour in combination with iron, or black in combination with indigo. Tengah is the bark of *Ceriops candolleana*, a close ally to the common mangrove, and a native of the Straits Settlements.

Food Plants.

In the domain of food plants little, perhaps, has been actually accomplished, either in introducing actual novelties or developing old sources. If we may be allowed to take Britain in its widest sense, we may here briefly refer to the West Indian Commission which left England at the beginning of 1897, and whose report has touched the keynote of economic botany, which has vibrated through the whole of the West Indian islands. The results, however, whether affecting our colonies and indirectly ourselves, will have to be written in future years. As the sugar-cane has dominated the West Indies so rice has, and, indeed, continues to be the prevailing food crop in the East. In relation to this universal food plant, it will be interesting to quote the following paragraph on double rice from the *Kew Bulletin*, p. 173, extracted from the 'Proceedings of the Asiatic Society of Bengal.' "This phenomenon of double rice it is said was found in all cases to be due to an increase in the number of ovaries, the other parts of the flower being invariably of the normal number. In the gynæceum of over 150 flowers examined, not one was found with fewer than four ovaries, all apparently perfect; the usual number being five, a few flowers were found to have six, and one or two had seven ovaries. When five, six or seven ovaries were present, sometimes only three, but usually four or five appeared to be perfect. The ovaries may be one, two or three-styled. Usually only two ovaries develop into grain, sometimes three, and their shape is modified accordingly." We have referred to the foregoing plants rather fully in consequence of the possibility of their becoming more important in the future in a commercial point of view, and as indicating the direction in which thought and research may be turned.

Plants of Minor Interest.

With regard to plants of minor interest, but without furnishing useful or interesting products, the following have been brought to notice during the year: Fiji ivory nuts; under this name the Kew authorities have proved, with the assistance of the curator of the botanical station at Suva, that the seeds of *Veitchia joannis*, when they are fully ripe and have become hard and dried, may possibly be turned to account for buttons and other small articles. The palm is known to the natives as the "Niu Sawa," and the kernel or seed in its fresh or soft state is said to have a slightly astringent taste and is eaten by the natives. A new use for *Asclepias curassavica* is also recorded, namely, as an insecticide. The plant under the name of "chilpati" is said to grow everywhere about the Isthmus of Tehuantepec, in Southern Mexico, where it is used by the Indians to keep away vermin, especially

fleas. A rough broom is made of the plant, and the floors and walls of the huts are swept with it, when it is said they are not troubled with fleas for a considerable time afterwards. It is further said that these brushes have been used for brushing the coats of dogs when they are full of vermin, and have been found equally successful.

PHARMACOGRAPHY IN 1897.

THE record of work done during the past year included very little of first-rate importance to pharmacy. Some of the investigations concerning the active principles of plants have contradicted previous observations without adding any new elements of certainty.

Norbitz has obtained a crystalline body having the composition $C_{35}H_{54}N_3O_4$ from capsicum, to which he has given the name of capsacutin, stating that it is the active principle, but which evidently differs from the capsaicin of Thresh in containing nitrogen. The work of numerous investigators on scopolamine results, according to Merck, in the discovery that in scopolamine hydrobromide there are present two isomeric bases differing in their rotatory power, but whether the less optically-active of the two is produced by the mode of chemical treatment, and whether or no it is identical with atroscine, is still a vexed question.

On the other hand, the discovery by Dr. Pfaff of toxicodendrol as the active principle of *Rhus toxicodendron* seems to rest on a sound foundation of physiological evidence, and the presence of the alkaloid paucin in the seeds of *Pentaclethra macrophylla* does not appear to be questioned. The investigation of asafœtida by Polasek has shown the presence of traces of vanillin, and that the ether-insoluble resin consists of asaresinol tannol, $C_{24}H_{38}O_4 \cdot OH$, and the ether-soluble one of its ferulic acid esters. Sassarini, working on gamboge, has found an oil boiling between 160°-210°, and containing a terpene and a camphor, isovitinic and acetic acids, a phenolic ester, a resin, methyl alcohol and higher homologues, and a liquid, either a ketone or an aldehyde, having a fruity odour, but thinks that the phloroglucin found by other workers is a decomposition product.

Chinese insect wax examined by Henriques has been found to consist chiefly of the cerotinic ester of ceryl alcohol, for which he gives the formula $C_{26}H_{31}O_2,C_{28}H_{53}$; ceryl alcohol, $C_{26}H_{54}O$, can be converted by the action of soda lime into cerotinic acid. Our knowledge of essential oils is continually being added to by numerous workers, as the complex nature of these bodies becomes better known. In cultivated French bitter fennel oil Tardy has found—besides fenchone and anethol—phellandrene, estragol, anisic aldehyde, anisic ketone, anisic acid, and a crystalline body, $C_{13}H_{14}O_2$.

Otto of rose and its chief constituent has formed the subject of numerous investigations, leading to the result that an alcohol, $C_{10}H_{17}OH$, is a common constituent of rose oil, rose geranium oil, and of various essential oils obtained from species of *Andropogon*. As to the name to be applied to this alcohol, geraniol seems to have the priority, although rhodinol is obviously more appropriate.

The odorous principle of celery has been named sedanolide, $C_{12}H_{18}O_2$, by Ciamician and Silber. It is the anhydride of sedanolic acid, and with it occurs sedanonic acid, which can be separated by means of warm sodium carbonate solution. Mr. J. C. Umney has contributed information on the fennel oils derived from different commercial fennel fruits, showing that the constituents vary in kind and in quantity, the Saxon, Galician, and Russian being the richest in fenchone, and the French sweet fennel containing none, the German yielding the largest amount of oil; he has also directed attention to the adulteration of star anise oil with petroleum, and to the presence in some samples of citronelle oil of a new sesquiterpene. He has also pointed out that oil of verbena varies much in its percentage of citral, and that, in estimating it, calculation must be made for the presence of methyl heptenone. The properties of pure essence of lemon have been shown by Robins to be sp. gr. 862 at 15° C., and an optical rotation of + 123° in a 200 Mm. tube.

Mr. H. N. Ridley has made an important contribution to materia medica in the publication of a list of the native plants used as medicines by the Malays.

Mr. J. Medley Wood has pointed out the value of *Monsonia ovata* and *M. biflora* in diarrhœa and dysentery. Holmes believes that he has identified the plant yielding the "white woolly" strophanthus seeds of commerce as those of a new species, *Strophanthus nicholsoni*, and has proved that sumbul can be cultivated in the open air in this country successfully, whilst alkanet cannot.

Mr. J. Bosisto, of Melbourne, has directed attention to the properties of *Daviesia latifolia* as worthy of investigation, on account of its febrifuge properties.

The materia medica of East Africa is now focussed into one volume in Engler's 'Mitzpflanzen Ost-Afrika." Dr. Greshoff has published a third part of the 'Economic Plants of the West Indies,' including eleven fine drawings, one of them being styrax benzoin. Several medicinal plants have been figured by Sir Joseph Hooker in the 'Icones Plantarum,' including *Dracæna ombet*, *Glossostemon bruguierii*, *Machilus thunbergii*, and *Balsamodendron playfairii*. Tschirch and Hildebrand have found in the yellow resin of *Xanthorhœa hastilis* 4 per cent. of paracumaric and a little cinnamic acid, free and also combined with tannol esters, the bulk of the resin consisting of the paracumaric ester of xanthoresinol tannol. The red resin of *X. australis* contained no cinnamic acid but a homologous tannol called erythroresinol tannol.

In wool-fat Darmstaedter and Lifschütz find myristic acid, melting at 53°-54, carnaubic acid at 72°-73°, a new oxy-acid (lanopalmitic acid), at 87°-88°, also a new dioxy-acid (lanoceric acid) at 103°-104°, lanopalmitic acid having the property of forming an emulsion when melted with water. They found also a new alcohol, carnaubyl alcohol, ceryl alcohol, an unsaturated alcohol not isolated, and cholesterin.

Coblentz controverts Robin's statement that gelsemic acid is identical with æsculin, gelsemic acid melting at 205°·5 to 206° C., and æsculin at 160° C. Sayre finds that the active principles of gelsemium are absent or only present in minute quantity in the stems. W. S. Glass has shown that African ginger yields the highest percentage of the oleoresin and the strongest essence, although inferior in appearance. Umney has indicated that Japanese chillies, although superior in colour to other varieties, are deficient in pungency.

A new alkaloid obtained from *Retama sphærocarpa*, and named retamine, $C_{15}H_{23}N_2O$, appears to be regarded as an oxy-sparteine. From *Palicourea rigida*, known as "Douradinha" in Brazil, a very poisonous acid called myoctonic acid has been isolated, which seems worthy of further investigation. The active properties of the alkaloids derived from various species of Anhalonium have been receiving attention in this country.

The histological contributions of the year include Part 12 of Tschirch and Oesterle's 'Anatomischer Atlas,' which treats of nutmeg and mace, linseed, valerian root, coca, and maté. Dr. C. Hartwich has published information concerning Winter's bark from Chili, and abnormal structures in aconite roots. Herr A. Schad has published, under the direction of Professor Tschirch, a very full description of the cardamoms met with in commerce;

Professor J. Moeller, a very careful paper on the structure of all the known varieties of aloes wood in commerce; and Drs. A. Schneider and H. Geiger's brochures on the jaborandi leaves of commerce, showing that they present sufficient structural difference for their identification in powder, especially in the relative size of their palisade cells and epidermal cells.

G. E. Cooley has shown that the bark of *Prunus serotina* collected in autumn contains very little starch and much less tannin than if collected in spring, when starch formation again begins, and that by this means it is possible to distinguish bark collected as officially directed in the U.S.P. He has also found that the root bark of *Juglans cinerea* may be distinguished from that of *J. nigra* by the presence of cluster crystals in the rows of parenchymatous cells accompanying the strands of long bast fibres, whilst in *J. nigra* the raphides consist of klino-rhomboidal single crystals only. Professor L. E. Sayre finds that the barks of *Rhamnus purshiana* and the *R. californica*, with which it is sometimes mixed, may be distinguished by the powder of the former giving an orange-yellow colour when macerated in dilute alcohol and a deep red with solution of potash, whilst the latter gives a purple colour with the alcohol and an orange colour with the alkali.

Several adulterations have been detected during the year, that of balsam of tolu with an unknown resinous body, by Braithwaite; of Japan wax with 20 to 25 per cent. of starchy matter by C. H. La Wall; of saffron with 36 per cent. of barium sulphate; of pimento with Armenian bole, by C. A. Macpherson; and of the substitution of the flowers of *Opuntia decumana* for those of *Cereus grandiflorus*, by Holmes.

Attention has also been directed to the variable quantity of impurities of a mechanical character present in some specimens of guaiacum and benzoin, followed by the suggestion that a limit of impurity in these drugs should be imposed in the forthcoming British Pharmacopœia.

The illustrated articles on Practical Pharmacography, published at intervals during the year, have been exceptionally well received, as they have served to meet a pressing want. It is a curious anomaly that no text-book or atlas has yet been published in England which fully meets the needs of the time.

BACTERIOLOGY IN 1897.

IN bacteriology a number of researches have been devoted to the bacillus of bubonic plague. Yersin has announced considerable success in the treatment of the disease with his antitoxic serum, but independent observers on the spot are somewhat sceptical of the results obtained.

Haffkine and Lustig and Galeotti have devised vaccines prepared with cultures of the bacillus (*Brit. Med. Journ.*, 1897). Haffkine has also drawn attention to curious stalactite down-growths occurring in broth cultures of the bacillus (*Brit. Med. Journ.*, i., 1897, p. 1461), and Hankin has observed large swollen involution forms when the organism is grown on a salt-agar (*Centr. f. Bak.*, xxii., 1897). Hankin and Nutall suggest the possible spread of the disease by insects and animals, such as rats and monkeys (*ib.*). Three suspicious cases occurred in London the latter part of last year (*Loc. Gov. Board Rep.*, 1896-97), and in one the plague bacillus was undoubtedly isolated by Hewlett (*ib.* and *Trans. Brit. Inst. of Prev. Med.*, i., 1897). In these cases Bucanan ascribes the source of infection to articles of clothing.

The spread of the rinderpest at the Cape has also occasioned considerable attention to be paid to this disease. So far no organism has been isolated, but means of prevention have been devised by Koch and his co-workers by the use of the bile of affected animals and of the serum of "salted" ones, *i.e.*, beasts which have recovered from an attack. Incidentally it may be not out of place to remark that while German and French commissions are investigating rinderpest, and German, Austrian, Italian, French, and American bacteriologists are studying plague, the British Government has remained completely inactive, not a single British bacteriologist having been deputed to investigate either of these scourges!

In diphtheria there is not much of importance to record. Diphtheria antitoxin has maintained its position as the most valuable remedy in the disease. Neisser has found that the diphtheria bacillus produces little or no acid during the first nine hours; after that, up to the end of the first twenty-four hours, a considerable quantity is formed, which increases somewhat until the end of the second day, when it ceases. The same observer has devised a double stain for the bacillus, which, he states, is almost diagnostic (*Zeitschr. f. Hyg.*, xxiv., 1897, p. 443).

The Widal reaction for enteric fever is still considered to be one of the most reliable tests. It is recognised, however, that the dilution should not be less than one in ten, and a time limit of half an hour or so must be adopted. Foreign substances must be excluded, for Malvoz has found that corrosive sublimate, alcohol, salicylic acid, and safranin cause agglutination of the typhoid bacillus. Safranin agglutinates the typhoid bacillus but not the colon bacillus (*Ann. de l'Inst. Pasteur*, xi., 1897, p. 582).

Copeman and Blaxall have published a paper on the influence of glycerin, etc., on the growth of organisms in vaccine lymph, showing that glycerinated lymph after storage becomes sterile, though still retaining its vaccinating properties unimpaired (*Report of the Medical Officer of the Local Government Board*, 1895-96). In the same volume Klein reports his examination of a number of cases of suspected cholera with negative results. In the succeeding volume (1896-97) Klein details the characters of the bacillus of bubonic plague with experiments on immunisation. He also describes the characters of Copeman's variola bacillus. In both these volumes a good deal of space is devoted to vaccine establishments and forms of vaccination and lymphs.

Sanarelli has discovered a bacillus which he believes to be the cause of yellow fever. It is a small organism, forming on gelatin bright opaque drops, like droplets of milk, without liquefaction. It stains by Gram's method, but is difficult to demonstrate in the tissues (*Il Policlinico*, *Brit. Med. Journ.*, and *Ann. de l'Inst. Pasteur*, 1897). Sternberg claims that this organism described by Sanarelli is identical with his bacillus X, obtained in 1889 (*Centr. f. Bak.*, xxii., 1897, p. 145).

The epidemic of beri-beri in Dublin has spread, and more than 100 cases have occurred. In two cases of this disease Hunter has isolated a coccus apparently identical with that described by Pekelharing and Winkler (*Lancet*, 1897, ii., p. 240).

PHOTOGRAPHY IN 1897

IN a review of the progress in photography during the past year, one cannot help being struck with the fact that there is practically no striking advance to record in any particular direction save one, but that photography is becoming more and more essential to commercial life and science cannot be denied.

ASTRONOMICAL PHOTOGRAPHY.

The international photographic chart of the sky has been steadily worked upon by the eighteen observatories engaged in the work, and in the warmer regions where cloudless skies are more general than with us, and the more temperate zones, the total number of fields of the sky allotted to the observatories have been successfully photographed, and good progress has been

everywhere except in South America, where political clouds have prevented observers from working. Nebular and general stellar photography has been by no means neglected, but the richest results have been obtained in the department of stellar, nebular, and planetary spectroscopy, and not only can we now determine the motion of a heavenly body in the line of sight to within an error of a mile a second, but we can also prove most conclusively that whether they are themselves suns emitting light the same as our sun, or merely dead and inert bodies reflecting light like our attendant satellite the moon. By the aid of photography the spectrum of any celestial body can be obtained, and the negatives afterwards submitted to examination to determine the actual composition of the body or the nature of the light, and it is impossible to state what is to be the future of this the new astronomy.

Commercial Applications.

The most striking advance in commercial photography is the increasing use made of the photo-mechanical processes for the illustration of magazines, books, catalogues, price-lists, etc. The advance recently made in the three-colour printing process is likely to lead to the illustration of magazines by this process, and to the displacement of lithography for many of the purposes for which it is now used. It is satisfactory to have to record considerable advance in the theory of the subject of the ordinary half-tone block making.

Apparatus.

The hand camera, which has of late years been so much to the front, has, if possible, increased in favour; the ordinary stand camera shows, however, no improvement, in fact, it is difficult to see how, except in minor details, it could be improved, if we except, of course, the agreement of all camera makers to adopt standard gauges for dark slides, which would enable the interchange of any slides with any camera. This is, however, probable in the Greek kalends. In lens construction there is, however, considerable advances to record. The old type of rapid rectilinear or doublet lens, composed of symmetrical doublets of flint and crown glass, are gradually giving way to the anastigmatic type, which have also two combinations, but these are composed of five, six, eight, or ten glasses, by which means spherical and chromatic aberrations and astigmatism are eliminated. The latest form of these lenses is the Planar, of Zeiss and Co., which, though only possessing three elements in each combination, has the outer one separated by an air space from the other two, so that the air space acts like a lens and helps in the correction of the lens. The Planar is constructed of foci varying three-quarters of an inch up to 33 inches, the smaller sizes are provided with the English Microscopic Society screw, and are specially adapted for photo-micrographic enlargements. The aperture of the lenses varies from F/3·6 to F/6, according to focus, and from their large angular aperture they are the most rapid lens yet constructed of the newer type. Dallmeyer and Co. have also utilised an air lens in the construction of their new lens, the Stigmatic, and they have also introduced a stigmatic corrector, which may be applied to any portrait lenses of the old Petzval type, thus making them far more perfect instruments.

Sensitive Surfaces.

For negative work, notwithstanding the increasing use of celluloid, glass still forms the principal support for the sensitive emulsion. Probably time, or the more perfect manufacture of celluloid, will lead to the replacement of glass entirely for tourist photography, but at present there is still a strong prejudice against celluloid, in consequence of many unexplained markings that have been met with. More attention has been paid to the use of paper as a negative support, and whilst this is to a great extent a reversion to the ideas of over forty years ago, there in no doubt that for artistic work and large cameras, negative paper is very satisfactory. Manufacturers have steadily increased the speed and the quality of their plates, and many are now issuing their plates backed with a viscous and rapidly drying solution of caramelene, one of the constituents of caramel, which has for its purpose the prevention of that annoying reflection from the back of the glass support known technically as "halation." Increasing attention is being paid by manufacturers also to the ortho-chromatising of emulsions, that is to say, to rendering them more sensitive to the less refrangible colours of the spectrum.

Printing Processes.

Gradually but surely the more permanent processes, platinotype and the so-called carbon or pigment printing, are replacing the evanescent silver processes, and particular attention has been directed lately to the gum-bichromate method, which was first suggested by Pouncy in 1857. In this process paper is saturated with potassium bichromate, allowed to dry, and then coated with a solution of gum arabic and colouring matter, and dried. After exposure the print is merely washed in water, and those parts which have not been affected by light are washed away, leaving the image intact. Practically, this is the carbon process without the transference of the image, which is usual. For many years albumen paper was considered the paper for printing, but in consequence of the small proportion of sulphur in the albumen and the difficulty of removing the last traces of the thiosulphate used in fixing, the silver image was very liable to be converted by the action of these and the atmosphere and damp into the pale yellowish silver sulphide. As an improvement, gelatin was used as a support, but this has its disadvantages, and to replace both albumen and gelatin many substances have been suggested; for some time collodion has again sprung into favour, but it is possible that the experiments of Drs. Jolles and Lilienfeld, of Vienna, as to the utilisation of the proteids and nucleoproteids of maize and other cereals which have resulted in the preparation of albumen free from sulphur, may again revive the use of albumenised paper which, when properly used, was by no means easy to excel. The most valuable researches in connection with printing processes are those which have been carried out by Messrs. Haddon and Grundy, and which have been continued this year, and they have proved that fixation is quicker and more complete when a 10 per cent. solution of hypo. is used than at any other concentration. An analogous case is found in the solubility of silver chloride in ammonia, as determined by M. Jarry in *Comptes Rendus*, which proves that up to a certain concentration increase of strength in the ammonia solution brings about an increase in the amount of chloride dissolved, but that when a certain point is reached any further strengthening of the ammonia leads to a decrease in the silver chloride dissolved. There has been considerable increase in the use of bas-relief prints, which are made by pressure on damp print in a mould which is either cut by the graver or a fret-saw.

Lantern Work.

In this department alone, and in one particular branch of it, namely, animated photography, has there been any revival of the fast-waning interest. Of the increase of animatography it is hardly needless to speak. At every music hall, at every entertainment, the results are shown and are known to all. Springing, in the first place, from the old and well-known zoetrope and wheel of life, which was followed by the praxinoscope and Edison's kinetoscope, there is no doubt that the further applications will be extended in many directions—the latest that of taking cinematographic pictures of the forthcoming eclipse, showing that the principle may be

usefully applied to other purposes than mere entertainment of the masses.

The use of acetylene has considerably increased, and it is interesting to note that the theoretically interesting discovery of this gas (generally known till recently as ethine) by Davy in 1836, and its scientific investigation by Berthelot in 1859, should have led up to the accidental discovery by Wilson, and independently by Moissan, of this useful gas. Acetylene is formed by the action of water on calcium carbide, CaC_2, according to the following equation:—

$$CaC_2 + H_2O = C_2H_2 + CaO,$$

the latter, of course, being quickly converted into slaked lime with the evolution of heat, which, converting a little of the water into vapour, necessitates the use of a cooling chamber for the gas or some method of withdrawing the subsequently condensed water. Calcium carbide is formed by the direct union of the elements in the shape of coke and lime in the elcctric furnace, and 60 per cent. of lime and 40 per cent. of carbon are thus fused the result should be about 81 per cent. of the carbide. It is important that the limestone should be fairly pure, or if phosphatic limestone be used, phosphuretted or siliciurretted hydrogen may also be given off with disastrous results. The theoretical yield of acetylene is about 5·8 cubic feet of acetylene per lb., and provided, as is generally the case, with English carbide, the yield is 5 cubic feet, we may be satisfied, but some of the Swiss and German carbides yield as low as 3·5 cubic feet per lb., and generally contain dangerous impurities. As regards the illuminating power of acetylene, it may be stated that at a distance of 1 foot from the burner it is one-third that of sunlight from a heliostat, or from 15 to 20 times greater than ordinary coal-gas. Researches have also pointed out that mixtures of the carbides of calcium, aluminium, and manganese will probably give greater illuminating power still.

PHOTO-MECHANICAL PROCESSES.

To such perfection has the ordinary process or half-tone block been brought that it is seriously damaging collotype printing, which has been hitherto (with the exception of photogravure) the best process for reproduction processes. Many attempts have been made to utilise zinc instead of copper for blocks, and probably now only the prejudice founded on experience prevents the increasing use of the former metal. It is an open question whether in long runs zinc would be an improvement.

PHOTOGRAPHY IN NATURAL COLOURS.

The photographic world was convulsed in February by the startling announcement, supported by two such eminent workers as Captain Abney and Sir H. Trueman Wood, that MM. Chassagne and Dansac had discovered a method of obtaining photographs in natural colours by the use of three solutions, and that the silver of the print exerted what was described as a selective absorption. In July a demonstration of the process was given before the Photographic Convention of the United Kingdom, when it was at once seen that there was selective action but not exerted by the silver image but by the operator who wielded the paint brush, the process being nothing more than a process of painting prints with three aniline or similar colours—red green, and blue—a method which possesses absolutely no novelty. The other processes, such a Lippmann's interferential method, Bennetto's, Ives', etc., are simply in *statu quo*. Finally, it may be said that although we cannot record any striking advance, yet there has been advance all along the line, not only in technique, but in artistic work and also in the perfection of processes and in the application of photography and kindred arts and sciences, and it is difficult to gauge exactly the limits of such applications and advances.

PARLIAMENT AND ITS WORK IN 1897.

THE session of 1897 opened earlier than usual, with every evidence of unusual vigour. On January 19 the legislative menu—if the speech from the Throne may, without *lèse majesté*, be so described—was published for the nation's delectation, and the nation ought no doubt to have indulged in pleasing anticipations of the delicacies therein tabled. But menus, like tombstones, have ever been renowned for the unreliable nature of their announcements, and few persons nowadays view either bills of fare or epitaphs with much confidence. To drop the gastronomic metaphor, the Queen's Speech promised much, and told flattering tales of expected legislation, but time proved a great deal of it to be fiction.

ADULTERATION OF FOOD AND DRUGS.

The chief interest at the opening of the House centred in the omissions from the Speech, and Mr. Kearley, the Liberal member for Devonport, with characteristic energy and tact, seized an opportunity of directing a large share of attention to one of those omissions. For many months a Select Committee of the House had been sifting evidence on the important subject of adulteration, more especially in relation to food products. A large amount of valuable information bearing on the inadequacy of the existing Statutes regulating adulteration had been gathered, tabulated, reviewed, commented upon, and digested. The Committee had embodied its opinions in a report and a series of recommendations, and yet the Government had ignored the whole thing. Such was Mr. Kearley's case, and upon it he felt impelled to move an amendment to the Address. Naturally the amendment did not pass; in fact, it was not persisted in, but the mover, in placing it on the Paper, secured attention, and wrung a vague assurance from the Government that ministers were very desirous of dealing with the subject, and hoped to introduce a thoroughly comprehensive measure thereon. Mr. Kearley did not, however, suffer his judgment to be deceived by the blandness of ministerial promises. The session had not far advanced before he secured the co-operation of Sir James Woodhouse (Huddersfield), Mr. Plunket (South Dublin), Mr. Lambert (South Molton), Mr. Jeffreys (Basingstoke), Mr. Nicol (Argyll), and Maurice Healy (Cork), a truly representative assembly of supporters, and launched a Food and Drugs Bill of his own.

A FOOD AND DRUGS BILL.

Perhaps one ought not to attribute the Bill to its introducer, for, as a matter of fact, it emanated from the Society of Public Analysts, and was practically a *réchauffé* of the draft measure published in the *Analyst* some few years back. The details of the Bill have already been given in the *Pharmaceutical Journal*. It was not a perfect Bill—perfection being as rare in measures as in men—but it possessed several points of value. It defined a "drug," which was certainly a step in advance, though there is room for more than one opinion as to the sufficiency of the definition. It increased the penalties for offences, and discouraged the adulterator by threats of advertising his convictions; and it provided for a board of reference of experts to deal with the difficult question of standards. Not an ideal Bill, perhaps, but still something which had possibilites in it after judicious amendment in committee. But it did not reach Committee, for it faded from the Order Paper towards the dog days. Mr. Chaplin, probably to ease his official conscience, introduced the much promised Government Food and Drugs Bill on a peculiarly inappropriate date—August Bank Holiday. It was, so to speak, flung at the House, and the introductory speech might well have been paraphrased thus:— "Here you are, this is the Government Bill. We are not going to proceed

with it, but as you have been howling for it, you can have it." And what a Bill it was! A thorough measure had been promised, but the actual outcome left the chief evils of the existing law practically untouched. The Council of the Pharmaceutical Society has already hinted at the probability of having to express its disapproval if the Bill be re-introduced next session.

Petroleum and Merchandise Marks.

If one had to describe the past session by its general characteristic, it might be fittingly said that it was a session of select committees. The Petroleum Committee was reconstituted, as well as that on Tuberculosis. The House of Lords re-enacted the farce of the Companies Bill Committee, and the condition of the Science and Art Department was also made an object of another inquiry. Merchandise Marks occupied a number of gentlemen several months in hearing conflicting evidence on the value of the Merchandise Marks Act, 1887, whilst various other committees of no special interest to chemists, saved Parliament the necessity of legislating on the matters referred to them. Few of these committees reported in a definite manner, except those on Science and Art, and on Merchandise Marks. The former revealed the unprotected state of the national treasures at South Kensington and the risk they ran from fire, and recommended that immediate steps be taken to minimise the risk. It was called an urgency report, and created a nine days stir. Later in the session it was explained that £5000 was available for immediate expenditure in carrying out the essential work recommended, and as the Committee will doubtless be re-appointed next session, there is some hope that South Kensington will be gradually made safer and more suitable for the important *rôle* it has to fulfil. The general report of the Committee on Merchandise Marks was favourable to the 1887 Act, which had been proved by a number of witnesses of commercial standing to have been instrumental in stopping many irregular practices formerly operating to the prejudice of British trade. Among suggestions for still further improving the Act was one for the substitution of the words "made abroad" instead of specific mention of the country of origin. The Committee also recommended the formation of an international league to put down bounties and subsidies, and to promote legislation on the lines of the British Act—a consummation devoutly to be wished, but scarcely to be looked for this side of the millennium.

Companies Bill Committee.

The other committees will be again in evidence next session, and their work needs little comment. With reference to the Companies Bill Committee, however, it may be said that the general trend of the evidence taken during the session was in favour of leaving the evils of "one-man" incorporation untouched for fear of restricting industrial enterprise. Witnesses seemed to think that the tares should be allowed to luxuriate because their eradication might possibly damage a few ears of wheat. A notable exception to this type of evidence was that of Lord Justice Lindley, who emphatically stated his opinion that it was dangerous to the community to permit one man to be a trader in the form of a limited company.

Registration of Firms and Early Closing.

An epidemic of registration seemed to rage among private members. Sir Stafford Northcote (Exeter) again introduced his measure for the Registration of Firms, which was designed to give traders an opportunity of knowing who they are dealing with, but the Bill failed to advance beyond the initial stage. A similar fate befel the projects for registering midwives, boiler-minders, and accountants, whilst the unfortunate Plumbers' Registration Bill fell to the opposition of the Radical benches. Early closing was represented by three Bills introduced respectively by Sir John Lubbock, Sir Charles Dilke, and Mr. Duncombe. All three died before their second reading. Sir John Lubbock is now trying to induce the Government to take up his Bill for next session, and there is hope that he may be more successful in 1898 than he has been during the past two years. Poor Law dispensers were introduced to the House on July 8, by a question addressed to the President of the Local Government Board by the Hon. Alfred Lyttelton (Leamington). Mr. Lyttelton had been inspired to ask why the qualification for dispensers had been watered down to admit Army compounders, and Mr. Chaplin was, in turn, inspired to answer that the compounding in the Army is most satisfactory, and that he sees no reason to alter the order placing compounders on a level with men holding the qualification prescribed by the Pharmacy Act, 1868. Further attempts to remedy the injustice will have to be made, and the dispensers in Poor Law Unions are already banding themselves in an Association by way of preparing for the fray.

Calcium Carbide, Payments in Bankruptcy, and the Metric System.

Calcium carbide came in for a share of Parliamentary attention; Mr. Kearley calling attention to the dangers attending the storage and conveyance of the carbide. He suggested that the substance should be placed under the restrictions provided by the Petroleum Act, and this was eventually done. The Home Office documents have already been printed in this Journal, and the conditions attaching to the conveyance, storage, and sale of carbide will be duly set forth in the new edition of the Society's Calendar. A useful minor Bill passed in the Preferential Payments in Bankruptcy Act (1889) Amendment Bill. One abuse of the Companies Acts has been removed by its means. Its object is to give to the employés of bankrupt companies priority as to wages and salary over payments to debenture holders. Henceforth clerks and others employed by companies are on the same footing as those in the service of individuals or unincorporated firms. Another positive piece of legislation during the session was the passing of a Bill to legalise the use of weights and measures of the metric system. The Pharmaceutical Council threw the weight of its influence on the side of the Government, and by sending a petition to Parliament in favour of the measure, may probably take some credit for persuading Mr. Ritchie not to drop the Bill.

The Bills That Failed.

These were, as usual, very numerous. Reference has already been made to some of the unfortunates, but among the others meriting attention, either on account of their intrinsic value or their inherent absurdity, were Mr. Macdona's project for rendering return railway tickets available during the year of issue; Mr. Carlile's Vaccination Bill for improving the supply of pure lymph; Bills for abolishing street noises, for paying the expenses of jurors, and for protecting the mental offspring of mediocrities (copyright amendment). The London University Bill was again introduced, and an undignified rush was made by the Ministerial party to get it through. But the attempt failed. The measure was announced as a tactful compromise between the various interests involved. It proved to be a mild travesty of the 1895 Bill, and the amount of opposition it aroused may be taken as a good object-lesson on the practical uses of compromises. London's Teaching University on the lines advocated by the Cowper Commission will not apparently become a *fait accompli* just yet. One incident during the past session of Parliament might well arouse envy in pharmaceutical breasts, namely, the good fortune of the Incorporated Law Society in obtaining official financial support for the discharge of public duties. On May 11 the House resolved, on the motion of Mr. C. Harrison (the recently deceased member for Plymouth), that a portion of the expenses incurred in keeping the Rolls clear of black sheep should be paid by the Treasury.

PHARMACEUTICAL SOCIETY.

MAJOR EXAMINATION PAPERS.

PRACTICAL BOTANY AND MATERIA MEDICA.

December 30, 1897.—10 *a.m. to* 1 *p.m.*

[*N.B.—In awarding marks the manipulation of the Candidates will be taken into account.*]

1. Identify and describe concisely A and B. Refer the plant C to its Natural Order, giving your reasons.
2. Cut a transverse section of the leaf D. Mount your preparation in dilute glycerin, and leave for examination with an explanatory sketch and brief description, illustrating the most important structural features.
3. Prepare and mount transverse and longitudinal (median) sections of the root provided. Leave them with a sketch and description, pointing out the histological characteristics of the drug.
4. Identify and report on the powder provided.

PHYSICS.

December 29, 1897.—2 *to* 5 *p.m.*

[*Not more than six questions are to be attempted.*]

1. Describe the construction of the barometer and state what corrections must be applied to the readings in order to obtain exact results. For what purposes is it used by the scientific chemist?
2. What is meant by radiation of heat? Describe experiments illustrating your answer.
3. Describe a calorimeter, and show how it could be used to determine the heat of combustion of a substance.
4. What is a kaleidoscope? State the principles on which its action depends.
5. Describe some form of photometer and show how it is used.
6. How may heat and light be produced by means of electricity, and what are the conditions under which they are produced?
7. Describe some form of constant battery and show how it differs from an ordinary voltaic couple.
8. If a thin magnetised bar of steel is broken into several pieces, what properties do the parts exhibit? How has this phenomenon been explained?
9. Describe methods by which a steel bar can be magnetised.

CHEMISTRY.

December 29, 1897.—10 *a.m. to* 1 *p.m.*

[*Not more than six questions are to be attempted.*]

1. How is nitrous oxide prepared, and how could you distinguish this gas from oxygen? What method would you use to determine the percentage composition (by volume) of a mixture of nitrous oxide and air?
2. A sample of milk of sulphur is supposed to be adulterated with gypsum. How would you test for, and, if necessary, estimate this impurity?
3. Describe experiments illustrating the use of four different reducing agents. Give equations.
4. Provided with blue vitriol, acetic acid, and ordinary laboratory reagents, how would you prepare a specimen of crystallised cupric acetate?
5. Describe the more important physical and chemical properties of the following compounds:—Arsenious oxide; mercuric chloride; lead acetate; benzaldehyde; urea.
6. You are required to ascertain whether a given liquid hydrocarbon is a paraffin, an olefine, or a member of the benzene series. Describe and explain the qualitative tests you would apply.
7. Describe the manufacture of salicylic acid and name any by-products which may be formed in the process. How would you satisfy yourself that a specimen of salicylic acid was free from impurity? What is "salol"?
8. What is an essential oil? Name three such oils and the important constituents of each. Mention some substances which are prepared artificially and used as substitutes for natural oils.
9. Analyses and molecular weight determinations having shown that a certain pure liquid has the molecular formula C_4H_8O, what steps would you take in order to determine the constitutional or structural formula of the compound?

BOTANY AND MATERIA MEDICA.

December 30, 1897.—2 *p.m. to* 5 *p.m.*

1. What do you understand by cross-fertilisation? Describe the flowers of two British plants illustrating different methods by which cross-fertilisation is favoured.
2. What are the chief reserve food-stuffs found in plants? How would you distinguish them (*a*) histologically, (*b*) chemically? How are such reserves made available for the nutrition of the protoplasm?
3. Contrast a seedling Oak or other tree with an Oak tree five years old as regards the structure of the stem.
4. Describe the different official varieties of Buchu; state their botanical and geographical sources and discuss their relative medicinal values, having regard to their chief constituents.
5. How would you isolate the following alkaloids from their respective drugs:—1, Cinchonidine; 2, Strychnine; and by what tests would you demonstrate their purity?

LETTERS TO THE EDITOR.

"Mr. Currie and the New Pharmacy Bill."

Sir,—In the Journal for December 18, a letter appears under the above heading from "An Old Pharmaceutical Chemist," in which he calls upon me to give an explanation regarding a statement which I am "reported" to have made at the opening meeting of the Glasgow and West of Scotland Pharmaceutical Association. I would just like to say that, on this occasion, report is quite correct, and to emphasise it more, I repeat the statement, that "the Society has too long ignored the claims of those whose support would be a valuable acquisition." But I have yet to learn that repeated attempts have been made by the Council to obtain authority for admitting as members all registered chemists and druggists. So far as I can find out, two attempts have been made (and they only half-hearted); once in 1867, when chemists and druggists then in business by registration and payment of a fee would become members, and be eligible in certain proportion for election to the Council; and again, three years ago, it was proposed to admit all qualified men as members with certain restrictions. But between those dates I am not aware of any attempt having been made, and the Bill now before us is the first occasion on which it has been proposed to admit to the full privileges of membership all registered men. When I made the statement I had no idea as to what form the impending Bill would take, but I say now, without hesitation, that the Council has taken a step which should receive the support of everyone desirous of seeing the Society truly representative. As a local secretary of a few years' standing, I know much, but as a very small unit of the Society I know more, and when I quoted what had been said by the late Mr. Sandford, as his opinion regarding examination and membership, it was simply to show that what was said in 1868 had truly come to pass, inasmuch as the qualifying (Minor) examination of to-day is as great a test of a candidate's capacity as was the Major of not so many years ago, and, being so, is entitled to recognition. If it was for nothing else, than that the Minor is recognised as the legal qualification, the claim for membership is well founded. All honour to the man who possesses the Major qualification. Protect his title of "pharmaceutical chemist" by all means. Give him a higher one if it is possible; it will not make much difference so far as a man of business is concerned, but is it fair, nay, is it just, to the Minor men who have qualified since 1868 that they can have no representation on the Council? It is all very well for "An Old Pharmaceutical Chemist" to say that if the claims have been "ignored." it has been by the members failing to support their executive, but it is not such an easy matter when a meeting is called in London to decide even such an important question, for provincial men to take part in it; but if voting papers were issued, and local secretaries and local associations asked to take the matter up, I think a different result would be obtained. Though not a Major graduate, I have the best interests of the Pharmaceutical Society as much at heart as if I were, and will regret exceedingly if moderate counsels do not prevail, so as to afford the opportunity of consolidating what up till now has been a disunited body.

Glasgow, December 22, 1897. William L. Currie.

*** Mr. Currie has overlooked the Bills prepared in 1890 and 1891. [Ed., *P. J.*]

The New Pharmacy Bill.

Sir,—In your leader of last week you imply that those chemists who are opposed to the draft Pharmacy Bill have overlooked the fact that the title pharmaceutical chemist is not to be bestowed on Minor men. Such, however, cannot be inferred from the proceedings held at Manchester last Friday week, though several provincial associations have gaily passed resolutions recommending that each Minor man should be styled a pharmaceutical chemist. One would like to have a record of the number and qualification of the chemists present at such meetings, and particularly the qualification of the local wire puller. The object of the Bill is stated to be "consolidation of the Society," which of course means increase of subscribers. The means proposed to be taken to effect this is to lower the qualification necessary for membership. Now, sir, suppose the Bill were passed and still "consolidation" was *non est*, would the Council advance another step, and as an inducement to non-subscribers throw open the membership to "student-associates"? It would be a perfectly logical sequence, and none the more absurd than the present proposal. [This remark fully demonstrates how completely Mr. Sargeant fails to

comprehend the subject on which he writes.—Ed., *P. J.*] Again, who will look after the interests of pharmacists if we have a Council composed of chemists of the second class? Who will appoint the examiners, who shall conduct the Major examination, Minor men? This latter point, however, has not much significance, since the Major, robbed of its principal privilege, would not be much patronised. With respect to the number of subscribers to the Society, the proposed change would probably reduce rather than increase them. It is hardly likely that a Major man would remain in a society which gave him no credit for his superior qualification. There is a feeling prevalent amongst pharmaceutical chemists generally that this Bill has been suggested by a few interested Minor men who would like to obtain a higher position in the Society than at present possible. This seems the more likely since the younger and more highly educated chemists and druggists do not call for the proposed change. All the enthusiasm in support of the Bill comes from Minor men of from twenty to thirty years' standing, who are beginning to feel the loss of the higher qualification, and are now suffering for their past indifference. The aspirations of these men may be noble, but pharmaceutical chemists of to-day will not yield one of their few emblems of superiority to satisfy such aspirations. The sister profession and the public generally understand by M.P.S. a chemist of the first class. That understanding would not easily be removed. The Minor examination, also, is too technical as a qualification for membership. All other societies of standing have advanced scientific examinations as qualification for the highest grade. Why should the Pharmaceutical Society, having raised the value of its two lower stages, undo all the good done by reducing to a minimum the qualification of the highest stage? Give associates a limited number of seats on the Council by all means. Let them have a voice in the management of the Society, but for the sake of the dignity of the Society as a corporate body, let the membership be as select as possible.

Manchester, December 27, 1897. F. PILKINGTON SARGEANT, PH.C.

Sir,—Since the Journal is not the organ of any one section of the Pharmaceutical Society, and since you have opened its columns to the expression of opinion regarding the Pharmacy Bill, I venture to ask for the insertion of this short note. Believing collective action to be more effective than that of the individual, I would suggest to those members of the Society who disapprove of this Bill the desirability of organising meetings—as in Manchester—in as many towns as possible. If this suggestion be favourably received, I should be glad if such members, resident in or near London, would communicate with me with a view of meeting to decide upon a course of action. I feel very keenly the injustice of the Bill in its present form, and it is evident from a perusal of recent correspondence in the Journal that others are similarly affected.

1, Harewood Place, Marylebone Road, N.W. December 27, 1897. F. A. HOCKING.

Sir,—I was astonished, when I read your leader in Saturday last's issue, to find how totally you had misrepresented the nature of the Manchester Meeting of Pharmacists, and applied to the members of the same ideas which they never entertained. I conclude you drew your information exclusively from your own report on page 575, which I can only describe as most inaccurate and misleading. As one illustration of this, I must point out that the resolutions, as you printed them, were not passed. They should have read as follows :—

(1) That this meeting, having read the Draft Pharmacy Bill, is strongly dissatisfied with the terms contained in Clause 3, and whilst admitting that Associates should be granted increased privileges in connection with the Pharmaceutical Society, to confer upon them the title of Member will be misleading and calculated to decrease the value of the Major qualification, and it is hereby resolved that unless such condition be excluded from the Bill, this meeting will use all legitimate means to prevent the same becoming law.

(2) That no proposal to make chemists and druggists Members can be accepted unless a corresponding advantage be conceded at the same time to pharmaceutical chemists who join the Society.

From this you will see that we advocate the principle of chemists and druggists, as associates, being eligible for election on the Council, but we deprecate any attempt to make them "members." This is because of the confusion that is sure to arise between the titles "Member of the Pharmaceutical Society" and "Pharmaceutical Chemist," and I cannot understand how the most ordinary mind should fail to see this. It must be remembered that the question of qualification does not interest simply the body of chemists, but the outside world generally, then how are the unitiated to understand the difference, when in the past they have learned to understand that M.P.S. was practically equivalent to Ph.C.? Those who framed the Act of 1852 are responsible for this, by creating a distinction and a position that is no longer of fictitious value. We hold no confused idea about a "necessary connection between membership . . and . . qualification." The fact that the Society holds the Major examination and offers the opportunity of becoming a "Member" as an inducement to undertake the same, is an indication of some connection between the two. By having offered this inducement the Council enters into a contract, which it now proposes to break. The meeting did not advocate the creation of Fellowships, etc., and only passed the second resolution as an alternative, which they would accept (reluctantly) as a compromise. One great absurdity about making chemists and druggists members of the Council is that they, being still eligible to enter for the Major, will have the selection of their own examiners. Comment is unnecessary. We oppose the Bill on strong educational grounds, but really I fear I have already taken too much of your space, and must content myself by saying that we were unanimously of this opinion: That if this Bill becomes law an incentive to study will be removed, and a blow struck at pharmaceutical education that will undo most of the good of the past. In conclusion, I may say that we have received strong promises of support from one half of the pharmaceutical chemists in this district, besides from several chemists and druggists, and furthermore, letters have been received from all parts of the country offering assistance to our opposition, and I take this opportunity to invite communications from all others similarly minded, so that our already strong position may be able to conclusively assert itself.

Manchester, December 29, 1897. WALTER GIBBONS.

*** The resolutions were printed as received from our reporter and were presumably officially supplied to him. The confusion of "Member of the Pharmaceutical Society" with the title of "Pharmaceutical Chemist" apparently exists in the mind of Mr. Gibbons but probably nowhere else, and that fallacy is the basis of his argument. [ED., *P. J.*]

THE METRIC SYSTEM IN PRESCRIPTIONS—A CORRECTION.

Sir,—In my letter of the 21st inst. I notice with regret that 67·6 minims appear as equivalent to 1 fluid drachm. This is an error of transcription on my part, which I hasten to correct. There should have been another line, thus—

4 C.c. = 67·6 minims,

instead of "about 73 minims," as stated in the paper referred to.

Wolverhampton, December 27, 1897. A. E. JOHNSON, F.I.C.

THE P.A.T.A. AND ITS LIST.

Sir,—As you are aware, we some time since asked the trade by advertisement and otherwise to let us know whether or not they wished us to join the P.A.T.A., and it will doubtless interest your readers to have some information respecting the replies which we received. In spite of the extensive nature of our advertisement and the publicity given to the matter by the trade journals, in addition to the special appeal made by the *Anti-Cutting Record* to the members of the P.A.T.A. to send replies to us, the total number received out of the 32,000 odd "patent" medicine sellers in this country was only 1104. Of these, most of the writers are members of the P.A.T.A., and therefore naturally expressed the hope that we would join their Association. Thirty-two correspondents expressly objected to the P.A.T.A.; six expressed their objection to any kind of interference with the trade; and twenty-seven expressed themselves indifferent about the P.A.T.A., so long as selling prices were protected in some way; 861 correspondents were in favour of selling the articles at face values; while 188 were in favour of selling at prices somewhat below the full face values. With respect to the terms of supply to the retail trade, 532 were in favour of continuing our present terms of supply to the retail trade, 71 correspondents did not care so long as they secured 20 per cent. profit on their turnover, while 195 wanted 25 per cent. on their turnover. As to the wholesale houses, 119 correspondents expressed their desire to secure 10 per cent. profit on their turnover, while 14 expressed their satisfaction with existing arrangements. Of the whole number of correspondents, 47 retailers expressed their desire to be supplied on the best terms irrespective of the size of order. Altogether the result of our application to the trade was a very disappointing one, and we can only construe it as indicative either of the greatest apathy or of widespread satis-

faction with the old arrangement. If a large proportion of the members of the retail trade wished us to place our articles on the P.A.T.A. list, or otherwise to protect the selling prices, its seem incredible that such a limited number of replies should have been received in answer to our application. The decision we have come to in the matter is expressed in the advertisement that is now appearing in the trade journals, from which it will be seen that while we have not seen our way—anyhow at present—to place our articles on the P.A.T.A. list, we have made some very considerable concessions to the trade, and for those concessions, to a certain extent at least, the trade have to thank Mr. W. S. Glyn-Jones.

December 29, 1897. C. T. Kingzett,
Managing Director of the Sanitas Co., Ltd.

The Explosion of Erythrol Tetranitrate.

Sir,—The inquiry into the unfortunate accident with erythrol tetranitrate has not elicited very clearly the cause of the fatal explosion. The opinion held as to the value of erythrol tetranitrate in cases of angina pectoris, for which it is claimed to be far more lasting in its effects than either amyl nitrite or nitroglycerin, gives a special interest to anything connected with it at the present time. During the last two years we have used erythrol tetranitrate somewhat extensively at this hospital, and have had occasion to present it for administration in various forms, all of which have necessitated a considerable amount of pulverisation, which has, of course, been conducted with a due regard for that class of explosive compounds to which erythrol tetranitrate is so closely related. In no case whatever have we had anything approaching trouble or danger with it, although we might add that for all our experiments a perfectly clean and dry glass mortar was used, which would, of course, only permit of very little detonating power. It would be very interesting to know the experience of others with this, for the moment, dangerous compound.

St. Bartholomew's Hospital, E.C., William Parsons.
December 29, 1897. J. Langford Moore.

ANSWERS TO QUERIES.

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

Pazo Compressor.—The address of the inventor was given in last week's Journal, page 580, in answer to J. D. D. T. [*Reply to* A. E.—2/31.]

Face Powder.—Boric acid, 2 parts; zinc oxide, 1 part; rice starch, 1 part; add sufficient oil of neroli and otto of rose to perfume to the desired odour. For a dusting powder for infants nothing is better than boric acid alone, perfumed with a little otto.—[*Reply to* E. H. W.—2/22.]

Remedy for Chilblains.—A mixture of four parts of oil of cajuput and one part of liniment of opium is an excellent remedy for chilblains. Boeck also recommends resorcin as an application for these troublesome affections. *Vide P. J.* [4], ii, 119. [*Reply to* A. H. P.—2/20.]

Oil of Garlic.—In reply to our inquiry, Messrs. Schimmel and Co., of Leipzig, inform us that they have no knowledge of oil of garlic ever being used medicinally. It is far too powerful a body for such purposes, unless very freely diluted. The chief consumers, are, they inform us, manufacturers of American condiments. When the oil is being distilled, the whole town of Leipzig is said to be redolent with the odour. [*Reply to* A. P. S.—2/7.]

Hair Preparation.—Take castor oil, 2 drachms; add to it an excess of solution of ammonia, and warm on the water bath until the uncombined alkali is driven off, and a little of the residue, on being dropped into water, dissolves without showing any oily globules. Dissolve it in 2 ozs. of water, add 1 drachm of tincture of cantharides, 2 drachms of jockey club, and make up to 4 fl. ozs. with proof spirit. Filter bright through powdered pumice stone. *Reply to* E. H. W.—2/23.]

Blistering Ointment for Horses.—This contains nothing but red iodide of mercury, the colour of which is covered by mixing some ultramarine or other blue pigment with the mass. It contains no cantharides. The red iodide of mercury present amounts to 13·3 per cent. This is rather stronger than the usual veterinary red mercuric iodide ointment, which is generally made to contain about 10 per cent. of the iodide. [*Reply to* Blister.—1/29.]

Cement for Glass.—Take shredded isinglass, 2 parts, and glacial acetic acid, 1 part; heat them together on the water bath until a perfectly homogeneous mass results, keep in the vessel covered to prevent evaporation as far as possible of the acid, and add more isinglass from time to time until a stiffish paste results, then drop by drop add more acetic acid until the mass is just pourable; run while hot into small wide-mouthed bottles, and cork up tight. Before using soften the cement by standing the bottle in hot water. [*Reply to* F. W. G.—2/5.]

Soda Lime.—This is used in analytical work for liberating nitrogen in the form of ammonia. It is made by slaking quicklime with strong solution of caustic soda thus:—Quicklime, 2; caustic soda, 1; distilled water, 2. Dissolve the soda in the water. Pour evenly over the lime, dry, heat to redness, cool, powder, and keep in a bottle with a well-fitting, vaseline-smeared stopper. It is a mixture of sodium oxide and hydroxide. Yes, it can be easily made on the small scale. Most analysts make their own, as a rule. [*Reply to* H. G.—1/32.]

Non-Excisable Coca Wine.—We have no formula for a coca wine which is at the same time palatable and not liable to a wine licence. The Excise regulations are framed with the intention of preventing the sale, as a medicated wine, of a preparation sufficiently palatable to be taken as a pleasant beverage. The amount of half a grain of alkaloid in each fluid ounce, which is required by the authorities to be present, is specified for this very purpose. You will be infringing the law if you sell coca wine which contains less alkaloid than this. If you obtain a wine licence, you can then sell the wine with only a trace of alkaloid or a flavour of the leaf, if you are so disposed. We do not, from an ethical point of view, recommend you to push the sale of coca wine at all. In our opinion it should only be given upon the direct prescription of a medical man. [*Reply to* Questus.—1/34.

Vegetable and Sewage Contamination of Drinking Water.—Roughly speaking, a high figure for chlorine in excess of the normal figure for well waters from the same geological strata, in the same district, and an excess of free and albuminoid ammonia may indicate sewage contamination. The presence of nitrites also points in the same direction. A lower figure for chlorine and free ammonia, with a high one for albuminoid ammonia and a large amount of oxidisable matter, as shown by the "oxygen absorption," indicates the presence of vegetable organic matter. The presence of an excess of nitrates will often show that a water has, at a more remote period, been contaminated with animal organic matter. There is no single test that will discriminate between animal and vegetable organic matter, but the various figures obtained in the course of an analysis, as indicated above—taken together with the general surroundings of the source of supply—will often give a fairly clear indication of the source of the contamination. [*Reply to* P. D.—2/19.]

OBITUARY.

Sharp.—On December 11, Thomas Robert Sharp, Chemist and Druggist, Owston Ferry, Lincolnshire. Aged 60.

Jones.—On December 18, Henry Richard Jones, Chemist and Druggist, Wolverhampton. Aged 79.

Watt.—On December 23, John Charles Watt, Chemist and Druggist, Ealing. Aged 32. Mr. Watt was an Associate of the Pharmaceutical Society.

Giles.—On December 25, Richard William Giles, Pharmaceutical Chemist, London. Aged 73. Mr. Giles had been a member of the Pharmaceutical Society since 1847.

COMMUNICATIONS, LETTERS, etc., have been received from Messrs. Ayrton, Barbour, Baxter, Christy, Clague, Currie, Davies, Davis, Dowdy, Elborne, Evans, Gadd, Hanbury, Hardwick, Henry, Hetherington, Hocking, Johnson, Johnston, Lescher, Lunan, Macdonald, MacGeorge, Mackenzie, Moore Mumbray, Oldham, Parke, Phillips, Ransom, Robb, Sargeant, Shorthouse, Smith, Swinton, Symes, Taylor, Tocher, Webb, Wilkinson, Wyatt.

Pharmacy and the Allied Sciences.

A REVIEW OF CURRENT WORK.

Basis for Gelatin Suppositories.

L. A. Mieux has read a paper before the Wisconsin Pharmaceutical Association, in which he recommends the following formula for a gelatin basis for suppositories :—Gelatin, 40 parts ; glycerin, 25 parts ; water to make 100 parts, or, if a softer mass is required, 120 to 130 parts. The product is said to be well adapted for use with alum and other salts. The addition of 25 parts of powdered acacia or dextrin in place of an equivalent amount of water renders the mass more suitable for use in summer or in a warm or moist atmosphere. In either case the gelatin should be soaked in 200 parts of water until soft, the glycerin (and gum, if required) added, and the whole heated on a water bath until complete solution is effected and the excess of water evaporated. Stir gently whilst heating, and keep the temperature well below boiling point. If air holes appear in the mass on cooling, it must be re-heated with 100 parts of water, and the whole again evaporated to the required bulk. The moulds should be oiled before filling, and, if made of metal, should previously be heated to about 50° C.

Dispensing Compressed Tablets.

A correspondent of the *Druggists' Circular* points out that no great trouble need be experienced in dispensing compressed tablets ordered in prescriptions, provided a good machine be available, elaborate preparation of the ingredients being unnecessary. As a rule, if the operator has first studied the different substances he is likely to be called upon to compress, and understands well how to regulate the pressure, no lubricant will be required for compressing a dozen tablets. Previous spraying with ether or alcohol, however, will often facilitate matters, though the powder must not be subjected to compression whilst wet. It should scarcely be necessary to say that in dealing with prescriptions, no permanent addition ought to be made to the powder that is to be compressed, without due authority. Ready-made tablets are usually unsuitable for dispensing purposes on account of the presence of gum, boric acid, or other foreign material added to facilitate granulation of the powder or to act as a lubricant. As regards the pressure to be applied, it is to be noted that insufficient force may leave the tablets in a crumbling condition, whilst too great a pressure will render them hard and more difficult to dissolve.

Some Pill Excipients.

Professor W. L. Scoville, in addressing the Massachusetts Pharmaceutical Association, observed that though crumb of bread has long been recommended as an excipient for making pills of fluid bodies, it is seldom used—"probably because the pharmacist generally prefers to eat outside the store." It is only useful as an excipient when fresh, in which condition it is not often available, and wheat flour has been found to be the best simple excipient for such bodies as creosote, camphor-chloral, volatile oils, etc. The fluid is first absorbed by a slight excess of flour, making a some what granular paste, then sufficient syrup is added to make a plastic mass, the presence of a slight amount of aqueous fluid being necessary to secure plasticity and adhesiveness. A two-grain creosote pill, so made, is about the size of a four-grain quinine pill, as ordinarily made. Smaller pills can be made by the use of gelatin. Dissolve 5·5 parts of gelatin and 2·5 parts of sugar in 12 parts of hot water, then allow to cool, and preserve in a wide mouth bottle, with a layer of dilute alcohol covering the jelly, so as to prevent drying and hardening. One grain of this gelatin basis is added to each minim of creosote, oil, or other fluid to be massed, then warmed to liquefy it and thoroughly mixed with the medicament, after which it is then kneaded with a sufficient quantity of powdered marshmallow to make a mass. A three-grain creosote pill made in this manner is about the size of a four-grain quinine pill. Phosphorus pills may be produced satisfactorily by dissolving 2 grains of phosphorus in 90 minims of chloroform, adding the solution to a mixture of 60 grains of powdered liquorice and 5 grains of tragacanth, incorporating thoroughly, and, when most of the chloroform has evaporated, adding 10 drops of glycerin and sufficient syrup to make a mass.

Modified Goulard Extract.

F. W. Haussmann, at a Philadelphia College of Pharmacy Meeting, stated that he had obtained satisfactory results with the cold maceration process of the Austrian Pharmacopœia for Goulard extract of lead, and the following modification of that process was recommended :—Graduate a strong bottle to 730 C.c. and pour in distilled water, that has been heated to boiling, up to that point. Then quickly add 170 Gm. of selected crystallised lead acetate, previously broken into small pieces, and cork the bottle. As soon as the salt is dissolved add 100 Gm. of sifted lead oxide, in divided portions, and shake the bottle thoroughly after each addition. In less than ten minutes the yellow oxide should have become white, and after occasional agitation during two hours, or until the liquid is cold, filtration may be effected.

Cod-liver Oil Emulsion.

J. K. Williams, at a meeting of the Connecticut Pharmaceutical Association, described how it is possible to make a simple emulsifier by fitting a narrow tin or earthenware vessel with a wooden cover, dasher, and handle, like an old-fashioned churn. The interior being quite dry, place in the vessel 3 ounces of powdered acacia, 16 fluid ounces of cod-liver oil, and sufficient of the desired flavouring essence ; mix with a spatula, then add all at once 9·5 fluid ounces of water, fix the dasher and cover in position, taking care that the former is quite below the surface of the fluid, and churn until emulsification is effected. Next add the remainder of the water or other liquids, churning meanwhile. No oil must be added at this stage nor should an oily measure be used for the other liquids, else there will be a risk of separation.

Useful Practical Hints.

A gritty preparation frequently results in making zinc ointment, even when the zinc oxide is sifted into the melted benzoated lard, and J. K. Williams suggests that this may be obviated by replacing 10 per cent. of the lard with castor oil. The oxide is placed in a warm mortar, the castor oil added hot, and the whole rubbed into a smooth paste. The lard is then added cold and mixed without heating, thus avoiding precipitation of any of the benzoin constituents present, and securing a perfectly smooth product. According to this writer it is useless to attempt to benzoate lard properly by digesting benzoin in hot melted lard, as benzoin is quite insoluble in hot fats. He prefers to mix with cold lard an equivalent quantity of an ethereal solution of benzoin, prepared by dissolving the resin in its own weight of ether, adding 10 per cent. of castor oil, and evaporating by air exposure to a syrupy consistence. In like manner, it is stated, tolu balsam may with advantage be kept dissolved in alcohol, so that an ounce by weight of the solution represents half an ounce of the balsam.

Commercial Calcium Glycerophosphate.

Adrian and Trillat, as a preliminary step in the investigation of this salt, have examined a number of commercial samples, which have been found to vary very much in physical and chemical characters. Seven samples examined contained from 19·5 to 24·5 per cent. of lime, and from 26 to 33 per cent. of phosphoric acid. In six of these two were neutral to litmus, one alkaline, and three acid. The solubility of the acid samples in distilled water at 25° C. was markedly in excess of the others, the most soluble dissolving to the extent of 7·6 in 100, while of the neutral sample only 4·05 in 100 was dissolved. The residues left by this treatment differed widely in composition, being composed chiefly of phosphate of lime, with some sulphate; the latter being probably derived from washing the precipitate with calcareous water. On extracting different samples with boiling alcohol and distilling off the solvent, residues varying in amount from 1·8 to 4·2 per cent. were obtained. These were found to consist of glycerin and free phosphoric acid, the percentage of the former varying from 3·4 to 1·3, and of the latter from 1·5 to *nil*. It is evident, therefore, that commercial calcium glycerophosphate is, at present, far from being a definite body.—*Journ. de Pharm. et de Chim.* [6], vi., 435.

Solvents for Gun-cotton.

T. Schlumberger finds that even highly diluted alcoholic solutions of certain salts possess the property of dissolving pyroxylin without any addition of ether. These salts are chloride of ammonium, calcium chloride, magnesium chloride, aluminium chloride, zinc chloride, sodium lactate, potassium acetate, and ammonium acetate. The risk of explosion and fire which attends the use of ether in preparing these solutions are for the most part avoided, or at any rate decreased, by the employment of these saline solutions. The solutions can also be prepared by impregnating the wool with the salts mentioned and dissolving in alcohol.—*Pharm. Centr.*, xxxviii., 722.

Hydrastine Monocalcium Phosphate.

The fact that the number of soluble salts of hydrastine is limited, has induced T. H. Norton and H. E. Newman to endeavour to add to their number. They have succeeded in preparing a soluble double salt of calcium and hydrastine combined with phosphoric acid, by digesting an excess of the alkaloid in an aqueous solution of pure calcium monophosphate. This salt so obtained, however, could not be crystallised, forming, on evaporation, a resinoid mass soluble in 10 parts of water. The amount of the alkaloid combined with the phosphate appeared to vary with the time in which they were left in contact. After three minutes' maceration the product contained 42·27 per cent. of alkaloid, corresponding to the salt $2Ca(H_2PO_4)_2 \cdot C_{21}H_{21}NO_6$, but after macerating for eighty hours, a body having the formula $2Ca(H_3PO_4) \cdot 3C_{21}H_{21}NO_6$ was obtained, giving 7·01 per cent. of the alkaloid.—*Journ. Amer. Chem. Soc.*, xix., 838.

The Rate of Solution.

A. A. Noyes and W. R. Whitney claim to have experimentally established the law according to which solid substances are dissolved in their own solutions, and they express it in the following terms:—"The rate at which a solid substance dissolves in its own solution is proportional to the difference between the concentration of that solution and the concentration of the saturated solution." This law has been proved to be correct in the case of substances so widely differing in chemical nature and physical properties as benzoic acid and lead chloride, and it is therefore assumed by the authors to be of general application.—*Journ. Am. Chem. Soc.*, xix., 930.

Peptone in Sweet Almonds.

Peptone has been repeatedly detected in several members of the vegetable kingdom. The various discoverers have not, however, been able to isolate pure peptone, but a mixture of peptone and albumose. Lupin seeds, for instance, showed after three days 0·2 per cent. of this mixture, determined by the colorimetric method. E. Lemport has used phospho-molybdic acid for detecting peptone in sweet almonds. The almonds were extracted without heat, the albuminoids being precipitated with picric acid solution. The peptone mixture obtained as a yellow mass, readily soluble in water, insoluble in ether or strong alcohol. The respective reactions had a positive result, the filtrate of the ammonium sulphate precipitate giving with tannin a voluminous precipitate revealing the presence of peptone, together with albumose. In spite of considerable loss the author obtained 0·25 per cent. of peptone mixture from almonds.—*Pharm. Zeit. f. Russl.*, 1897, 527, and *Pharm. Centralh.*, xxxviii., 737.

Rhamnus Frangula Bark.

In addition to emodin, frangulin, and chrysophan, all definite crystalline chemical bodies known to exist in the bark of *Rhamnus frangula*, and the so-called frangulic acid isolated by Kubly, and stated by him to yield, on purification, a glucoside, Dr. E. Aweng has added further bodies. He regards the so-called pure frangulic acid of Kubly as a decomposition product, aud terms it pseudo-frangulin; the original crude acid of Kubly he calls "primary glucoside." When hydrolysed, pseudo-frangulin furnishes pseudo-emodin. Both these are slightly aperient. The emetic action of the green bark is attributed to a hydrolytic ferment, which is destroyed by heating. In preparing the fluid extracts of *Rhamnus frangula* the author suggests that the glucosides should first be hydrolysed by heating with citric acid solution, evaporating to dryness, and then extracting with alcohol 96 per cent. The citric acid may if desired be removed.—*Journ. der Pharm. v. Els.-Lothr.*, 1897, 183.

Oil of Cusparia Bark.

Beckurts and Troeger find that cusparia bark gives a light yellow aromatic oil, which darkens on keeping. It is not easily fractionated, as it appears to undergo decomposition; but a yellow aromatic alcohol, optically inactive, galipene alcohol, $C_{15}H_{26}O$, boiling between 264° and 265° C., and a sesquiterpene, $C_{15}H_{24}$, were isolated.—*Archiv der Pharm.*, 1897, 518.

Preservation of Ergot.

L. Aymonier recommends the following process for preserving ergot. Immerse the fresh ergot in an ethereal solution of tolu balsam, take out to dry, and preserve in a stoppered bottle. The author preserved ergot in this way for eight months without any change, and states that there is no doubt that it could be kept in this way for an indefinite period, although it is advisable to renew the ergot after each harvest. The treatment gives the ergot a slight taste without otherwise affecting its properties.—*Journ. de Pharm. et de Chim.* [6], vi., 359.

New Mucilage Gum.

A variety of gum has been imported from Angra Pequena, in German South-West Africa, since last spring. It consists of round colourless to faint yellow pieces with sharp edges. The gum is readily soluble in water. The solution 1:3, compared with the official mucilage, was found to be greatly superior to the latter. 20 C.c. of gum arabic flowed out of a burette in 29 seconds, 20 C.c. of Senegal gum in 50 seconds, and 20 C.c. of Angra Pequena gum in 63 seconds. Hartwick states that the Angra Pequena gum is derived from *Acacia horrida*. —*Chemik. Ztg.*, xxi., 256.

Study of Mustard Seeds. L. H. Pammel gives an excellent bibliography of mustard seeds, with an illustration comparing the structure and histology of the seeds of *Brassica alba* and *Camelina sativa*. This is only one of a series of illustrated articles on the seeds and testa of some Cruciferæ, which should prove of value to those desirous of identifying the commercial seeds of this natural order.—*Amer. Monthly Micro. Journ.*, xviii., pp. 206 and 313.

Varieties of Matico. G. Dethan and R. Bertaut point out that the matico of commerce contains two varieties of *Piper angustifolium*, which differ somewhat in the shape of thc leaves. These are present in herbaria under the names of variety α *cordulatum* (*Artanthe elongata*, Miq.), and variety β *ossanum*, which corresponds to the *Piper angustifolium* of Ruiz and Pavon. The former has the leaves larger, shorter, and broader in proportion, and obliquely cordate at the base. There are also, in the anatomical structure, differences by which the two varieties can be recognised. The midrib of *A. cordulatum* is much less convex below than in the variety β *ossanum*. The fibro-vascular bundles form a shallow arc and not a circle, and no stone cells are visible. Where the secondary nerves join the midrib there is a special cavity containing hairs and stomata. Such cavities are formed by the growing together of the nerves, owing to hypertrophy of the tissue, which separates them.—*Journ. de Pharm. et de Chimie* [6], vi., 537.

Preservation of Algæ. A method of preserving algæ for demonstration purposes is published by C. Thom, which has the advantage of preventing shrinkage. The plants are killed and fixed by the use of Flemming's weaker solution (10 C.c. of 1 per cent. osmic acid, 10 C.c. of 1 per cent. acetic acid, 25 C.c. of 1 per cent. chromic acid, and 55 C.c. of distilled water). This may be used from half a hour to twenty-four hours or more without injury to delicate tissues. Next add 10 per cent. of glycerin, allowing each drop to diffuse before adding more, so as to prevent the shrinkage caused by diffusion currents if glycerin is added too rapidly. Continue adding glycerin until enough has been added to cover the specimens, when the fixing solution has evaporated from a watch-glass in which they are exposed for the purpose. The red algæ retain their colour almost perfectly, but green algæ lose more or less colour, although the chromatophores retain their shape perfectly, and the cells become clearer than fresh material.—*Botanical Gazette*, xxiv., 373.

Mixed Plant Grafts. The term "mixed grafts" is applied by L. Daniel to those grafts in which some of the buds of the stock are still allowed to remain instead of all being destroyed. This brings about, in his view, a certain degree of symbiosis between the graft and the stock, the former acquiring some of the characters of the latter. The process is recommended when it is desired to produce new varieties, rather than when the object is to perpetuate existing forms.—*Comptes rendus*, cxxv., 1897, p. 661.

Pitchers in Plants. Prof. S. H. Vines gives a useful *résumé* of the present state of our knowledge of the structure and function of pitchers in plants. The known examples belong to the orders Sarraceniaceæ, Nepenthaceæ, Asclepiadaceæ, Saxifragaceæ, and Lentibulariaceæ, with which may also be associated the underground scales of *Lathræa* (Scrophulariaceæ). In the great majority of cases these structures are traps for insects; while others have apparently no such function. Among insect traps, the greater number (Sarraceniaceæ, *Genlisia*, *Utricularia*), appear to be incapable of digesting the insects which they capture absorbing only the products of the decomposition caused by micro-organisms; these therefore are not correctly termed carnivorous plants. The pitcher of the various species of *Nepenthes*, and possibly also that of *Cephalotus* (Saxifragaceæ), undoubtedly secretes a digestive enzyme. When pitchers are not insect traps, they have some function in connection to the supply of water to the plant; either relieving it of an excess of water which it may have absorbed, or storing it up for future use.—*Journ. R. Hort. Soc.*, 1897.

New Mode of Grafting. L. Daniel advocates a new process of grafting, which he terms the *greffe en flûte-approche*, and which he claims to combine the advantages of the flute-method (*greffe en flûte*) with those of the cushion method (*greffe en écusson*). It is described as being certain in its results, but it takes more time than the methods already in use, and is applicable rather to the perpetuation of special varieties than to use for ordinary purposes of cultivation.—*Bonnier's Rev. Gén. de Botanique*, 1897, p. 213.

Water in Plants. C. B. Davenport points out the important part played by water in the growth of plants, and compares the developmental processes which go on in the tip of a twig to those which occur in the animal embryo. In both there is first a period of rapid cell-division with slow growth; next a grand period of growth in which the general form of the embryo is acquired, the rudiments of the organs are established, and the organism increases rapidly in size by the imbibition of water; whilst, finally, there is a period in which the histological differentiation is carried on, while the absolute growth increments cease to increase. —*Proc. Boston Soc. Nat. Hist.*, 1897, p. 73.

Spanish Silkworm Gut. To prepare this useful material, after the grub has eaten enough mulberry leaves and before it begins to spin, it is killed by being thrown into vinegar for several hours. The substance which the grub would have spun into a cocoon is then forcibly drawn out into a much thicker and shorter silken thread. Two such threads are placed for about four hours in clear cold water, after which they are immersed for ten or fifteen minutes in a caustic solution, prepared by dissolving soft soap in water. This serves to loosen a fine outer skin, which is next removed by the hands while the workman holds the thread between his teeth. The silk is then hung up to dry in a shady place. In some cases the silk "guts" are bleached with sulphur vapour, which makes them look beautifully glossy and snow-white, like spun glass, while those naturally dried retain always a yellowish tint.—*Journ. Soc. Arts.*, xlvi., 78.

Pigment from Yeast. Dr. Casagrandi publishes a note on a yeast producing a red pigment, which he considers to be an offshoot from the red yeast, known as *Saccharomyces ruber* discovered by Demme some seven years ago. Demme stated that his variety was not endowed with any fermentative properties, but that isolated by Casagrandi ferments glucose very readily. Both Demme's and Casagrandi's specimens are pathogenic to guinea-pigs, rabbits and rats, when subcutaneously introduced into these animals; whilst when grown in milk they are both capable of so modifying the character of this liquid that dogs and rabbits fed with it develop diarrhœa, and the same symptoms have been observed in babies which had partaken of milk in which red yeast had been growing. The yeast appears to be present in our surroundings, and may, therefore, at any time make its presence felt by obtaining access to milk if the latter is left unduly exposed.—*Annali d'Igiene Sperimentale*, through *Nature*, lvii., 158.

POISONS AND POISONERS.

There has attached to the subject of poisons from the earliest ages an interest and importance, both deep and easily to be accounted for. The mysterious and terrible power of dealing death in a cup of wine, a dish of food—a breath of perfume even, or by the needle-scratch of a poisoned weapon—all these combined with the absence of antidotes, and the lack of all certain knowledge of the mode of action, the terrible pain and quickly fatal termination of the tragedy, have combined to attract and fix a fascinated attention to the subject.

It would seem that the first poisonous effects noticed, were due to blood poisoning from infected wounds. The term "Toxicology" (the science of poisons) is derived from the Greek τοξον, a weapon or bow. The savage probably found that the weapon, when stained with the blood of former victims, inflicted more deadly wounds than when clean. The next step would be to smear the blade with all manner of evil-smelling pastes, and with the juices of plants deemed unfit for food. Many of these would be quite innocuous, but continual experiments *in corpore vili* would point to the effective ones. Examples of this class of poison still exist in the Wourali poison of the South American natives, described by the great naturalist Waterton as a fearsome mixture of the juice of a poisonous vine containing a substance similar to strychnine, now known to chemists as "curarine," the pounded bodies of red ants, the fangs of serpents, etc. Mystic rites attend the fabrication of the drug; the hut in which the operation is conducted is deserted, all vessels used are burnt, and the secret of the process is carefully preserved from coming to the knowledge of the women of the tribe. The last two seem to be reasonable precautions. The natives of the Malay Archipelago use the dried juice of a tree, the *Antiaris toxicaria*, as an arrow-poison, and similar compounds are found in use by the Andaman islanders, the bushmen of South Africa, and by the dwarf race described by Stanley in Central Africa.

From the poisoned weapon, dealing its slight but deadly wound, it is not a long step to the more subtle and much less easily-detected method of administering poison in food or drink. Here the limitations are more stringent. Such a poison must have little taste, so as not to excite suspicion at the time of consuming the deadly food or drink. It should be free from any immediate irritant effect, and the symptoms should simulate those of some common disorder. Such a substance has for long ages been known in India in the *Datura* (Sanskrit, *Dhatoora*) class of plants. Three varieties are common, *Datura alba*, *D. fastuosa*, and *D. ferox*. All yield the drug atropine, well named after the eldest of the three Fates, whose duty it is to cut short the thread of life at its appointed place. *Datura* was frequently used in India for the purpose of terminating domestic quarrels, and to this practice may be traced the origin of the custom of "suttee" or widow burning. The Brahmin priesthood, who were also the law-giving class, found that by making a wife's life conterminous with the husband's, the average husband lived considerably the longer. The drug also held an important place as a state agent. The effect of a number of doses insufficient to kill is to cause insanity, thus affording a ready means of rendering harmless subjects deemed too powerful and influential.

The ancient Egyptians were acquainted with prussic acid prepared from peach-kernels, as appears from the words, "Pronounce not the name of A. I. O. under the penalty of the peach," deciphered by M. Duteil on a papyrus in the Louvre. Here is evidently a threat, to such as reveal priestly secrets, of death by waters distilled from the peach-kernel, which we know to contain prussic acid. From Egypt the knowledge of the fatal potion seems to have passed to Italy. A Roman knight in the reign of Tiberias, accused of high treason, swallowed a draught of poison, and fell dead at the feet of the senators. Unless we fall back on the theory of some sudden syncope from natural causes, nothing but prussic acid, and that fairly strong, can account for this sudden death. A further example of the use of prussic acid in Rome is the murder of Britannicus by his brother Nero. Hot water was a favourite drink in fashionable Roman circles at this time. One day, after dinner, a slave brings to Britannicus his beverage. It is too hot. Cold water is added, presumably containing the poison. Immediately on drinking the victim lost power of speech. The breathing ceased. His mother and sister were horror-stricken. Nero, the murderer, looked coldly on, remarking that such fits often happened to him in infancy without evil result. In a minute or two the banquet proceeds. If this, again, were not sudden brain or heart disease, the cause of death must have been prussic acid.

Owing to the loss of the ancient knowledge of anatomy and physiology possessed by the Egyptian embalmers, no post-mortem was possible. In the absence of such knowledge, much importance was attached to outward signs. Doubtless many persons must have died from poison, and the reason of their death remained unknown, while others, who died naturally, but whose bodies putrefied rapidly, were supposed erroneously to have died from poison. Indeed, up to the present day there lingers a belief in these outward and visible signs. When Pope Alexander VI. died, probably enough from poison, his body (according to Guicciardini) became a fearful sight, too unclean to describe here. When the Duke of Burgundy wished to raise a report that John, Dauphin of France, had been poisoned he described the imaginary event thus:—

"One evening our most redoubtable lord and nephew fell so grievously sick that he died forthwith. His lips, tongue, and face were swollen. His eyes started out of his head. It was a horrible sight to see, for so look people that are poisoned."

In point of fact, these extraordinary symptoms are less likely to ensue in cases of poisoning, for, as a rule, a poisoned man is cut off while healthy, and with his tissues sound and less liable to rapid decay than if he had suffered from disease.

The use of poison is entirely opposed to the Anglo-Saxon habit of thought. To what anger the people were wrought by the detection of poisoners is shown by the execution at Smithfield in 1542 of a young woman convicted of poisoning three households. She was boiled alive. But at about this time we find the Venetian and other Italian courts formally treating poisoning as a legitimate method of securing their ends. Especially is this the case at Venice. In the dark records of the "Council of Ten" we find the names of those who voted for and against each assassination, the reasons adduced, and the sum to be paid the agent. For example: On December 15, 1543, a Franciscan brother, John of Raguba, offered a selection of poisons and declared himself ready to remove any objectionable person out of the way. For the first successful case he required a pension of 1500 ducats yearly, with an increase of pay for further services. The Presidents Guolando Duoda and Pietro Guiarini placed the matter before the "Ten" on January 4, 1514, and on a division (ten to five) it was resolved to accept so patriotic an offer, and to experiment first on the Emperor Maximilian. The bond laid before the "Ten" contained a regular tariff of charges, ranging from 500 ducats for the Grand Sultan to 100 for the Pope, and 50 for the Duke of Mantua. The Council appears to have quietly arranged the deaths of many public men. In successful cases we find the single grim marginal note, "factum," accomplished.

The drugs used by the Venetian poisoners are not cer-

tainly known. Baptista Porta, writing in 1589, includes a vast mass of information on poisons in the cookery section of his book in "Natural Magic!" It seems to be an open question whether cooks most needed a knowledge of poisons or poisoners a knowledge of cookery. We have a more certain knowledge of the methods of the Italian schools of the sixteenth and seventeenth centuries. The iniquitous Toffana made solutions of white arsenic of various strengths, and sold them as "Acquetta di Napoli." She is said to have poisoned more than 600 persons, including two popes, Pius III. and Clement XIV. The composition of the Acquetta di Napoli was for a long time a secret, shared, strange irony of fate, by the reigning pope, and by the Emperor Charles VI. The "Acquetta di Perugia" was another choice preparation. Its manufacture is thus described: "A hog was killed and cut into joints, which were rubbed with white arsenic. The juice which dripped from them was preserved and accounted far more deadly than the ordinary arsenical solution." In view of recent work on bacteriology this seems extremely likely. Secchi has actually succeeded in preparing highly poisonous organic compounds of arsenic by allowing animal matters to putrefy in contact with white arsenic; the liquids swarm with bacteria. The talented lady who dispensed this brew was arrested in 1709, but availing herself of the protection of the church, continued to sell her wares unmolested for nearly twenty years longer. She taught her art to Hieronyma Spara, who formed an association of young married women in the papal reign of Alexander VII. for criminal purposes. They were detected and convicted on their own confession. The persuasive measures employed to secure confession have not been officially recorded! It would almost seem as if "suttee" might well have been introduced into Italy three hundred years ago.

In the letters of Mme. de Sevigny and in Voltaire's 'Siècle de Louis XIV.' are written accounts of another school of poisoners, that of St. Croix and Mme. de Brinvilliers, the pupils of Keli. The lady appears to have been as cold blooded as Toffana. She made experiments on the patients in the Hôtel Dieu in order to test the strength of her preparations, and invented "les poudres de succession," an arsenical preparation. She poisoned her father, brothers, sister, and others of her family. St. Croix was killed by the fumes of a preparation on which he was engaged. Mme. de Brinvilliers was detected, but sought safety in a convent. She was enticed thence by a police officer disguised as an abbé. She was afterwards beheaded and burnt near Nôtre Dame.

Since the times of Toffana, Keli, and St. Croix, such progress has been made in pathology and analytical chemistry as to render a repetition of these crimes impossible, by making detection certain. Arsenic, the darling of the mediæval poisoners, is rendered worse than useless by the delicate tests which have been placed in the hands of the expert. Chemical research has indeed placed new and subtle weapons in the hands of the poisoner, but it has rendered his detection inevitable.

ORTHO- AND PARA-CHLORSALOL AS DISINFECTANTS. — Both ortho- and para-chlorsalol—occur as white, slightly-soluble powders. The ortho derivative melts at 56° C., the para form at 70° C. The former smells slightly of salol, while the latter is odourless and tasteless. According to Karpow, chlorsalol is free from toxic properties and is much more active as a germicide than salol. The ortho modification is recommended for external use in the dressing of wounds, etc., and *p*-chlorsalol internally as an intestinal disinfectant.—*Chem. Zeit.*, xxi., 223.

$$C_6H_4\begin{cases}OH\\COO\cdot C_6H_4Cl\cdot OH\end{cases}$$

REVIEWS AND NOTICES OF BOOKS.

DIE PROTEIDE DER GETREIDEARTEN, HÜLSENFRÜCHTE, UND OELSAMEN SOWIE EINIGER STEINFRUCHTE. Von Dr. VICTOR GRIESSMAYER. Pp. xvi. + 301. Price 10 marks. Heidelberg: C. Winter's Universitätsbuchhandlung. 1897.

The proteids or albuminous bodies are a class of substances which are of supreme importance to the student of biology, physiology, and dietetics. So far as one can speak with certainty concerning the composition of living protoplasm, proteid forms its essential constituent, and the chemical phenomena of life resolve themselves largely into the chemical changes of albuminous matter. In spite of this, chemists have not yet succeeded in unravelling the constitution of the proteids; it is known that their molecules are heavy; something is also known of their percentage composition, and we know that on decomposition they yield numerous, and often complex derivatives, principally of the fatty, amido-fatty, cyanogen-yielding, and aromatic groups. How these are fitted together into the proteid molecule is a matter at present of mere speculation.

The classification of proteids which is now in vogue depends principally on their solubilities in certain reagents, particularly in solutions of neutral salts of varying strengths. This is largely empirical, but it is nevertheless convenient and practicable.

Animal proteids have received more attention than those which originate in the vegetable kingdom; the most prominent chemical substances in plants are the carbohydrates, but the classification of the vegetable proteids is now attracting the attention of numerous physiological chemists.

The pioneer in this direction was Ritthausen. His work was of an extraordinarily laborious kind, and though his results are now largely called in question, the credit is due to him of being practically the first to enter the untrodden forest. A few isolated pieces of work, chiefly directed to the occurrence of crystallisable proteids in plants, bridged across a long interval, till Vines made his masterly researches into the composition of aleurone grains. Later, Sidney Martin, employing the modern methods of chemical physiology, did much to add to our knowledge of the proteid matter in wheat and other grains, and in America the subject was taken up by Chittenden. Among Chittenden's pupils was one Thomas Osborne, who, at first in conjunction with his master, and then independently, pursued, and is still pursuing, this line of research; and in the present volume we have translated into German a series of his most important contributions. They were originally published in America, mostly in the *American Chemical Journal*, and although Dr. Victor Griessmayer has done the good service of collecting these papers together, it should be as editor and translator that he should appear on the title-page, and not as author. There are some fourteen papers altogether, and this review will be concluded with a brief *résumé* of each one of them.

The first paper relates to the proteids obtainable from maize. They consist of three globulins, one or more albumins, and a proteid soluble in alcohol. The two principal globulins exist as such in the flour, and can be extracted by means of a 10 per cent. solution of sodium chloride; they differ from one another in composition and coagulation points. During the process of recrystallisation from warm dilute salt solution, a proteose, probably a product of hydrolysis, makes its appearance. One of these globulins resembles myosin; the other, vitellin; the latter is identical with a proteid subsequently dubbed "edestin" by Osborne in his later work. The third globulin is characterised by its solubility in much weaker saline solutions. Both it and the myosin-like globulin are con-

vertible into insoluble albuminates by the action of water and salt solutions. The two albumins present no special points of interest, but the existence of a proteid soluble only in alcohol is particularly noteworthy. The existence of a proteid which is dissolved by weak—though not by strong—alcohol is not unique in the vegetable kingdom. Ritthausen made that out, and termed the proteid in question maize-fibrin. Osborne calls it "zein." It is characterised by a high percentage of carbon, by its resistance to the action of alkalis, and by the ease with which it passes into an insoluble modification by warming with water or very dilute alcohol.

The next series of proteids which are considered are those of oats, and to this subject two papers are devoted. Here also the proteid soluble in alcohol is the chief point of interest; like that from maize, it is readily made insoluble, and it has a remarkably high percentage of sulphur, so resembling keratin in the animal kingdom. The principal proteid present is a myosin-like globulin; another globulin is deposited as sphæroliths by warming to 65°, and then cooling a 10 per cent. sodium chloride extract of the flour. By recrystallisation regular octohedra were obtained. Small quantities of acid-albumin, proteose and albumin were also separated out. The great difficulty encountered in these researches is to distinguish between proteids present in the flour or grain, and those which are produced by the methods of extraction. Even water will sometimes cause a soluble proteid to become insoluble, and the existence of ferments similar to those which cause coagulation in animal fluids, like blood and milk, is mooted. The general conclusion drawn is, however, that the proteids present in the oats are three in number, namely, that soluble in alcohol, avenalin (the crystallisable globulin), and a proteid which is especially easily extractable by means of dilute alkali.

Wheat comes next, and this, from the point of view of diet, is of special importance. The formation of gluten is the most familiar instance of the formation of an insoluble proteid under the action of water. Sidney Martin considers its precursors in the flour to be partly globulin, partly proteose, and he was the first to suggest the idea of ferment activity involved in the change. This conclusion is, however, strenuously resisted by Osborne, and in this country O'Brien, while admitting the change is of a hydrolytic nature, also denies the existence of a ferment.

The nomenclature adopted by Osborne is the following:—The proteids in wheat are (1) a globulin, the edestin previously mentioned; (2) an albumin, which is termed leucosin; (3) proteoses, which are regarded as artificial products; (4) gliadin, which, like zein, is soluble in alcohol (the formation of gluten is specially dependent on changes in this substance); and (5) glutenin, which can only be dissolved out with dilute alkali.

Rye forms the subject of the next chapter. The results here are very similar; leucosin, proteose, edestin, gliadin, and glutenin were separated out, and in their reactions and elementary composition are similar to those obtained from wheat. The percentage of these substances in the meal is given as follows:—Glutenin, 2·4; gliadin, 4; leucosin, 0·4; edestin and proteose, 1·7 per cent. Rye flour also yields gluten, and thus like wheat is available for bread-making.

Barley contains leucosin, a small quantity of proteose, edestin, hordein (a proteid soluble in alcohol, and identical with Ritthausen's mucedin) in somewhat different proportions. One may here remark in passing the almost constant presence of proteoses, which in animals are found only as the result of digestive processes. These antecedents of peptone are probably in plants formed also by a species of digestion in the seed, analogous to that which produces sugar from starch, and by this means the growing plant is provided with soluble nitrogenous materials in its circulating sap.

This view is confirmed by the investigation of malt, where, in addition to albumin and globulin, proteoses were found in considerable amount, and are divisible into three varieties. Bynin is the name given to the proteid which is soluble in alcohol.

Leaving the cereals and coming to leguminous plants, we find that the proteids contained in the kidney bean are two in number, and both are globulins; one named phaseolin forms about 20 per cent. of the seed, the other, named phaselin, differs from the first in being more soluble, and in containing less nitrogen and more oxygen. In peas and vetches the legumin of Ritthausen is shown to be a globulin; in addition to this a small quantity of another proteid, coagulable by heat, is present, and in all cases proteose was found as well.

In potatoes the small amount of proteid matter present is divisible into a globulin (tuberin) and a proteose.

In flax seed a globulin, a proteid soluble only in alkali, and proteoses were separated out; whereas in cotton seed the proteid present is nearly all proteose; there is a little edestin and alkali-soluble proteid as well.

The last two papers relate to subjects of more purely scientific interest; the first of these treats of crystallised vegetable proteids, where, after an excellent historical sketch, the author describes his own methods and results. It is a pity that Dr. Griessmayer has not seen fit to reproduce the very excellent photo-micrographs of the crystals that accompany the original paper. The last paper on conglutin and vitellin discusses these proteids as originally described by Ritthausen and prepared from numerous plants in the light of new experiments, and the methods of modern physiological chemistry.

Such a brief abstract can give but little idea of the monumental labour involved in these investigations. The tables of analyses are complete, and the details of the reactions of each proteid are given in full. For these the reader must consult the original memoirs. To those interested in the subject from either the scientific or economic standpoint they will amply repay careful study.

The Practice of Medicine, a Text-book for Practitioners and Students, with Special Reference to Diagnosis and Treatment. By James Tyson, M.D., Professor of Clinical Medicine in the University of Pennsylvania. Illustrated. Pp. 1184. Price 37*s.* 6*d.* net. Manchester: John H. King and Son.

The writing of a serious text-book on medicine at the present day is an undertaking of the most arduous character, and the result must be either a woeful waste of energy or a work of encyclopædic character and of great utility. There is no doubt that Dr. Tyson's work belongs to the best kind of works on medicine. Every page bears the impress of personal experience and thought, and at the same time of wide information. The work does not exceed the author's intention of making it a text-book, and yet the essential features of every phase of disease are given clearly and sufficiently. Thus in the description of the symptoms of typhoid fever, the likeness of many cases of typhoid to cases of meningitis is insisted on. "The popular term 'brain fever,' now passing into disuse, doubtless included many cases of nervous typhoid." The forms of malarial fever which resemble typhoid are also duly noted. Among the sequelæ of typhoid, bone lesions are rightly given prominence: "They include osteitis, necrosis, and periostitis. Ebermaier, in 1887, obtained from two cases of suppurative post-typhoid periostitis the bacillus of Eberth in pure culture." In the treatment of typhoid the cold bath method is described at length, and the description

is aided by clear illustrations. Note may be made of one trait in the directions given for the management of special symptoms in typhoid: "Methods more directly adapted to control delirium are a soothing touch and voice, the bromides, etc." In placing the soothing touch and voice before the drugs the author shows a true physicianly instinct. Another feature may also be noted, *i.e.*, the expression of quantities of drugs in both English and the metric systems, thus recommending turpentine, as indicated by a dry, leathery tongue in typhoid, the author writes: "It should be administered in doses of ten minims (·66 Gm.) in mucilage of acacia every six or eight hours." This method of denoting quantities is used all through the book, and forms an excellent example to writers on medicine who may be thus able by degrees to help to hasten the universal adoption of the metric system, and so the removal of a heavy hindrance to scientific teaching in this country.

The illustrations are all clinical rather than pathological in character. Thus temperature-charts, laryngoscopic views, pulse-tracings, a few clear diagrams of simple brain and nerve physiology form the bulk of the ninety figures, which are all clear and serviceable. The book has the desirable quality of being of even merit and soundness throughout, and this merit is of the very highest. The order of the work would be improved if Section IX., "constitutional diseases," *e.g.*, rheumatism, gout, etc., were made to come before diseases of special systems, *e.g.*, the digestive, respiratory tracts, etc. This is a detail which does not detract from the high merit of this important work, which contains, clearly expressed in good English, the venerable truths of the vast accumulation of observations which constitutes the science of medicine, as well as the most recent additions to medical knowledge, wherever they have been indisputably established. Two most important qualities of the work are, first, evenness of merit in every article and detail, and, secondly, the impress of the author's personal supervision of every line. Professor Tyson's book must rank with that of the late Hilton Fagge as among the best text-books on the subject with which it deals. The print is clear, and the type large and good. The book would be an invaluable possession to any medical practitioner or student.

ETIDORHPA. By Professor JOHN URI LLOYD. Pp. xvi. + 386. English Edition. London: Potter and Clarke, 60, Artillery Lane.

The author of this work is not unknown in pharmaceutical circles as a scientific writer. It was, therefore, with some considerable curiosity that the book was taken up to dip into it, but it was found at once that the customary skimming was useless, the book had to be read through carefully. In the first place, it will strike the casual reader as being only worthy of the companionship of Verne and later writers of the same class, but there is far more in the book than is at first sight apparent, and to the more earnest thinker there will be opened up a vast field of speculation not only on the generally accepted "laws" of science but on many a moral law. In his prologue the author states that the work "recites the physical, mental, and moral adventures of one whose life history was abruptly thrust upon my attention, and as abruptly terminated." The story is supposed to be told by one Llewellyn Drury, to whom the MS. is read by a supernatural visitor who calls himself "The-man-who-did-it." For thirty years the story is buried, as Drury is afraid to publish it, but at last, through the agency of Professor Uri Lloyd, after it had been in his possession for seven years, it sees the light of day.

One naturally desires to know who "The-man-who-did-it" was, and what he did, and apparently he was a member of a hermetic secret society who reveals the secrets, is kidnapped by his brethren and condemned to "pass on in consciousness of earth and earthly concerns when we are gone. Your name will be known to all lands, and yet from this time you will be unknown. For the welfare of humanity you will be thrust to a height in our order that will annihilate you as a mortal being, and yet you will exist suspended between life and death, and in that intermediate state will know that you exist." Throughout the book runs an evident undercurrent of freemasonry, and the judges evidently are of this order.

Kidnapped and prematurely aged by the application of some liquid, the supposed author is taken down one of the curious sink-holes in Kentucky, and thence through the underworld by a sexless, eyeless guide, who sees more perfectly in the interior of the earth than man does above earth, and one explanation of this is somewhat interesting in the face of the recent experiments of Woodward and Goldstein as to the non-existence of light as we understand it outside our world and its atmosphere. The guide asks the following question: "You have used the term sunshine freely; tell me what is sunshine? Ah! you do not reply. Well, what evidence have you to show that sunshine (heat and light) is not earth-bred, a condition that exists locally only, the result of contact between matter and some unknown force expression? . . . . What reason have you to believe that a force current is not circulating to and from the sun and earth, inappreciable to man, excepting the mere trace of this force, which, modified by contact action with matter, appears as heat, light, and other force expressions?"

To trace the wanderings of "The-man-who-did it" and his guide, to attempt to criticise the experiences met with, or describe in detail or even sketch in outline the arguments advanced to account for certain phenomena, would take up at least four or five pages of this Journal. We cannot extract even a tithe of the many truisms or statements on little known or understood natural phenomena. Suffice it to say that probably no finer sermon has been preached than that portion which treats of drunkenness. Finally, the supreme creation of the book, "Etidorhpa," is met with, "The beginning and end of earth, the antithesis of envy, the opposite of malice, the enemy of sorrow, the mistress of life, the queen of immortal bliss."

If there is a fault to be found, and possibly it may be put down to a spirit of carping criticism, one might object to the interpolated arguments and conversations between "The-man-who-did-it" and Llewellyn Drury—these are apt to make one lose the continuity of the story, and they would be equally as forcible and equally as interesting, for they are by no means dull if included as an appendix; and, further, we are left in a condition of uncertainty, and one that was evidently shared by Llewellyn Drury, for he presses his supernatural visitor to recount his experiences in the land of Etidorhpa, but with no success. Of such a nature is the work that one naturally longs for more. One feels that, instructive and entrancing as has been the journey in the underworld, the land of Etidorhpa must be still more inviting, though possibly it would have to partake rather of a speculative character and deal with the fourth dimension of space, the hereafter and moral arguments, for everyone will see from the extract that we have quoted that the title of the work is but Aphrodite spelt backwards.

The book is odd but full of the fire of imagination, as fascinating as any romance by Dumas, not extravagant, and here and there rises to a height of word painting which has been rarely excelled. To the lover of the frothy neurotic novel of the day it is not a work we can recommend, but for one who desires to possess a work into which he can dip and always be sure of present entertainment and food for future thought and speculation, it is the book of the day.

PHARMACY IN FRANCE.*

BY E. C. SPURGE.

The objects of this paper are to sketch briefly some of the conditions under which the French pharmaceutical student obtains his diploma, afterwards to give details of the privileges and protection which he enjoys, and in conclusion to make a few general remarks upon pharmacy in France. The conditions for qualification in that country are prescribed by the Government, which, however, was urged to frame the laws regulating those conditions by the pharmacists themselves.

A would-be pharmacist must spend three years in a pharmacy and three years in a recognised school of pharmacy before he can obtain his diploma. The period of three years in a pharmacy must be completed before the embryo chemist can commence his scholastic training, and those three years are verified by means of periodical registrations. The embryo chemist on entering a pharmacy must register himself as a pupil in pharmacy either at a school of pharmacy or at the office of the Justice of the Peace of the canton. He must be at least sixteen years old before he can commence the "stage," as the three years' period is termed, and he must also produce as a preliminary either the diploma of Bachelier es Lettres or of Bachelier es Sciences (complete). These are required from intending first-class pharmacists; intending second-class pharmacists must have passed either one of the same examinations, or an examination in chemistry, physics, and natural history.

The conditions having been complied with and registration effected, the embryo chemist now becomes a "stagiaire" or probationer, and must renew his registration yearly. At the first registration a certificate is given to the probationer and is endorsed each year. So particular and punctilious are the authorities about registration that when a "stagiaire" leaves a pharmacy and enters another he is required to get a certificate from the employer whom he is leaving, stating the date of his departure, and a similar certificate from his new employer, stating the date on which he entered the pharmacy, and these two certificates have to be produced at the annual registration. If the removal is distant and out of the circuit embraced by the previous registry office, then a fresh registration must be made within a fortnight at the registry office of the circuit into which the "stagiaire" has moved, and an extract of his previous registrations must be produced at the same time. Any period of time passed in a pharmacy which is not registered as described does not count.

After having finished his three years, the "stagiaire" has yet to pass an examination—"L'examen de Validation"—before he can be received as a student of pharmacy. The subjects of this examination are:—

1. Preparation of a compound, either chemical or galenical, selected from the 'Codex.'
2. The dispensing of a prescription.
3. Recognition of thirty plants and of ten medicinal compounds.
4. Questions on various pharmaceutical operations.

Four hours are allowed for the first subject, and half-an-hour for each of the others, and it will be noted that the requirements exacted from a "stagiaire" are much more severe than those demanded from the English apprentice.

Assuming that the "stagiaire" passes the "Examen de Validation" satisfactorily, study at any recognised school of pharmacy may be commenced; of course, the student need not go to college immediately after the expiration of his three years' stage, but can work years in a pharmacy as an assistant if he likes, and this time it is not necessary to register. The student who wishes to qualify can enter either for the—

Diploma of First-Class Pharmacist, or
Diploma of Second-Class Pharmacist.

The period of time required to be passed in a school of pharmacy is the same for each, viz., three years; the course of study is nearly and the subjects are the same for each, but the examination is rather more difficult for the first-class diploma than for the second-class diploma.

Here it would be well, perhaps, to mention that in France there are several kinds of schools of pharmacy. There are—

1. Superior schools of pharmacy.
2. Mixed schools of medicine and pharmacy.
3. Schools in full exercise of medicine and pharmacy.
4. Preparatory schools of medicine and pharmacy.

* Read before the School of Pharmacy Students' Association.

The first two schools mentioned are controlled and supported by the State. The two latter are under municipal control and support. Training for the First-Class Diploma may be obtained at the superior schools, mixed faculties, or at the schools in full exercise, and training for the Diploma of the Second Class either at these schools or at the preparatory schools of medicine and pharmacy. On entering a school of pharmacy the student has to deposit his certificate of registration.

During the three years of study the students have to register themselves every three months in a register kept at the school, thus making twelve registrations during the three years. The first registration is made on entering the school upon production of the *certificate de validation*. This registration having been made, the student can commence his studies.

The scholastic year is from November to the following August, and the subjects for study are distributed as follows:—

First year.—Inorganic chemistry; organic chemistry; physics; cryptogamic botany; general botany; mineralogy; hydrology.

Second year.—Materia medica; inorganic and organic chemistry; chemical pharmacy; general botany; toxicology; analytical chemistry.

Third year.—Zoology; materia medica; galenic pharmacy; analytical chemistry.

It will be noted that galenic pharmacy is not taken up until the third year, possibly because it is considered that unless one possesses a knowledge of chemistry and allied sciences it is impossible to apply oneself to the study of galenic pharmacy with profit. Practical laboratory work is obligatory during the whole three years. Botanising excursions are arranged by the professors at certain times. At the end of each year there is an examination bearing on the subjects taught during the year. The examination is held in August, and if the student does not pass it satisfactorily he can submit himself for re-examination in November when the school re-opens (August to November is the vacation). Supposing the student to fail again then he has to wait till next August for re-examination, and cannot register himself again till he has passed the examination, so that a whole year is lost to him, as he is debarred from taking the next course of lectures and can only do practical work during that time.

In addition to these yearly examinations candidates for the Diploma of the First Class have to pass an examination held in the middle of their last year, and with regard to this examination in case of failure, the same conditions apply as described for the yearly examinations. There are plenty of precautions taken to ensure the candidate putting in all the required time, and also to ensure that the student shall have a good grasp of the subjects taken up each year before being allowed to proceed further with his studies. If a candidate does not understand his subjects, it is not the fault of the persons who framed the regulations just mentioned.

Assuming the student to have passed the school examinations successfully, and that his registrations are in order, he is entitled to present himself for the final examinations. Candidates for the Diploma of the First Class are examined in the school at which they have studied during their third year. Candidates for the Diploma of the Second Class must be examined at the school in whose circuit they wish to open a pharmacy, because pharmacists of the second class can only open a pharmacy within the circuit embraced by the particular school of pharmacy from which they have obtained their diploma, whereas, pharmacists of the first class can open anywhere in France or her colonies. The final examinations are held in August and November, and are three in number.

The first examination is divided into two parts:—

Part I. Practical chemical analysis.

Part II. Oral examination in physics, chemistry, toxicology, and pharmacy.

The second examination is also divided into two parts:—

Part I. Practical microscopy.

Part II. Oral examination in botany, zoology, materia medica, hydrology, and mineralogy. (This second portion of the examination can be omitted in certain cases.)

The third examination is also in two parts:—

Part I. Oral examination on five chemical preparations and on five galenical preparations.

Part II. The preparation of five chemical compounds and of five galenical preparations.

Four days are allowed for this second part, and if the candidate

is rejected in this latter part he has only to present himself for re-examination in it. A candidate who has been rejected cannot present himself again until the expiration of three months at least.

The fees payable by candidates for the diploma of the second class are :—

First Qualifying Examination	50 fcs.
Second ,, ,, ...	50 ,,
Third ,, ,, ...	100 ,,
Materials for Third Examination.....	100 ,,
Three Certificates corresponding to the Three Qualifying Examinations, each 40 fcs.	120 ,,
A Diploma	100 ,,
Total	520 ,,

equal to about £20 16*s*. English money.

The examination fees payable by candidates for the Diploma of the First Class are :—

First Qualifying Examination	80 Fcs.
Second ,, ,, ...	80 ,,
Third ,, ,, ...	100 ,,
Cost of Materials	100 ,,
Three certificates corresponding to the three Qualifying Examinations, each 40 Fcs.....	120 ,,
A Diploma	100 ,,
Total.....	580 ,,

equal to about £23 4*s*. English money. The fees are appropriated by the State.

The actual cost of examination for the Diploma of the First Class is but little more than the cost of the examination for the second class, whilst the advantage of being able to move anywhere is great.

It is much more difficult to obtain a qualification in France than in England, but the French pharmacist appears to be much more protected than his English colleague. A superior diploma of Pharmacist of the First Class is granted, but I shall not discuss the conditions under which it may be obtained, but will turn to consider some of the privileges and the protection accorded to the pharmacist. Recently the French pharmacists have drafted a new law regulating the practice of pharmacy, and this law has passed its first reading. As this new law represents the feeling and requirements of the pharmacists of to-day, and as the conditions relating to qualification are unaltered by it, I shall base many of the following remarks upon its provisions.

At the present time in France the pharmacists have a very decided feeling that they ought to be well protected, and a feeling that their high standard of education and training demands it. One or two quotations from the address of the Commission which presented the new measure will bring forth this point excellently :—

"We (the Commission) have advised the suppression of the Diploma of the Second Class, thinking that the better education one demands the greater is the guarantee of security to the public."

This paragraph at once calls to mind a similar view which is held by many English chemists, and on this point I should like to make a few remarks. Whilst admitting that education is extremely desirable, yet there is a danger that in highly educating a man one is apt to give him a distaste for the trade portion of his business, and conscientiously no one can deny that (in England, at any rate) there is a good deal of the trade element in pharmacy which, in the great majority of cases, must be carefully attended to if success is to be attained. Many French pharmacists feel that the time and money spent in obtaining their diploma does not place them proportionately in such a good financial or social position as that obtained by doctors and dentists. In fact, speaking generally, the profession or calling of pharmacy does not appear to be a particularly happy one ; in Germany and Italy the chemists are dissatisfied ; in England, as you know, we are anything but united or contented. However, the French pharmacists are trying hard to better their position, as will be seen from the following quotation :—

"We, the Commission, have removed from the law everything that could give to pharmacy a too accentuated commercial character. We are all in accord in opposing the exaggerated commercial extension of pharmacies open to the public. All think that there is a better guarantee for patients to come to a pharmacist—a man of science and probity—rather than to one of those large businesses which have, and can only have, no other care than to withdraw from them a rapidly acquired fortune."

With these sentiments many will doubtless agree, and personally I am inclined to favour them, although many objections can be raised against them. Such sentences could easily convey to an English mind that a monopoly was being aimed at, and monopolies are not popular in England. However, they are not regarded with such disfavour in France as in England.

Besides the pharmacists of the first and second classes there are druggists and herborists. The pharmacists alone have the right to sell all drugs and medicaments in medicinal quantities. Herborists can sell fresh and dried indigenous herbs, and in order to be allowed to do that the herborist must pass an examination which has for its object to ascertain whether the herborist can recognise and describe the herbs, and whether he knows the seasons for collecting them and the best methods of drying and preservation. Druggists can only sell simple substances in wholesale quantities, and poisons under certain restrictions. Amongst the provisions of the new law is one which provides that the granting of certificates to herborists is to be stopped after the expiration of five years from the passing of the law.

The herborists being somewhat numerous, and not without some influence, are naturally enough protesting vigorously against this treatment, which would, unless the provision be altered, eventually divert their business into the hands of the pharmacist. Here it may be noted that French people are very fond of buying herbs and such-like simples and making them into infusions termed tisanes ; consequently the herborist often does a considerable amount of business. Dried lime-flowers and mallow are much used for "tisanes."

Each pharmacist must be the proprietor of the pharmacy which he works ; he may not own more than one pharmacy, and neither can he carry on in his shop any other business beside that in drugs and in general medical and pharmaceutical requisites. There are certain exceptions made as to the proprietorship, viz., in such a case as results from the death of the proprietor, the widow is allowed to carry on the pharmacy under the management of a qualified man for a limited time. With regard to patent medicines or "nostrums," at present secret remedies can be made up and sold, provided that the maker of them submits his formula to an official, together with the claims he makes as to the curative properties of the combination.

The official notes of the doses of the substances entering into the composition are safe and proper, and whether there is in the composition anything likely to be deleterious to health. Supposing the preparation to be approved, the official fixes a price at which the remedy is to be sold. The price fixed generally allows a good margin of profit, but varies according to the excellence of the preparation, which seems quite fair. If the new law should be passed, the pharmacist will be able to make up specialties, but as he will be obliged to indicate the full formula of the preparation on the label of each bottle his preparations will cease to be secret remedies.

The French pharmacist, dreading the establishment of company pharmacy, has several clauses devoted to it in his new measure, and of these I will give a brief *résumé*.

"Any association having for its object the working of a pharmacy is forbidden, unless it consist of an association of qualified pharmacists known by the collective names of the partners, and the pharmacy can only be managed by one or more of the partners themselves." Thus a company consisting of Brown, Jones, Robinson and Smith, all being duly qualified men would be a legal company, whilst Brown and Co., where Brown is the qualified man, and the company consists of his mother-in-law and one or more maiden aunts would be an illegal company. All wholesale establishments selling pharmaceutical preparations must be managed by a qualified pharmacist, on whom rests the sole responsibility. The sale of simple substances in wholesale quantities which are used in medicine is free to anyone.

In conclusion I wish to add just a few words on doctors and dispensing. Doctors are not allowed to supply medicines or drugs to their patients, unless there be no pharmacy within six kilometres distance, or the doctor reside six kilometres from a pharmacy and people come to consult him. Exception is made, however, in the case of certain urgent remedies, and a list of such is drawn up by the administration. Chemists cannot deliver to the public without a doctor's prescription simple poisons, compounds or preparations endowed with poisonous properties, and also certain medicaments of which a list is inserted in the 'Codex.' Besides, there are drugs which if contained in a prescription, the prescription cannot be repeated unless the doctor either gives a fresh prescription or writes the word "Repeat" upon the old one and signs and dates the same. The French physician is

required to sign his surname in full on his prescriptions. The regulations relating to the sale of poisons are similar to the English poison regulations, so that I won't trouble you with them.

Respecting the visitations made to pharmacies by the authorities at least once a year, in order to inspect the stock of drugs, the severity of these varies a good deal. A friend told me that in his case the inspector merely looked at the extract of ergot, at the rose water, and at the prescription book, spending the rest of the time in chatting to the proprietor of the pharmacy. There remain many points about which much could be said, but I will only remark further that although the English chemist is below the standard of the French pharmacien in theoretical and scientific training, yet Continental employers frequently speak highly of the workmanlike and finished manner in which the English chemist executes and sends out his work.

PRACTICAL PHARMACOGRAPHY.

CANNABIS INDICA.

Indian Hemp, Guaza; Chanvre, Fr.; Hanf., Germ.; Canama, Sp.

Macroscopic Characters.— The *Cannabis indica* of commerce consists of the flowering tops of the female plant collected when the fruits are forming. The tops are usually compressed or flattened,* from 2 to 3 ins. (50 to 75 Mm.) in length, with

Fig. 1.—Cannabis Indica.—*a*, Young leaf. *b*, Female flower, with linear bract. *c*, Perianth unrolled. *d*, Longitudinal section of ovary. *e*, Fruit. *f*, Ditto, transverse section. *g*, Ditto, longitudinal section.

more or less stem attached to them, and about 2 Cm. in diameter. The bracts and flowers and fruits are more or less agglutinated together by the resin. When the pieces, which are brittle, are broken across, the stigmas and fruits are easily recognised under a lens. The colour of the drug is dark or brownish-green, according to age, the odour is characteristic, and the taste acrid and faintly bitter. The female flowers consist of a single cordate-ovate, hairy, glandular five-veined leaf sheathing around and enclosing the ovary, with two filiform hairy stigmas protruding beyond it; the flower is subtended by a linear-lanceolate tapering hairy bract (Fig. I., *b*, *c*). The ovary is ovoid, smooth, one celled, with a single pendulous ovule (Fig. I., *d*). The fruit is about $\frac{1}{8}$ in. (3 Mm.) long, oval, and compressed, the brownish-grey, faintly reticulated pericarp separating into two valves on pressure. The seed completely fills the fruit and contains a curved embryo peripherally placed, so that it almost surrounds the oily albumin (Fig. 1, *e*, *f*, *g*). The leaves, or rather fragments of leaves, are scabrous with curved rigid hairs. The structural details of the flower and fruit are given by Bentley and Trimen, 'Med. Pl.,' vol. iv., pl. 231.

* The drug usually met with in English commerce is imported from Bombay; a much more active form of the drug, in more cylindrical, not flattened, pieces, is occasionally imported from Calcutta.

Microscopic Characters.—The transverse section of the leaf shows a layer of large epidermal cells below the cuticle, and a single row of long palisade cells, occupying about two-thirds of the thickness of the leaf (Fig. 2, I.). There are stomata only on the under surface of the leaf (Fig. 2, II.). The hairs of the leaves are one-celled, and swollen at the base (Fig. 2, I., *h*), which is sunk in the tissue below

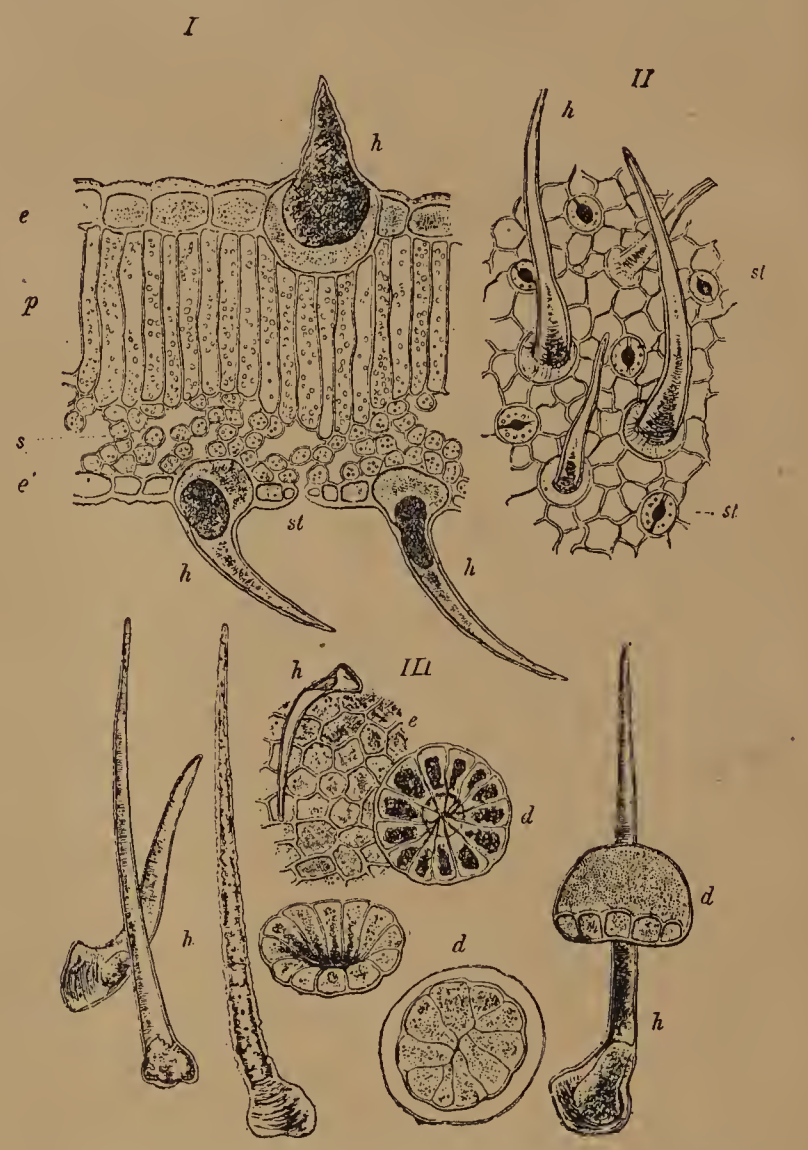

Fig. 2.—Cannabis Indica.—I. Transverse section of leaf. II. Lower epidermis showing hairs and stomata. III. Hairs (*h*), and glands (*d*). After Vogl.

the epidermis. The hairs contain a cystolith suspended from the upper part of the cell. The hairs are shorter and thicker on the upper surface of the leaf. On the flowers and bracts are found sessile and stalked glands (Fig. 2, III., *d*), which are here more numerous than on the stem. These contain a secretion which is either a colourless oil or a brownish-yellow resin. These features will serve to distinguish it from any other official drug, whether whole or in powder.

Hydrargyrol.—Under this name Gautrelet has recommended the use of mercuric paraphenolsulphonate, $C_6H_4 \cdot OH \cdot SO_3 \cdot Hg$, as an antiseptic. The salt is prepared by dissolving mercuric oxide to saturation at 100° C. in paraphenolsulphonic acid, and evaporating to dryness. It forms brownish scales having a peculiar aromatic odour, and a neutral reaction, readily soluble in water, and in glycerin, giving ruby-red solutions. It precipitates alkaloids and basic toxines, but does not coagulate albumin, the latter being a very important property. Its toxicity is much less than that of many antiseptics, being seventy-five times less toxic than mercuric chloride. It is stated to be very efficacious as a germicide and antiseptic.—*Les Nouveaux Rem.*, xiii., 718.

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MEMBERSHIP OF THE SOCIETY.

THE charge made by Mr. GIBBONS in his letter last week (see p. 21), that the nature of the meeting of pharmacists at Manchester was "misrepresented" in this Journal, and that ideas were applied to those attending the meeting "which they never entertained," is in itself too serious to be passed over in silence, especially since inquiry into the matter has shown that there is no foundation whatever for Mr. GIBBONS' complaint. Our reporter states that the day following the meeting he read over to Mr. GIBBONS his report of the resolutions, so that he might have the opportunity of making any correction that was requisite.

Mr. GIBBONS is correct in his conclusion that our information respecting the meeting was derived from the report published at page 575, but his statement that the report was "most inaccurate and misleading," is utterly without foundation. The one circumstance he points out as being an illustration of the alleged inaccuracy, does not in the least degree support his statement, as will be seen on comparing the resolutions as given in our report with the version of them in Mr. GIBBONS' letter. The words in both are with one exception the same, the only other difference being the order in which they are placed, and the purport is absolutely the same in both. The one verbal difference is that the term "chemists and druggists" is used in the reported resolutions, while Mr. GIBBONS' version gives the term "associates" as having been used at the meeting. This is a difference so obviously insignificant that we can only express surprise at such a quibble being resorted to for the purpose of attempting to make out an indefensible charge of inaccuracy in the report.

Our representation of the nature of the meeting over which Mr. GIBBONS presided was that it manifested total want of acquaintance with the subject discussed by the speakers, and the letters of Mr. GIBBONS and Mr. SARGEANT may be referred to as fully supporting that statement.

The principle stated by Mr. GIBBONS to have been advocated at the meeting, viz., that of chemists and druggists as associates being eligible as members of Council, is contrary to the spirit and terms of the Society's Charter, according to which members only can hold that position, and the meeting evidently overlooked the fact that eligibility as a member of Council pre-supposes membership of the Society. The resolutions passed at the meeting are therefore self-contradictory, and in themselves as much evidence of deficient acquaintance with the subject as the confusion of the title pharmaceutical chemist with membership of the Society. The notion that admitting Minor men to membership would be prejudicial to pharmaceutical chemists, or lessen the inducement to take that qualification, has no other foundation than erroneous conceptions of those positions and disregard of facts. At the present time there are nearly four thousand chemists and druggists entitled to membership of the Society, and many of them hold that position without detriment to the Major qualification, the value of which rests upon an entirely independent basis, and is in no way determined by membership of the Society. In regard to that point, therefore, the views expressed by Mr. GIBBONS and his friends are entirely erroneous.

Similar evidence of want of knowledge of the circumstances referred to at the meeting was afforded in other respects. Neither Mr. GIBBONS nor any of the other speakers seem to have been aware that one great object of the Society has always been to bring all chemists and druggists throughout the country into one united body, as well as to secure the qualification of everyone engaged in the business. The latter condition has been realised by the Act of 1868, so far as the public interest requires protection, but without regard for the interests of chemists and druggists, the protection and promotion of which can be effected only by that collective action for which membership of the Society affords opportunity. The national organisation of chemists and druggists, from a public point of view, has yet to be followed up by their more extended incorporation for purposes of self-protection and the advancement of their craft, purposes which are as necessary for pharmaceutical chemists as for chemists and druggists. On this point reference to some of the articles which appeared in this Journal thirty years ago would afford useful instruction as to the principles by which admission of members to the Pharmaceutical Society should be regulated, notably one dealing specially with that subject [2], viii., 617. The fact has probably been overlooked that the discussion of this same question of membership then attracted considerable attention. The views put forward at the Manchester meeting were then propounded, and they were at the time shown to be as untenable in principle as they were illiberal and impolitic. Even then the establishment of compulsory qualification was regarded from the point of view of trade organisation as an ample equivalent for extending eligibility for membership, because it would lead to the end aimed at from the beginning.

Subsequent experience has shown that the views then held by the Council, and by a large majority of members of the Society were just and reasonable. Though it is matter for regret that chemists and druggists who were in business before the passing of the Act have not joined the Society to such an extent as might have been expected, notwithstanding the urgency with which they put forward their claim for incorporation, the case is different as regards those who have since then obtained the compulsory legal qualification by examination. A very large proportion of them have become connected with the Society as associates, and the aggregate as well as relative increase in that section of the Society has become so considerable that the claim now made for equal representation as members cannot be disputed. By that means opportunity would be afforded for making the Society thoroughly representative and more influential for dealing with matters in which the entire body are interested.

ANNOTATIONS.

THE APPRENTICESHIP SYSTEM IN PHARMACY is the subject of a pithy note in the *Spatula*, in which reference is made to the fact that, on this side of the Atlantic, it is preferred that shop experience should be obtained before attendance at a college of pharmacy. Without discussing that point, however, the editor of our sprightly contemporary expresses the opinion that where a young man is taken into a pharmacy as an apprentice or pupil, the pharmacist should insure that the student is directed in such a course that he may imbibe right ideas and methods. At the same time, it is desirable that the youth should be impressed with the idea that, no matter how trivial the work he is engaged on, it should be done with care, and that accuracy and intelligence should invariably mark the work of the pharmacist. The *Spatula* is undoubtedly right in this matter, for whatever is worth doing is worth doing well, even to the training of apprentices. The pharmacist—who, above all, should cultivate precision in all that he does—must obviously not neglect the inculcation of a similar spirit in those he has, directly or by implication, undertaken to teach the art of pharmacy. The degradation involved in utilising apprentices merely as a source of cheap labour is pitiful in the extreme, and the harm done to pharmacy as a profession by such practices is incalculable.

ATTENDANCE AT DAY CLASSES IN CHEMISTRY AND BOTANY is, we must reiterate, the best solution of the apprenticeship problem, and such attendance ought to be rendered compulsory by a clause in the indentures or agreement drawn up and signed at the outset of the youth's business career. Having attended classes in chemistry and botany regularly, and worked systematically at those subjects, during three years or more, whilst making a practical acquaintance with materia medica and pharmacy proper during the hours of shop service, the student would be in a condition to reap the utmost advantage possible from a systematic college course, prior to presenting himself for the qualifying examination. This college course ought to be regarded as essential in any case, the class work during apprenticeship being designed to preserve the continuity of the habit of study between leaving school and entering the college, whilst also preparing a substantial foundation on which the knowledge attained as the result of subsequent work may be based. The object of systematising studies during apprenticeship is not to open a "short cut" to qualification as a chemist and druggist, but to secure the reality of the knowledge on the strength of which that qualification is granted.

PROFESSOR REMINGTON IS QUITE JUSTIFIED in expressing doubt as to the efficacy of examinations as educating mediums. At best, they can only serve as tests of education, and bad tests at that. But, as he also remarked when addressing his students on the subject of his European experiences, examinations have become a necessary evil, throughout the United States no less than in Great Britain, since so many institutions in both countries allow examination to be the only test of education and technical training. But, as the test of examination is defective, it is incumbent upon all who are interested in the progress of pharmacy to do their best to minimise the evil that admittedly exists. The only absolute remedy that suggests itself is a compulsory curriculum of study, candidates for examination being required to present a certificate proving that they have studied the specified subjects for a certain period, attending lectures and courses of laboratory instruction in recognised institutions. Unfortunately, the absolute remedy appears, for the time being, to be as difficult of application as absolute perfection in anything is difficult of attainment. The Legislature bars the way, and too many chemists and druggists support the Legislature in so doing. But a similar result could be achieved, without invoking legislative interference, if only every chemist in business were true to his craft, and steadfastly resisted the insidious temptation to sell his birthright for a mere mess of pottage.

A VOLUNTARY CURRICULUM is quite possible, even if only a large majority instead of all chemists and druggists agree as to the desirability of improving and extending the scope of existing educational facilities. Let each one (1) decline to take an apprentice or pupil who has not passed a scholastic examination, the certificate of which will be accepted by the Pharmaceutical Society's examiners; and (2) in drawing up an indenture or agreement, insist on a clause binding himself, on the one hand, to allow the youth to attend suitable day classes, whilst on the other, compelling the apprentice to pass through a systematic course of instruction during the three or more years of his term of service. In last week's Journal it was suggested that local pharmaceutical associations might, with advantage, take the lead in this matter—first, by passing formal resolutions declaring the desirability of taking the proposed steps; next, by proceeding, in conjunction with other associations, to devise a satisfactory scheme for carrying the resolutions into effect. Several associations are now devoting attention to the systematisation of their educational arrangements, and the suggestions repeated above are commended to their careful consideration. For, no improvement that can at present be effected in pharmacy is likely to be productive of such far-reaching effects as the voluntary imposition of a curriculum of study, and the time appears quite ripe for the purpose.

"FELLOW OF THE PHARMACEUTICAL SOCIETY" is a title that seems to possess an attraction for many of our readers, and if the conditions existed, or were likely to exist, which would render such a title of any real value, the question of its adoption might be expected to demand serious consideration. But though it might be a comparatively simple thing for the Society to secure Parliamentary powers, enabling pharmaceutical chemist members to style themselves "Fellows," it is far from certain that the privilege is worth asking for. There are Fellows and Fellows—Fellows of universities or colleges which confer the title after a prolonged curriculum of study, supplemented by examination, and Fellows of so-called learned societies, who obtain admission without much trouble after nomination and payment of certain fees. For the Pharmaceutical Society to grant fellowships at the present time would be practically to reduce itself to the level of the latter, and the title would be regarded as a mere tinsel decoration, bringing no credit to the wearer and laying him open to scorn rather than increased respect. But when, if ever, a real curriculum of study precedes examination for the pharmaceutical qualification, in all cases, the question of a higher title may again be brought forward by those who are interested in it, with a much greater prospect of making their views prevail. Meanwhile, however, they would do well to possess their souls in patience, and help in the good work of familiarising the minds of all their friends and acquaintances with the idea of a proper curriculum of study for everyone engaged in the practice of pharmacy.

As The Pharmacy Ball will be held on Wednesday week, those who are desirous of acting as Stewards should lose no time in sending in their names to the Hon. Secretary, Mr. William Warren, 24, Russell Street, Covent Garden, W.C. Attention is directed to a list of the names already sent in, which appears in the advertisement pages of the Journal this week (p. 3).

Trade Protection is becoming more and more a necessity of the times, but a fear that movements in this direction are not quite "the correct thing" has probably been influential in preventing many chemists and druggists from resorting to combination for such a purpose. They may feel reassured, therefore, on learning that Mr. De Rutzen, one of London's most prominent magistrates, has recently expressed the opinion that to form an association for the purpose of protecting a trade in which the members are interested is "a very natural and proper thing to do." The case in connection with which this remark was uttered was an action by the Bacon Curers' Association of Great Britain and Ireland against the Junior Army and Navy Stores (Limited), for selling a Canadian ham as Irish. The magistrate, in giving judgment for the plaintiff Association, pointed out that it had to compete against the whole world, but if the Association's competitors was to include an institution carried on by fellow-countrymen, who carried on trade in such a manner as had been disclosed in this case, he thought there was every reason to be satisfied with the assistance afforded by the officials of the Association is getting up the case.

A New Variety of the Victoria Regia has been grown at Kew this year. It was raised from seeds received from Philadelphia, and is described in the *Kew Bulletin* as differing from all other forms in the pale green colour of its leaves, of a rich red underneath, the turned-up rim, which is from six to eight inches high, the absence of spines on the calyx lobes, and the time when the flowers expand, which is early in the afternoon instead of about six o'clock. It also grows with extraordinary vigour, and flowers more freely than the type. A second plant sent from Kew to the Royal Botanic Gardens, Glasnevin, is stated to have shown the same characteristics.

'The Model Engineer and Amateur Electrician,' published by Messrs. Dawbarn and Ward, Ltd., 6, Farringdon Avenue, E.C., is a new monthly journal, published in the interests of amateurs who take up mechanical or electrical work as a hobby. It differs from existing journals in being exclusively devoted to mechanics and electricity, and a special feature is made of original working drawings and high-class illustrations. The contents of No. 1 (price 2*d.*) include the first of a series of illustrated interviews entitled "Model Engineers and Their Work," and illustrated articles on "The New Wireless Telegraphy," "Design for a Model Goods Waggon," "How to Make a Useful Bichromate Battery," "Lathe Screw Carriers," and "The Construction of Small Dynamos and Motors." There is also a column devoted to "Workshop Wrinkles and Recipes," and particulars are given of a new system of "Queries and Replies." Several attractive prize competitions for amateurs are announced, which should be of interest to both mechanical and electrical workers.

The Cricket as a Thermometer is the latest scientific novelty, a correspondent of the *American Naturalist* being responsible for the suggestion that the chirps of this irritating insect might be utilised as a temperature indicator. Though an individual cricket chirps with no great regularity when alone, particularly in the daytime, when great numbers are chirping together at night the regularity of the function is described by this observer as astonishing. In fact, the crickets—of what species or genus is not stated—are said to chirp synchronously under those conditions, keeping time as if led by the wand of a conductor. Moreover, the rate of chirp seems to be entirely determined by the temperature, and this to such a degree that one may easily compute the temperature when the number of chirps is known. At 60° F. the rate is 80 chirps per minute, at 70° it increases to 120 per minute, whilst below 50° the crickets have no energy to waste in music (*sic*), and the number of chirps falls to 40 per minute. The relation between temperature and chirp is thus expressed:—Let T stand for temperature, and N the rate per minute. Then, as—

$$T = 50 + \frac{N-40}{4}$$

the temperature when the concert of crickets attains 100 chirps per minute should be—

$$T = 50 + \frac{100-4}{4} = 65°.$$

This is very interesting and may be quite true, but what is to be said of the marvellous powers of observation implied in the statement that, when great numbers of crickets are assembled together, "the resting spells of individuals are unnoticed, but when the latter recommence they not only assume the same rate but the same beat as the rest of the field"? Of a surety, the American naturalist is a remarkably observant individual, and most painstaking in his efforts to carry conviction into the minds of others.

A Case of Poisoning by Carbolic Acid, taken in mistake for rum by a woman at Redcar, is one of the latest incidents in the unchecked career of the deadly fluid. It is almost needless to say that the bottle containing the poison was not labelled. A sufficiently convincing statement of facts for anyone who does not happen to be a Privy Council official has been published by Dr. A. E. Harris, Medical Officer of Health for Islington, who, in a report to the local vestry, has directed attention to the unrestricted sale by grocers and others of carbolic acid, and its free distribution by sanitary authorities, with the result that deaths from this poison have increased from one in 1864, to 201 in 1894, and 258 in 1895, 224 of which, according to the Registrar-General's last-published report, were suicides. Carbolic acid, as Dr. Harris points out, can be purchased as easily as milk at present, and it is declared to be essential, in order to prevent the increasing number of accidental and suicidal deaths from this poison, that restrictions should be imposed upon its sale.

A Novel Adulterant of tincture of rhubarb was indicated by the results of an analysis recently undertaken by Mr. A. H. Allen, of Sheffield. At the Skipton Petty Sessions on Saturday last, John Henry Edmondson, grocer and drug dealer, of Barnoldswick, was summoned, on the information of Mr. A. Randerson, inspector under the Sale of Food and Drugs Act, for selling adulterated tincture of rhubarb. It was proved that a sample obtained from the defendant's shop contained 31·44 per cent. of alcohol, 8·90 of glucose, 7·07 of other extractive matters, and 52·59 per cent. of water. The sample thus contained only about two-thirds of the alcohol that ought to have been present, according to the British Pharmacopœia, whilst the analyst pointed out that the addition of glucose is neither necessary nor useful, and that the sample in question was the first he had met with containing such an adulterant. The defendant, who fainted in court during cross-examination, possibly at the thought that he had added glucose unnecessarily, was fined 20*s.* and £1 4*s.* 4*d.* costs. This is probably a record price for glucose.

SOCIETY OF ARTS.

THE PRODUCTION OF COLOUR BY PHOTOGRAPHIC METHODS.

BY SIR HENRY TRUEMAN WOOD,
Secretary of the Society.

(*Concluded from last volume, page 115.*)

These pictures (Lippmann's) are of marvellous brilliancy and beauty. The colours appeared to be rendered with great accuracy. Unfortunately, they are by no means easy of production, nor are they capable of reproduction as ordinary photographs are. They can be seen by the naked eye, or better when illuminated by a powerful lantern and projected on a screen, but they are only visible as coloured pictures when viewed at a certain angle; looked at directly, or by transmitted light, they show no colour at all. For exhibition in the lantern, they are best seen when specially mounted, with a thin prism in front of them, in order to reflect away light falling on the surface of the glass, and to allow only those rays to reach the eye which are reflected from the surface of the picture itself.

Under these circumstances it is evident that while M. Lippmann's beautiful discovery must always be regarded as of the highest scientific interest and value, it is not, in its present state, likely to be turned to any practical account. What its future development may be nobody can say. As a matter of fact, I believe not very many of them have been made, and those chiefly by M. Lippmann himself, and by the brothers Lumière, who first succeeded in making gelatin plates sufficiently transparent for the purpose. M. Lippmann's first results were all obtained on films of collodion or albumin.

The difficulty of obtaining colour pictures by any direct process has led various inventors to try and discover methods by which the difficulty might be evaded. If several pictures could be taken, each showing the proper tone and gradation of one of the primary colour sensations, and these pictures could be combined into one, it is not unreasonable to expect that a picture with all the colours of nature would be the result. Such is the idea on which Mr. Ives has developed the very beautiful instrument which he calls the photochromoscope, an instrument which beyond any question gives us very vivid and beautiful representations of coloured objects. Mr. Ives has not been alone in his work, few inventors have, but as I believe he alone has succeeded in carrying his ideas into practical shape, I think the full credit of the invention is due to him, especially as he has always, in his published papers, shown the utmost readiness to admit the claims of other workers in the same field.

There is the less reason to describe his apparatus and method at length, inasmuch as he has already given full descriptions of it to the Society; indeed, it was here that the invention was first introduced to an English audience. I may, therefore, content myself with saying that he takes three pictures of his subject, through three coloured glasses, red, green, and blue. He thus obtains a picture formed by the red, green, and blue (or rather blue-violet) rays of light. This picture, remember, is just an ordinary photographic negative taken by light of a particular colour. It has no colour of its own. If now we take a positive transparency from each negative, and illuminate it by its own proper light, we get what we may consider the red, green, or blue image, the version of the original we should get by looking at it through red, blue, or green glass. If, further, we combine these images together, we shall get the effect produced by looking at the original through white glass, that is the original with the colours of Nature—always supposing our coloured glasses are so selected as to give, separately and in combination, the actual colours of Nature. The photochromoscope is an instrument in which, by means of suitable reflectors and coloured glasses, this is done. The three monochrome pictures are each illuminated by its appropriate coloured light, and the three coloured images thus produced are reflected through a single lens, and form a single picture in the eye. By suitable modifications they can be projected by the optical lantern on a screen, and made visible to a large audience.

Another method for producing similar results has also been brought out by the same inventor. Having obtained his three positives as before—this time on films of gelatin or other suitable material—he dyes each film of a colour complementary to that by which the negative was taken, viz.:—lemon yellow complementary to the blue-violet, cyan-blue complementary to the red, and magenta-pink complementary to the green. He then superposes the films one upon the other. On viewing them by transmitted light we get a picture in all its proper colours. The reason for using complementary colours is obvious when we remember that we have here a case of absorption, whereas in the photochromoscope we have a mingling of coloured lights. If we look through blue and yellow glasses superimposed, we get green. If we combine the light passing through separate pieces of blue and yellow glass, we get white. This method has the advantage that it does not require a special apparatus for its exhibition, but I understand there are certain difficulties in carrying it out practically which prevent its becoming as useful as it is certainly promising. At all events, Mr. Ives himself seems to prefer the more complicated method I have previously described.

A very ingenious method has been proposed for printing the three colours on a single film. This depends on the fact, discovered by Messrs. Cross, Bevan, and Green, that certain of the coal-tar colours are sensitive to light.*

When a fabric, stained with one of these "diazo-derivatives," is exposed under a positive transparency, the parts acted on by light lose their power of combining with certain colouring matters (naphthols, phenols, etc.) and remain unchanged, while the shaded parts are dyed, the colour depending on the particular reagent employed. To produce a coloured transparency from three negatives, first, the blue-printing negative is printed in a blue colour (to obtain this, the ferro-prussiate process is used, the diazo-compounds not giving a good blue), then the film is treated with the diazo mixture for producing red, and a print taken from the "red" negative. This combined print is again sensitised with the mixture for producing yellow, and a print from the "yellow" negative taken. The result is said to be a positive in natural colours. Three negatives are required, and three printings, but only one film. One defect in the process is stated to be that the prints fade when used in the lantern, and this is likely to be the case, for the coal-tar colours (or, at least some of them) bleach very rapidly in a strong light.

An obvious objection to Mr. Ives's process is the necessity for using three separate pictures. Dr. Joly and some other inventors have endeavoured to get over this objection by using a single variously-coloured screen composed of fine coloured lines, taking the picture through that, and backing up the finished positive with a similar screen. One would hardly have expected good results from such a process, and yet it does give very fair results. The effect of colour is well produced, but the picture itself shows the grating, and suggests rather a print from a coarse process block than a direct photograph. I have not, however, had an opportunity of seeing many examples, and I believe very few have been publicly exhibited.

We now come to what is, I think, the latest development of colour-photography—the very interesting process of Mons. Villedieu Chassagne, a process which a fortunate accident some time ago brought to my notice, and one which is, I think, of sufficient importance to justify its being brought before the Society even in its present stage.

The actual inventor of the process, I am told, was Dr. Adrien Michel Dansac, and it was worked out jointly by him and Mons. Chassagne; but the illness of the former incapacitated him from pursuing his researches, and the matter was left in Mons. Chassagne's hands alone.

There is this difficulty in the scientific discussion of the subject, that the process is in part a secret one, and it is impossible to regard it with quite the same interest as a process which one can follow out from beginning to end, as was the case with those other methods with the consideration of which we have previously been occupied this evening. Nevertheless, you will understand that I do not think that we have any reason to complain of an inventor who quite reasonably retains in his own hands the secret of his invention in order that he may reap from it his perfectly fair and legitimate profits. But if we admit the inventor's right to reticence, he must admit ours to suspended judgment. He must be content to submit to the severest examination and cross-examination. He must not expect to have any of his statements accepted until they have been verified by independent evidence or

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* Mr. Cross and his colleagues described the process in a paper read before the Society in January, 1891 (*Journal*, vol. xxxix., p. 150). Mr. Bothamley gave an account of this three-colour printing process, in *Photography*, June 4, 1896. According to his statement, it was devised by Messrs. Lumière and Segewetz.

supported by independent testimony. Let me add that there is a special difficulty in the way of a honest inventor in this particular subject, because so many pretentious schemes for the production of photographs in colour have been at different times foisted upon the public.

It is a matter for sincere regret that the publication of scientific advances should so often be hindered by commercial considerations. But we cannot help this. We must take things as we find them, and it would, I think, be foolish of us to refuse to avail ourselves of limited information because full information is withheld.

Regarding the matter in this light, I have very much satisfaction in being able to bring before the Society a process of extreme interest and great promise, and I do not hesitate to express the opinion that on the whole we ought to feel ourselves greatly indebted to Mons. Chassagne for letting us even as far as he has into his secrets. Few inventors are so liberal as he has been, and I hope it may not be long before he may be in a position to disclose the whole of his process, and give photographers the opportunity of working it out thoroughly for themselves.

The process, so far as we know it, is as follows:—A negative is taken on an ordinary gelatin plate, which has been prepared by treatment with a solution, the ingredients of which are unknown. The negative thus obtained shows no trace of colour, and appears in all respects like any other photographic negative. From it a print is taken on ordinary albuminised silver paper, which has been treated with the before-mentioned solution; or if a transparency is desired, on a gelatin plate prepared in the same manner as that which was used for the negative. This print shows no trace of colour either by reflected or transmitted light. The print when dry is washed over with the solution, and is afterwards treated successively with three coloured solutions—blue, green, and red—the operation being conducted in a bright light. As the solutions are applied the print gradually takes up its appropriate colours, the intermediate tints being, it is supposed, produced by a mixture or combination of the three primaries. That a yellow colour should be produced by a combination of what are presumably green and red pigments is not in accordance with expectation, for though red light and green light when superimposed produce yellow, we do not get yellow by mixing red and green colouring matters. Probably the yellow is produced by the application of a yellow dye mixed in the green solution, and not by a combination of colours.

It is to be noted that the process is not one for the direct reproduction of natural colours. It is rather one for treating a photographic print in such a way that it enables it, one might say, to automatically paint itself, to take up in the proper parts the colours which are required, rejecting them in the parts where they are not required. How this is effected is at present a mystery, and perhaps with the limited amount of information available it is not worth while speculating upon it. How a monochrome negative can confer on a monochrome print this power of selective absorption has yet to be explained. I can offer no suggestion on the subject. I am informed that a negative of a special character is required to produce the coloured positives, and that is all I know about it.

The results certainly are produced, and there seems no reason to doubt the good faith of those who state they were produced in the manner described. Of course when we are thus asked to accept facts without receiving an explanation of them, we require, as I said before, very strong evidence that the facts are genuine. Examination and experiment, so far as they have yet gone, have thrown no doubt on the statements made, and the inventor, I wish to say most distinctly, has offered every facility for inspection so long as the secret of his materials is respected. Sufficient time has not elapsed for crucial tests to be made, but we may reasonably expect that the process will stand those tests as well as it has those to which it has been submitted.

I have myself seen the colours applied in the way I have described, and the promised results produced. Mr. Herbert Jackson and myself took negatives on Mons. Chassagne's plates of various test objects. Mr. Jackson was afterwards kind enough to make some positives from these plates, and neither negative nor positive was touched, or I think seen, by Mons. Chassagne, until we placed them in his hands that they might receive their final treatment. On the application of the colouring solutions, we saw that the proper colours were produced.

Photographically, the results we obtained were very poor; the prints were extremely thin and unsatisfactory, as was not to be wondered at, since the negatives were taken on a dull foggy day. Nevertheless they showed a great deal more than traces of the proper colours. A blue china vase, with a piece of red ribbon tied round it, and containing a bunch of flowers, was reproduced with perfect accuracy, though the image was thin and faint. An Indian brass pot showed not only the yellow colour of the brass, but also distinctly metallic lustre. Altogether I can only say that the results of these experiments, so far as they went, satisfied myself, and I think the others who saw them, that the results were produced in the manner described. Were it not for the novelty of the process, and the difficulty of accounting for its results, it would be accepted without hesitation. Whatever hesitation exists is after all but a testimony to its importance.

I have been taken to task, by some of my friends, for accepting results so remarkable without evidence more substantial. I can only say that I think any of you who saw the process carried out would have arrived at the conclusions at which I arrived. All evidence is a contest of opposite improbabilities. It seemed to me more probable that the colours were produced in the manner stated than that the prints were first painted by hand, then bleached, and then the colours restored under my eyes, by the application of some mordant; or that the operator who seemed to be sluicing and dabbing his colour all over the print, was really painting it on in the proper places. I can think of no other alternative. Still I freely admit I shall myself like further proof. I look forward shortly to being supplied with the materials, and I shall not be absolutely happy until I have myself produced something which—however inferior it may be to the very beautiful examples we have here to-night—shall yet show the colours of an original subject taken by myself.

In a secret process such as this it does not seem worth while to speculate. First, because it is a waste of time guessing how results are produced that we may expect to have fully described to us in a short time; and, secondly, because it does not seem fair to use information published by an inventor for the purpose of finding out the nature of his invention and robbing him of the reward of his work.

I should like, however, to draw your attention to some more or less recent researches which indicate what has been done by workers in the same field, since they may help us to realise what probability there is of success being attained by this, or some similar process.

All I think are based on the process of Becquerel, to which I referred in an earlier part of this paper. Now very much depends on the manner in which the colour of the Becquerel films is produced; whether they are pigmentary or interference colours. If the latter is the case, the only hope for success is on the track which has been so successfully followed by M. Lippmann. If the former, there may be some hope by chemical treatment of so developing or reinforcing the colours as to produce results such as those we have seen this evening.

In an elaborate paper by Otto Wiener, to which my friend Mr. Bolas has drawn my attention, a method is suggested for distinguishing between interference colours and actual pigmentary colours, depending on the fact that interference colours change with the angle of view, while pigmentary colours do not. When tested by this method it was found that colours obtained by Becquerel's method on chlorinised silver plates were due in the main to interference, but that when chloride of silver in a flocculent mass was used the coloration was pigmentary in its nature, and the same colour was observed by reflected or transmitted light.

Up to the present no explanation has been offered why any coloured compound should correspond to the rays which produced it. But Wiener somewhat boldly hazards the theory that there is a potentiality of producing various coloured bodies in the action of light. He suggests that any given colour tends to survive under a radiation corresponding to itself, because it best reflects that radiation, absorbing it least, and being therefore least affected by it. In fact, he lays it down as a probable general law, that coloured illumination acting on suitable material generates pigmentary bodies of corresponding colours. The theory is interesting, and would answer many questions if it could be substantiated, but at present I know of no evidence by which it can be supported.

The chemical treatment of the Becquerel film has been attempted by very many. Success has been frequently announced, but very rarely attained. The most recent publication on the subject is contained in a paper brought by Mons. A. Graby before the Paris Academy of Sciences, an abstract of which, translated from the *Comptes rendus*, appeared in the *Photogram* for the current

month. An exposure is made on the surface of silver chloride in contact with various re-agents. So far as can be gathered from the abstract, it appears to be assumed that red, blue, and yellow sub-chlorides of silver exist in the film, or are produced in it by the preliminary exposure which is made before the exposure to the coloured image. The author appears to argue that the coloured chlorides are preserved in light of their own colour, and are destroyed or converted, by light of another colour acting on them in the presence of the re-agents specified. That chloride of silver can be obtained in a condition showing strong colours we know from the researches of Cary Lea in 1887, researches which attracted a great deal of attention at the time, but have not borne much fruit since.

In the year mentioned, he announced that the haloid salts of silver (chloride, bromide and iodide) could be obtained, by chemical treatment, of various colours, red, purple, and blue. Whether these "photo-salts," as Cary Lea termed them, are definite chemical compounds, or whether they are not of the nature of "lakes" (organic colouring matters precipitated in the presence of a metallic base, generally alumina) "physical combinations of unaltered haloid with the reduction product" (Meldola) is, I believe, still an unsettled question. If these photo-salts are of this character, and if they have the power of combining with colouring matters of their own hue, and if again a process for practically utilising these properties can be worked out, it is conceivable that pictures such as Becquerel produced might—if I may be allowed the expression—be so reinforced by the addition of colouring matters as to be turned into permanent coloured pictures. This, indeed, is mere speculation, and rather crude speculation, for it assumes a very great deal more than we have any right to assume.

At all events, we know that a certain amount of colour can be produced on films of silver chloride, and it is at least conceivable that the condition to which the chloride is brought when it shows colour, is also a condition which enables it to combine with colouring matters, though at present I do not know of a particle of evidence, apart from the evidence afforded by the pictures we have before us this evening, to justify such a proposition. However, we have much to learn on the subject of colour, and I believe M. Chassagne's invention will open up a fresh field for research to those who, like our Chairman, have added so much to our knowledge of photographic theory. I hope that Captain Abney will investigate the problem for us, and that before long he may give us a full and consistent theory of the whole subject. When he does, he will, I imagine, have added a good deal to our knowledge, not only of photography, but of the science of colour.

That the process is capable of very considerable development, I think can hardly admit of much doubt. The colours in themselves are capable of much improvement. The merits of the productions, you can, however, estimate for yourselves from an inspection of the very large number of examples which, by M. Chassagne's courtesy, I am able to show you this evening. The great bulk of them have been prepared during the past three weeks for the illustration of this paper, so that it is evident they can be produced rapidly, and I am informed that their actual cost is very moderate. I think, therefore, that we have here a process, even in its present condition, of considerable practical value, and one capable of producing results more likely to be turned to practical account than any other which I have seen.

The last things I hope to show you this evening are some photographs in colour produced by Mr. Bennetto, of Newquay in Cornwall. Mr. Bennetto tells me that he has been at work for many years upon the subject, and that he would have preferred to have delayed, until he could carry his researches to a further extent, the publication of the results he has obtained. Circumstances led to their publication last year, and as they were only shown to a limited number of persons in Cornwall, a good deal of incredulity was expressed in the technical papers, both as to the results themselves and as to the manner in which they were obtained.

Mr. Bennetto has not yet published his process, but he has kindly undertaken to show some of his results this evening, and this will be, I believe, their first public exhibition. I must allow them to speak entirely for themselves, but I am sure you will agree with me that we are greatly indebted to Mr. Bennetto for showing us the pictures; and, personally, I feel very much obliged to him for enabling me to make this communication as complete as it is by the inclusion of at all events, a reference to what, however they may be produced, are, without any question, among the very latest attempts to solve the problem of obtaining photographs in colours.

PHARMACEUTICAL SOCIETY.

EXAMINATIONS IN LONDON.

January, 1898.

MAJOR EXAMINATION.

Candidates examined	23
,, failed	9
,, passed	14

Barrie, Thomas Stewart.
Burgin, Mark Frederick.
Evans, Thomas James.
Hacking, Charles Harold.
Haley, Benjamin Pawson.
Hill, Philip Robert.
Holmes, John.
Jones, Ernest William.
Pattinson, Joseph.
Price, Edward George.
Shaw, William.
Shorrock, Mary.
Wild, Sydney.
Windemer, Oscar Roxburgh.

EXETER ASSOCIATION OF CHEMISTS.

At the annual meeting, on Tuesday, January 4, Mr. J. Hinton Lake, President, in the chair, the following officers were elected for the ensuing year:—President, Mr. D. Reid; Vice-President, Mr. J. H. Lake, jun.; Hon. Sec., Mr. P. F. Rowsell; Committee, Messrs. Lemmon, Milton, Stone, H. W. Gadd, H. Gadd, and Lake, jun. Mr. J. Hinton Lake was pressed to act as President for another year, but declined.

The Early Closing Question

was then discussed, and it was finally resolved—

That the President and Vice-President form a deputation to wait on the chemists of the city to ascertain their views on the matter and report to a subsequent meeting.

The Annual Dinner.

The meeting next considered the question of holding the annual dinner. It was resolved that the dinner be held, if possible, the first week in February, and that the Right Worshipful the Mayor, Mr. R. Pople, and the Sheriff, Mr. J. Delpratt Harris, be invited to attend. The arrangements were left in the hands of the Committee.

The New Pharmacy Bill.

—The question of the proposed amendment to the Pharmacy Act was then introduced by the Chairman, who said it appeared to him that the objects to be gained by the proposed amendment were these:—That associates, or rather, registered chemists and druggists, would, by the Pharmacy Acts Amendment Bill, 1898, become eligible as members of the Pharmaceutical Society by payment of subscription, and by reason of their membership would be eligible to sit on the Council of the Pharmaceutical Society. The only other advantage that he was aware of was that, by common consent, it had been allowed that pharmaceutical chemists should be exempted from sitting on juries.—Mr. H. Gadd said that was already allowed by Act of Parliament.—Mr. Lake, resuming, said that the exemption of pharmaceutical chemists from service on juries formed no part really of the Pharmacy Act, 1852, but was a provision of the Juries Act, 1862. Chemists and druggists had to serve if summoned. He might say that personally, as a pharmaceutical chemist, he felt extremely jealous of any infringement of the rights of pharmaceutical chemists, or of anything that would raise those who had not passed the Major examination to the status of pharmaceutical chemists; but it appeared to him that the immense amount of benefit which would be gained by the possibility—or he might say more than that, the probability—of increasing the ranks of those who were directly interested in the Pharmaceutical Society would surpass to a very great extent any small loss of dignity to himself and those who were pharmaceutical chemists. The proportion of those who at present were really closely connected with the Pharmaceutical Society was out of all proportion with what it should be, and he could only think that by making chemists and druggists eligible for membership in the Pharmaceutical Society a great advantage would be gained. He should propose that this meeting was of opinion that it was desirable to support the Council of the Pharmaceutical Society in its undertaking of the Pharmacy Acts Amendment Bill, 1898.—Mr. F. W. Vinden said of course if the Bill passed into law, the associates would

only be members, not pharmaceutical chemists.—The Chairman replied that there would still be the distinction of pharmaceutical chemist.—Mr. T. C. Milton said he had much pleasure in seconding Mr. Lake's resolution, because he had always been of opinion that they could not do too much to strengthen the Pharmaceutical Society. At present it was not a representative body. They could not say that it represented the chemists of the kingdom, and if they admitted those who had passed the Minor examination, it would very much strengthen their hands. With regard to the question of jury service exemption, it seemed to him almost a question of right that chemists should be exempted from serving on juries. He believed that, as a rule, pharmaceutical chemists were in such a position that they could better attend than chemists and druggists, and, therefore, the hardship came very much greater on ordinary chemists than on pharmaceutical chemists.—Mr. Lemmon observed that he saw no reason why, if pharmaceutical chemists were exempt, chemists and druggists should not be. The fact of their having passed a chemist's examination ought to exempt them.—Mr. H. Gadd said that the small number of chemists who belonged to the Pharmaceutical Society prevented the Society from having that power with the Government which it would otherwise have.—Mr. Milton again remarked that the Pharmaceutical Society could not be called a representative body.—Mr. Gadd continuing, said the Government knew quite well that the Pharmaceutical Society did not represent more than one-third of the chemists. He believed that if the membership of the Pharmaceutical Society were greatly strengthened, and it could go to the Houses of Parliament with the voice of the majority of the chemists, it would have more power. He was sure many chemists would be induced to join if they knew they could become members, and at the same time, pharmaceutical chemists would lose none of their dignity. He would like to go a step further and see a clause introduced into the Bill, giving pharmaceutical chemists the right of Fellowship to the Society.—The Chairman stated that he was in conversation with Mr. Hills when at Glasgow, and he said he could hardly see how that could be brought about. They would have to obtain a different charter to grant a title of Fellowship to a pharmaceutical chemist.—Mr. Gadd: An addition to the Charter?—Yes.—The Chairman remarked that the main object of the discussion that night was to support the Council of the Pharmaceutical Society in passing the proposed Bill, but they must go further than that if they wished to carry it into effect. They must see their Member of Parliament (Sir Stafford Northcote), and try as far as possible to induce him to fall in with their views on this matter and endeavour to secure his support when the Bill was brought before Parliament.—Mr. Lake's original resolution was carried, and the Chairman then moved that a deputation wait upon Sir Stafford Northcote, drawing his attention to the fact that the Association was in favour of the Bill, and asking him to do all in his power to promote the passing of the Act.—In reply to Mr. Lemmon, the Chairman said that many members of the Pharmaceutical Council were strongly of opinion that the Bill would become law.—Mr. H. Gadd seconded Mr. Lake's motion, and suggested that when the deputation went round to the members of the trade to ascertain their views on the question of early closing, they should also find out if they approved of the Bill. It would be useful to tell Sir Stafford Northcote that every chemist in Exeter approved of the Bill. Sir Stafford Northcote would be in Exeter the first week of February, and the deputation would have an opportunity of interviewing him then.—The resolution was carried unanimously, and the President, Vice-President, and Hon. Secretary were appointed the deputation.

Letters and Resolutions.

The Hon. Secretary reported that he had received a communication from the Federation of Local Pharmaceutical Associations, who held a meeting of delegates of various local associations in Glasgow in August last.—The meeting favourably considered the resolutions embodied in the Federation circular.—The Hon. Secretary also reported that he had received a further communication from the Federation, who had resolved, *re* Sanitas Company's advertisement, "to write inviting them to place their articles on the P.A.T.A. list. The selling price to be face value, supplies to retail at present rates." He did not think it necessary, on receipt of that letter, to call the members together, and he replied to it, stating that they were in favour of the things being placed on the P.A.T.A. list.—The Hon. Secretary's action was approved of.—Mr. Rowsell further reported that he had received a third communication from the Federation of Local Associations, with respect to the proposed amendment of the Pharmacy Acts.

With regard to the question of the Local Government Board and the dispensers, Mr. Rowsell moved:—

> That in the opinion of this Association the action of the Poor Law authorities in recognising dispensing by unqualified men constitutes a danger to the public and is a moral evasion of the Pharmacy Act.

Mr. Lemmon seconded the motion, because he thought that no Local Government Board dispenser should be an unqualified man.—Mr. H. Gadd supported, stating that the Local Government Board, by giving appointments to unqualified officials, constituted a great danger. The resolution was carried unanimously, and the Hon. Sec. was asked to forward the same to the Council of the Pharmaceutical Society.—The Chairman said it had been suggested that it was desirable that this Association should be affiliated to the Federation, whose object was to link together the various local associations for conference.—Mr. H. Gadd concurred. If they had an organised body they would be ready for any emergency at any time. They would be able to present a united front. Chemists' organisations throughout the country were very powerful. A resolution that the Association be affiliated to the Federation was carried.

Vote of Thanks.

Mr. Rowsell moved that a cordial vote of thanks be accorded Mr. Lake for the admirable manner in which he had carried out his duties as President during the past year and for his conduct in the chair.—Mr. H. Gadd seconded the resolution, which was carried by acclamation, and Mr. Lake, having replied, the meeting terminated.

ULSTER PHARMACEUTICAL SOCIETY.

The monthly meeting of this Society was held on Tuesday last, in the chambers of the I.O.F., Royal Avenue, Belfast, Mr. James Tate, M.P.S.I., President, in the chair. Owing to the inclemency of the evening the attendance was not as large as it would otherwise have been. The consideration of the P.A.T.A. movement, and a resolution on the subject received from the Northern Branch of the Chemists and Druggists' Society, was postponed to be a special meeting to be convened in the course of a few days, and some routine business having been transacted, the President called upon Mr. James Guiler, M.P.S.I., to read a paper on "Water, Its Composition and Impurities."—On the motion of Dr. Fielden, seconded by Mr. D. W. Elliott, a cordial vote of thanks was passed to Mr. Guiler, who suitably replied.

BELFAST CHEMISTS' AND DRUGGISTS' SOCIETY.

A specially convened meeting of the members of this Society was held in the Board-room, Garfield Chambers, on the evening of the 31st ult., to consider several matters of trade interest. Mr. John Watson, Vice-President, occupied the chair. There were also present Messrs S. Gibson, J. S. Shaw, W. J. Gibson, Joseph Richardson, James Richardson, James Browne, John Freckleton, S. Suffern, W. Shaw, and W. J. Rankin, Hon. Sec.—The Chairman said the object of the meeting was, among other things, to consider how they could best advance the interests of the P.A.T.A. He would rather, as a matter of fact, put the question thus:—How could the P.A.T.A. best advance their interests? The Society might be a very good one in its own way, and, he believed, was engaged in a good work, but unless the chemists and druggists could utilise it to their advantage, he thought it would be foolish to adopt it. The objects of the P.A.T.A. were, however, commendable. They all knew the prices of goods were very much cut, so if the P.A.T.A. would enable them to get fair prices, they should give it their hearty support. He understood branches of the Association had been formed in connection with different societies, and were working well, so there would be no harm in their giving it a fair trial. With regard to the Pharmacy Bill they were agreed that it was of a rather far-fetched character, and he saw it was down upon the agenda for discussion. He was pleased to say that their Society was on the whole in a flourishing condition, and he hoped the year they had entered upon would be even more successful than the one just completed. They wished their kindred Society—the Ulster Pharmaceutical—every success in their operations, and he was sure every member of the Chemists' and

Druggists' Society would do all in their power to give them a helping hand.—A report on the British Pharmaceutical Conference was presented by Mr. S. Gibson, who reported that the Conference had accepted the invitation from the pharmaceutical chemists and druggists of Ulster to visit Belfast in August, 1898, and hold the Conference there, and stated that both sections were working conjointly, and doing all they could to make the reception as complete as possible.—Subsequently, a somewhat lengthy discussion ensued on the P.A.T.A. question, and ultimately, on the motion of Mr. W. J. GIBSON, seconded by Mr. BROWNE, it was resolved :—

> That this Society thoroughly sympathises with the objects of the P.A.T A., which are deserving, in its opinion, of the hearty co-operation and support of the entire drug trade in the north of Ireland."

A committee, consisting of the Chairman, Messrs. S. Gibson, Jos. Richardson, W. Suffern, and the Secretary, was appointed to confer with the Ulster Pharmaceutical Society should they pass a similar resolution with the view of securing some advantages from the operations of the P.A.T.A. in Belfast and vicinity.—Mr. S. GIBSON reported that the Committee in charge of the Guarantee Fund in connection with the British Pharmaceutical Conference would meet at an early date.

TRADE NOTES AND FOREIGN NEWS.

INDIARUBBER CULTIVATION.—Since cycling has become so universally popular, there has been a greatly increased demand for rubber, and to meet this want numerous companies have been formed to acquire rubber property. But the *Financial News* believes that many of the prospectuses of such companies are prepared, and when circulated are read, in the belief that one tropical country is as good as another for successful and profitable rubber cultivation. Therefore, for the guidance of would-be investors it devotes an article to the subject, which is quoted by the *Chemical Trade Journal*, and gives some interesting particulars with regard to indiarubber-growing centres, the manner of cultivation and gathering, and the results obtained from the same species of plants in various countries. The most valuable rubbers are Bolivian and Para (both have touched 3*s.* 10*d.* per lb.), and are the product of various species of Hevea and of an allied genus, Micranda. There are practically no plantations of Hevea in Brazil, the family thriving best in their natural state, growing on land that is under water six months, more or less, in the year. Every attempt to cultivate Heveas commercially in other countries has failed. In Ceylon the trees appeared to thrive amazingly, but when tapped the yield was only about 25 per cent. of that obtained in Brazil, where the yield per tree varies from 1 lb. to 25 lbs. or 30 lbs., according to age, size, and situation. The best rubber tree for cultivation is said to be the *Castilloa elastica* of Mexico, British and Spanish Honduras, Guatemala, Nicaragua, Costa Rica, the Isthmus, and part of the United States of Colombia. The *Castilloa* is a totally different tree from the Heveas, and belongs to the same botanical order as the bread-fruit, whereas the Heveas belongs to the Spurges. The chief advantage offered by the *Castilloa* from the planter's point of view is that it will flourish on comparatively dry lands, while its yield of milk is nearly if not quite as abundant as the Heveas, but its rubber is of about 40 per cent. less value. West African rubbers are obtained from various species of Landolphia, all climbing plants, from *Ficus vogelii*, and *Kikxia africana*, but West Africa is not, and probably never will be, a favourable field for rubber cultivation, owing to climatic and other conditions. The principal rubber tree of India, Burma, and various other parts of the East is the *Ficus elastica*. It has been cultivated by the Indian Government in Assam, where promising results have been obtained, the average yield of fifty trees in one year amounting to 26 lb. per tree. The rubber from Borneo, Sumatra, and the Malay Archipelago is mostly derived from species of Willughbeia, and it is believed that in fairly healthy countries like the two first named and Java the cultivation of the best Willughbeias, *W. firma*, would pay well. In the United States of Colombia there are a number of rubber-yielders, which in all probability would pay well for cultivation.

ALBUMIN MANUFACTURE IN CHINA.—Several attempts made to establish albumin factories in China have failed in their purpose, but according to a recent report of the United States Consul at Chinkiang, the efforts of a German firm at that place have been attended with success. The surrounding country is noted for the rearing of fowls and ducks, and the eggs are preserved by a process which, it is claimed, will keep them good for ten or twenty years. The process is as follows : A lye of beanstalk and lime is made by burning these to a powder, which is then put in water, black tea-leaves and salt in certain proportions being added. This is boiled until all the water has evaporated, leaving the residue caked and hard. It is then pounded and the fresh eggs are placed in the preparation, with a little rice husk, where they remain 100 days, when they are ready for use. As soon as the eggs are received at the factory they are tested by means of a tin cylinder containing a lamp giving a powerful light concentrated on an opening, before which the eggs are held, when all specks and flaws are distinctly seen, the eggs showing the slightest defect being rejected. The good eggs are then broken and the yolk separated from the white, which is carefully cleaned of all stray clots of yolk, and is then either put through a course of stirring in a large vessel by means of a heavy rod or paddle worked by hand, when it is ready for the drying room, or it is run into large vats and allowed to ferment, the process of fermentation being accelerated by the admixture of certain secret chemicals. When all impurities have been deposited or thrown off in the form of a thick froth, the resulting liquid is albumin, as clear as water, and is ready for the final process of drying. This is accomplished in a series of three rooms, each hotter than the last, the temperature ranging from 40° C. to 50° C. A period of sixty or seventy hours is necessary for drying the albumin, which is run into shallow pans about 1 foot square. When thoroughly dry it has the appearance of isinglass with a yellow tinge, and after cooling it is packed in large square boxes holding about 400 lbs., and is then ready for shipment. The yolk of the eggs is also put through various processes, and is afterwards used in the preparation and dressing of superior leather goods.

TECHNICAL EDUCATION IN GERMANY.—In a report to the Foreign Office on the Leipzig Exhibition, 1897, it is stated that in Saxony almost all "Gewerblichen Schulen" (technical schools) are under the Ministry for the Administration of the internal affairs of the Kingdom. Many of the schools have been founded by the State, the others owing their existence to private enterprise. Early in the present year there existed in Saxony (not counting the mining and shipping schools and three State high schools) 270 trade schools, two of which are devoted to the teaching of druggists. Of these trade schools 166 were founded between the years 1874 and 1894. The sums expended by the Saxon Government for industrial and art teaching at the State schools are shown by the following figures :—In 1874, £11,439 ; in 1884, £23,136 ; and in 1894, £34,983. Forty-six other trade, agricultural, and commercial schools in Saxony were aided by the State in 1873 to the extent of £3090 ; sixty-two in 1883 received £4785 ; and in 1894 125 schools were subsidised with £8572. Very large sums have also been spent in late years on new buildings.

THE DINGLEY TARIFF AND GERMAN INDUSTRIES.—H.M. Ambassador at Berlin, in a memorandum on the influence of the United States tariff on German Industries, speaking of the Leipzig trade, states that the exportation of drugs, chemicals, oils, paints, will depend on the capabilities of American similar industries. The former tariff raised the duties on the chemical imports, but it was found did not affect German exports of the finer preparations, inasmuch as higher wages in America caused a high price there, and thus the profits on the German article were more than before, and it is expected that the same will be the case now, and that even with further high duties the exportation will not diminish. With regard to the whole German trade in chemicals and chemical preparations, it will not be much affected, as it is not much interfered with by the new duties ; and also because the chief German exports—tar colouring matter, scientific and pharmaceutical preparations and photographic chemicals—are so superior to those of all other states that people cannot do without them. A reduction in the exportation to America of textiles in which large quantities of colouring matter are employed is the only damage expected to accrue from the tariff.

ADULTERATED SAFFRON IN BELGIUM.—Breedenraedt reports on a sample of saffron which consisted of over 37 per cent. of exhausted saffron, coloured with vesuvine and dressed with barium sulphate.—*Journ. de Pharm. d'Anvers* 4, iii., 241.

DENTAL NOTES.

BROKEN NERVE BROACHES.

A 25 per cent. solution of pyrozone applied on cotton and left in root canal for a few days is recommended in *Items of Interest* as an easy way of removing broken nerve broaches.

SOME PRACTICAL HINTS.

The addition of 2 per cent. of silica to a gold plate is said to enable it to be melted over a lighted candle. A little resin applied to driving belt of the engine prevents it slipping. Instruments can be sterilised and saved from oxidation by boiling them five minutes in a 1 per cent. solution of sodium carbonate. Two parts of resin and one of bees-wax make a good sticky wax. Heavy pasteboard makes a capital vulcaniser packing. A little gum arabic added when rubbing borax down in water will keep the solder in its place. Oxyphosphate is the best thing with which to repair broken teeth of plaster models if sufficient time is allowed for setting.

HÆMORRHAGE AFTER EXTRACTION.

To stop hæmorrhage after extraction mix ordinary dental plaster quite stiff, and with a tightly-rolled ball of absorbent cotton press the plaster, one piece after another, into the socket until the bleeding stops. The plaster requires no further attention, and as the wound heals it is thrown off without having caused the least irritation.

FINISHING THE GUM.

When using plain teeth and pink rubber, instead of finishing the gum with file and sand-paper, use with the dental engine a large round bur, rather dull, and a smaller bur in the corners between the teeth. With a rapidly revolving bur carve the gum festoons, moving first vertically, then longitudinally. As the carving nears completion pass the bur lightly over the surface, then polish with brush wheels, pumice, and whiting. This gives the granular appearance peculiar to the natural gum, and not a perfectly smooth surface.—*Dominion Dental Journal.*

THE X RAYS IN DENTISTRY.

An interesting case of illustrating the injurious effects which frequently follow the injudicious use of the X rays is reported in the *American Journal of Dental Science.* A young woman suffering from intense pain in the jaw, which was supposed to arise from necrosis, had an X ray photograph taken to assist in determining the exact cause. The first photograph was not a success, so another was taken the next day with an exposure of twenty minutes. A few days afterwards the patient's face began to swell, and grew black. The hair on one side began to fall out, so that in a short time part of the scalp was bare. Her face was blistered, and sores formed all the way down her neck, shoulder, and arm. A scab formed over the blister, and when it fell off disclosed the raw flesh. Her left ear swelled up, and she lost the sense of hearing in it. Constant applications of oil were necessary to allay the pain arising from exposure of the flesh to air.

TREATMENT OF SENSITIVE TEETH.

An ingenious and effective method of treating sensitive teeth is described by Mr. Houghton in the *Journal of the British Dental Association.* A gentleman, aged sixty, had complained of pain in the left upper molar. There was much absorption, but the pulp was quite healthy. A gold plate was fitted over the exposed fangs, a model being first taken, which was pared away at the neck of teeth so that a band would fit beneath the gum. Chloro-percha was painted beneath the gum and the plate fastened with a pin and cemented the same as with a crown. The success was immediate, though before the plate was put on the patient could not bear either hot or cold water in his mouth. The tooth has remained quite firm and is doing good service. In the next case the symptoms were the same, but complicated by decay on the distal surface. The cavity was filled with artificial dentine, then a split band was fitted around the tooth, which was tightened up by means of a screw when in position. This case has proved equally successful.

THIRST AND DRY MOUTH.

Dissolve a teaspoonful of gum arabic in a glassful of water and add two teaspoonfuls of glycerin, then sufficient lemon-juice to flavour agreeably.—*Odontologie* [2], v., 306.

EXTRACTS FROM CONSULAR REPORTS.

THE METRIC SYSTEM OF WEIGHTS AND MEASURES has another advocate in Consul C. S. Dundas, of Christiania. After demonstrating that Germany has a larger share of Norwegian import trade than Great Britain, he states, in a recent report on the trade of Norway, that until British manufacturers are content to put the weights and measures of their goods in accordance with the metric system, they will always be at a disadvantage when dealing with foreigners.

THE EXPORTATION OF COD-LIVER OIL from Bergen amounted to 28,000 barrels in 1896, as against 33,000 barrels in 1895 and 52,000 barrels in 1894. The total produce of oil was smaller than it has been for the last fourteen years, and consequently prices were very high in the beginning of the season, best steam-refined medicinal oil reaching 180 kroner (£10) per barrel. The quotations towards the end of the year, however, were rather lower, being 120 kroner (£6 13*s.* 4*d.*) per barrel.

THE DRY DISTILLATION OF ACETIC ACID, wood naphtha (methyl alcohol) and tar from sawdust is one of the latest enterprises in Norway. A factory has been started at Fredrikstad capable of distilling 10,000 tons of sawdust during the year, and also of manufacturing charcoal briquettes, which are exported to the Netherlands. The acids are chiefly placed on the German market, while the tar is mostly consumed at home. The factory is said to be the first of its kind erected in the country.

THE OUTPUT OF MANGANESE at Kunui (Japan) during 1896 was only 478 tons, although 1591 tons, valued at £2242, were exported from Hakodate, the difference being made up by surplus stocks.

THE SUPERIORITY OF GERMAN TECHNICAL EDUCATION to that of Great Britain, according to Consul Wilfred Powell, is denied by many Germans who have studied the subject in both lands, but they admit that the application of this education in Germany is carried out to a more practical and useful conclusion than in England. Consul Powell thinks that British lads are not sufficiently educated in living "commercial" languages, and he advocates an exchange of pupils between English and foreign schools, so that pupils could acquire a knowledge of a language in its own country.

THE HONG KONG IMPORT OF INDIAN OPIUM for the year 1896 shows a decrease of 2400 chests, and importers have sustained losses owing to the unfavourable rupee exchange without a corresponding rise in the price of the Indian drug in the China market. It has risen sufficiently, however, to give an impetus to the production of the native drug, and this, together with the shortness of the Bengal opium crops year after year and the diminished auction sales of the Indian Government, are factors affecting the price of the Indian drug to such an extent that, if such conditions continue, the native product must eventually supplant the imported drug.

THE NON-EXISTENCE OF PATENT LAWS in Roumania has made it possible for the "Holden" apparatus, for the use of petroleum fuel by locomotives, to be imitated with impunity. According to the British Vice-Consul at Bucharest, twenty of the 450 locomotives in Roumania have already been fitted with this apparatus, and it is ordered to be placed in thirty more, while in three years' time it is expected that the new motive power will be applied to all the locomotives in the country. The "Holden" apparatus, it is understood, is being copied by a Roumanian firm—"E. Wolff"—located near Tilaret, on the outskirts of Bucharest, at a cost of 400 francs less than in England.

STAR ANISE TREES are extensively cultivated in Kwangsi (China), the oil being drawn from the fruits by distillation. The trade is steadily growing, and promises to attain very large proportions £85,600 being realised in 1894 from aniseed and aniseed oil.

THE RICHEST QUICKSILVER DEPOSITS known to the world are reported to be at Kweichow (China), while the mountains of Kwangsi are rich in minerals such as gold, silver, copper, iron, and coal. Another province, Yunnan, furnishes copper and salt. The mines, however, are as yet but little worked.

NEW REMEDIES.

Unfavourable Results with Trional.—Kaempffer gives several instances of persons suffering with cancer of the stomach or liver to whom was given 15 grains of trional, which caused, instead of sleep, restlessness, anxiety, palpitation of the heart, and illusions, which lasted all night. In one case a smaller dose produced sleep for 6 or 7 hours; in others no change resulted from lowering the dose.—*Mod. Med.*, vi., 66, after *New York Med. Journ.*

Di-iodo Acetylene and Tetra-iodo Ethylene.—The latter body has been recommended as a substitute for iodoform, especially in France, under the appellation of di-iodoform. Biltz prepares it from iodine and iodide of potassium by the aid of calcium carbide. Fifty grammes of iodine are dissolved by heating in a concentrated aqueous solution of 25 grammes of potassium iodide, and the solution is cooled to about 0° C. Small portions of roughly-powdered calcium carbide are very gradually added with continual stirring. The equations—

$$C_2Ca + 4I = C_2I_2 + CaI_2$$
$$C_2Ca + 6I = C_2I_4 + CaI_2$$

illustrate the action. The product containing acetylene di-iodide, and ethylene tetra-iodide is separated, the di-iodide obtained in colourless volatile needles, which are readily soluble in most solvents, while ethylene tetra-iodide, which is more difficult to dissolve, forms yellow non-volatile and odourless crystals of the formula C_2I_4, melting at 187°. The author states that acetylene di-iodide is virulently poisonous to micro-organisms, and is one of the most active preventatives of decomposition. It is, in fact, only equalled by the extremely poisonous cyanogen iodide. In the animal body it is apparently effective by liberating iodine, a part, no doubt, passing undissolved through the body. Ethylene tetra-iodide exercises the same healing influence on wounds as iodoform, but is preferable in use, being odourless.—*Pharm. Zeit.*, xlii., 448.

Application for Sycosiform Eczema.—Styrax, 10; ol. amyd. dulc., 30; sulphur precip., 1. For external use.—*Pediatrics*, iii., 357.

Sodium Formate in Pneumonia.—Rochon finds formate of sodium to be a useful remedy in pneumonia, especially in the croupous form to which children are subject. To these it is given in daily doses of 30 to 50 centigrammes; adults may take from 1 to 2 grammes. The fever rapidly diminishes and profuse perspiration is produced, together with a slight looseness of the bowels.—*Pharm. Zeit.*, xlii., 546.

Airol Paste for the Occlusive Dressing of Sutured Wounds.—Bruns recommends the following paste for covering surgical wounds and sutures:—Airol, mucilage of acacia, and glycerin of each 10; white bole, 20. This is applied with a spatula over the wound and adjacent parts, and firmly pressed into the orifices of the sutures with the fingers, then covered with a layer of cotton.—*Therap. Woch.*, xliv., 545.

Further Report on Sanoform.—Originally introduced by Arnheim (*Ph. J.* [4], 11, 422), di-iodomethyl-salicylate or sanoform, has been found by Sternberg to be in every way a desirable substitute for iodoform. It is odourless, gives rise to no irritation, and is perfectly harmless. Employed as a dressing in thirty-seven cases of recent wounds, a complete cicatrisation resulted, in most cases in two to four days with one dressing, and in all, complete healing followed a second application. Similar good results were obtained in the treatment of abcesses and ulcers; fissures were rapidly healed by a 10 per cent. sanoform ointment with lanolin, and the powder itself was successfully employed in slight tearing of the perineum. Sternberg strongly advocates the use of sanoform in private practice.—*Nouv. Rem.*, xiii., 530, after *Therap. Monats.*

Starch Iodide as a Veterinary Antiseptic Dressing.—Perçus calls attention to the value of starch iodide in veterinary work, particularly in the treatment of the wounds and excoriations caused by ill-fitting harness. It does not stain the hands, and is free from the objectionable odour of iodoform.—*Vet. Record.*, ix., 559, after *Journ. Vet. Méd. et Zoot.*

LETTERS TO THE EDITOR.

The New Pharmacy Bill.

Sir,—I have followed with great interest the correspondence respecting the new Pharmacy Bill. The supporters of the measure seem to overlook the fact that the privilege of membership was the chief attraction for students to take the higher degree. In my own case the title Pharmaceutical Chemist offered no inducement whatever, and I continued my studies for the sole object of becoming a member of the Society. This position is now becoming generally understood, not only by the medical profession, but also by the public at large, and it is a most unjust proceeding to rob those who have been more industrious of the fruits of their labours. I feel sure very few of the chemists and druggists on the Register would accept, by paying a subscription, that which might have been easily and honourably won by industry and study. On the other hand, the successful passage of this Bill through Parliament would cause a large secession of pharmaceutical chemists. I sincerely regret to notice that some of the promoters of this change have used the statement (as an argument), "the present Minor is practically as difficult as the Major was ten years ago." Was not the Minor correspondingly easy at that period? In these and all examinations in science it is obviously unfair to compare one at the present time with the other as it was ten or fifteen years ago. Major men are asked to be generous; but it is no small thing when it is proposed to deprive them of the only advantage they enjoy.

Waterloo, December 29, 1897. Wm. Pearson.

Sir,—As a chemist and druggist (Minor) I should like to express my views on this new Pharmacy Act Amendment Bill. I think it only just to the Major men that they should have a distinguishing title, let it be Fellow, or anything they please, but I think they have already one and that a protected one, "Pharmacist," as no one is allowed to assume that title unless they are pharmaceutical chemists. For my part I do not think it will be the question of title that will bring in the outsiders to the ranks of the Society, and I feel that loyalty to the craft as a brotherhood should do more than granting the title of Member, as in every other branch of labour nearly there is federation of members or trades union, and why might not our *confrères* form such a union by joining our legally established union and interest themselves in the government of the Society? It appears to me that the feud arising between Professionalism *versus* Trade is the cause of the mischief, and that while our Society is aiming at the first, affecting to ignore trade interests, our members are aiming at the latter, as they cannot afford to ignore them. If such were not the case, why do we see so much puff by advertisement of So and So's this, that, and the other as reliefs and cures for all kinds of ailments? To take up the professional side of the question, all such advertisement should cease, as with doctors, who are not allowed to advertise in any way. Again, the Society, aided by medical men, ought to be able to put a stop to the indiscriminate manufacture of medicine under cover of the Patent Medicine Stamp (so-called patents), as these may be, and very likely are, made by the greatest amateurs in the knowledge of medicine. The Society, if they have not the power, should seek powers of compulsory registration, licence, and control of every business in the country to see that every man whose name is on the Register is properly qualified and duly carries out the requirements of the Pharmacy Act. It is the *non possumus* attitude of the Society that causes such disaffection in our ranks. I have been tempted to give up paying my annual subscription on account of it. When an unqualified man in this town was prosecuted for infringing the Act and paid four or five penalties into court, thus avoiding publication of the fact that he was not a chemist, I wrote the Registrar of the Society, who told me "the Society could not publish the fact under the law of libel." I naturally asked, Why pay to support such a useless body? Why could they not prosecute and inform defenders that whether they paid penalties into court or not, the offence would be published in the interests of the public, whom the Society are called into existence to safeguard, and their action would be taken as privileged "for the safety of the public"? It is on account of loyalty to the Society that I shall continue to pay my subscription, and I hope many others, in fact, all, will do the same; if not, let it once be known that the Society intends to seek powers of compulsory registration, and paying the fee as a

licence, and then we shall see such a number flocking to the ranks of the Society as we never have had.

Torquay, January 1, 1898. W. J. RAWLING.

Sir,—I notice that although it is stated in the opening sentence of the "Draft Pharmacy A. A. Bill" that "Pharmaceutical Chemist" and "Chemist and Druggist" shall have the same meanings as in the Acts of 1852 and 1868, some of your Major correspondents object strongly to it as an encroachment on their privileges, but yet do not suggest anything in its stead. As there are more sides than one to every question, it may not be amiss to look at it from another point of view. I am an "associate not in business," and subscribe to the Benevolent Fund, the extent of my privilege consists in receiving the Journal, permission to visit 17, Bloomsbury Square, and, so far as the annual subscription goes, the Journal is well worth the money. Of course, perhaps one ought to be in business, but there must be many men like myself who, although no longer young, are not in that position. Many, undoubtedly, must be very capable, both from the professional and business point of view, but on account of not being in business have had neither vote in electing the Council nor voice in its representation; in fact, we have been left decidedly in the cold. I have always thought the Society would eventually alter so unsatisfactory a state of things, and should be sorry to see this attempt by the Council at betterment frustrated. Indeed, looking at the number unassociated with the Society, I cannot help thinking had a more generous spirit prevailed towards the "associate not in business," that the strength of the Society would be much greater not only in Minor men, but also in Majors, as a healthy interest in its matters might have induced many who had the time and means to have gone in for the Major examination; at any rate, many would have been friendly who, to say the least, if not inimical to the Society, seem to take no interest in it whatever. However, the large number outside seems to me to be very unsatisfactory. The fear of the examinations being interfered with and their standard lowered is, I should be inclined to think, groundless, as with the greater facilities for education, the increased opportunities that the present-day student has, which were entirely lacking only a few years ago, any backward movement would be fatal. We must go forward; it is a duty alike binding on masters, assistants, and apprentices. Personally, I should be very sorry to receive any advantage to the detriment of Major men, or to appear anything more than the Minor examination entitles one to, and should regret if the proposed Bill caused any bitterness or ill-feeling; we cannot afford to quarrel. The idea of the Bill, all should remember, is to consolidate and strengthen the Society, and thereby enable it to render services by which we may all reap advantage—Majors and Minors alike.

London, N.E., January 3, 1898. J. WELLBURN.

Sir,—Judging from the correspondence columns of the Journal, there seems to be a considerable amount of irritation amongst certain pharmaceutical chemists concerning the supposed iniquities of the new Pharmacy Bill. Perhaps justice might have been done to chemists and druggists by allowing them a third or half the seats on the Council. Still, it cannot be denied that by the abolition of a privileged party future friction will be avoided. But has the Council acted wisely, or might I say diplomatically, in refusing to give a "Fellowship" to the pharmaceutical chemists? If local association meetings are any indication of the feeling of the country, such a distinction between the two qualifications would have been quite acceptable to the chemists and druggists, and would in all probability have satisfied the malcontent pharmacists. As no difference in privileges would exist between the Fellows and the members, any rivalry between the two would be impossible. The Royal College of Veterinary Surgeons is conducted on similar lines. The highest examination confers a Fellowship of the College, which is purely honorary in character and carries with it no privileges. I cannot but think that the Council will make a mistake by abolishing all differences between the two qualifications. It would be far more to the interest of the Society to give the Minor men the title of "pharmaceutical chemist" and reserve membership for the Majors, thus practically compelling the latter to become members of the Society, whereas under the proposed arrangements large numbers of pharmaceutical chemists who are at present members will probably sever their connection with the Society. It seems a very small matter, but it may be the means of wrecking the Bill.

Eastwood, Notts., January 3, 1898. F. D. F. CHAMBERS.

ERYTHROL NITRATE IN MEDICINE AND PHARMACY.

Sir,—The conditions under which erythrol nitrate is explosive are apparently not well known. After the publication of Professor Bradbury's researches on its physiological action I tried several experiments with it. I was unable to explode it on concussion in its pure state by hammering a little on an iron plate at the ordinary temperature, but if heated to about 130° F. it readily exploded on being struck, and even on rubbing the hammer on a stone to polish and clean it, thus slightly warming it before striking the erythrol nitrate, the latter exploded after two or three strokes. I found, however, that like nitro-glycerin, it was soluble in fats and oils; it readily dissolved in the fat of chocolate, which solution was stable and could be safely cut into tablets for medicinal use. Of these I have prepared a number of small quantities. Since the fatal accident we have further experimented in my laboratory with the object of ascertaining what admixture of other substances used in pharmacy will render it more explosive. (1) We find that if a little be heated on platinum foil it deflagrates with a flicker. (2) A trace triturated violently in a porcelain mortar does cause slight explosions. (3) Mixed with a little milk sugar we could not explode it by striking it with a hammer at ordinary temperature, or even after moistening the mixture with spirit, but only a little was tried. (4) A trace of an oxidising agent such as silver oxide, mercuric oxide, potassium permanganate, potassium chloride, or potassium nitrate, as well as reducing agents, such as reduced iron, charcoal, hypophosphites, pyrogallol, morphine, and creosote, all seemed to render the erythrol nitrate more readily explosive by concussion. Erythrol nitrate melts at 142° F., and neutral fats and oils dissolve it to the extent of one-fourth their weight when gently warmed, but on cooling much of the nitrate crystallises out. Nevertheless, this fatty coating of the crystals is a protective, as I find that chocolate tablets can be prepared to contain a large dose of the nitrate by adding an excess of fat. I have failed to make these explode by violent hammering, although they contain a quantity of the crystals. It is desirable, however, to use such a quantity of chocolate that the erythrol nitrate may be in complete fatty solution in the tablets.

10, New Cavendish Street, W. WM. MARTINDALE.
January 4, 1898

Sir,—I can quite endorse the remarks of Messrs. Parsons and Langford-Moore with regard to the dispensing of erythrol tetranitrate. We, too, have dispensed in this hospital a large quantity of the compound during the last two years, both in the powder and liquid form. We have always powdered it in a dry mortar, exercising due precaution, well knowing it to be of an explosive nature, and in no way have we experienced any trouble with it. With a little care it does not appear to be dangerous. But if Mr. Parsons will take 5 grains of erythrol tetranitrate and rub it gently to powder in a dry mortar, and then strike the powder quickly with his pestle, he will get a report and a flash of light equal to that given off from a small cannon, and his mortar will be blown to pieces. I have some practical experience of this, but not in dispensing the chemical; consequently, I can quite understand that if a report like this can be got from 5 grains, the intensity must have been terrible from 4 ounces. Therefore, it is easy to conceive that the unfortunate chemist must have in some way or other dropped his pestle on the erythrol suddenly and with great force, or possibly for the express purpose of bringing it to powder quickly; hence the explosion. There is a possibility also of the erythrol containing as an impurity some of the allied explosive compounds. I may add that the largest quantity of erythrol tetranitrate we have powdered at one time has been one hundred grains

Bristol Royal Infirmary, F. J. KILNER.
January 4, 1898

Sir,—I have looked through several accounts of this unfortunate affair and have failed to discover what was the kind of mortar and pestle employed in the operation. It surely is a question of some importance, and the facts ought to be recorded. I would venture to suggest that triturations of that dangerous sort should be conducted in a mortar with very smooth surface, that the pestle should be of wood, and the stirring knife of bone

Weymouth, January 4, 1898. THOS. B. GROVES.

The General Index to the Journal.

Sir,—As one of the first to suggest to you the importance of a General Index to the Journal being published, and perhaps one of the most persistent inquirers for it since, may I be permitted to point out to those chemists who are not in the habit of using general indexes some of the advantages such works possess. This seems necessary, because the limited number of those who think such a veritable "Enquire Within" upon everything connected with a chemist's business worth having, appears to indicate either a lack of knowledge or a want of business foresight that in either case is lamentable. The number of applications addressed to me for information almost every day concerning articles that have already been described in the Journal, and concerning which the literature therein is often considerable, indicates that the writers are not in the habit of keeping their Journals bound, or even of keeping a file of the annual indexes. There are constantly coming into vogue new remedies, and as soon as these are described they appear in our Journal, but as it takes usually a year in the larger cities and sometimes three years in provincial towns before new remedies come into demand, the notices in the Journal are by that time forgotten. As a rule, medical men will make inquiries of such chemists as they know and respect concerning new remedies, and the chemist who has on his desk a General Index can refer at once to the literature concerning them, instead of appearing to be behind the times by having to confess ignorance, or writing to the Journal for information. The saving of time so effected and the enhancement of reputation so obtained will repay over and over again the guinea expended on the Index. It is strange to see chemists so blind to their own interests that not even 200 can be found in three months willing to make a business investment of this kind. But when one finds that the last General Index, published in 1880, was given away, and that so many chemists would not even take the trouble to ask for it, it is easy to understand that the Council is not willing to throw away money on work that is not appreciated, and that it is left to private enterprise to furnish what every chemist wide-awake to his own interest should be anxious to have on his desk. Some years ago a very shrewd man of business said to me, "If you want to make a good investment, and earn a reputation for learning, get all the general indexes you can and use them." I was so much impressed with the idea that, since the last General Index was published, I have, week by week, had two copies of the *Pharmaceutical Journals* cut up, and all the scientific information concerning vegetable drugs cut out, pasted on paper of uniform size, and arranged alphabetically in boxes. Although this has entailed a considerable amount of time, it has saved an infinitely greater amount in my daily work as Curator. I may add that I am not personally interested in the matter, but as a member of the Society I do view with regret the apathy which leads chemists to ignore what may be made to add to their income, and to neglect their own interests as in the analogous case of the Council elections, when not half trouble to return the voting papers sent out, or as in that of chemists and druggists who refrain from joining the only corporate body which is, or is likely to be, recognised by Government as representing their interests, and through which alone any measures affecting the craft can be presented for consideration. It is to be hoped that the activity now being displayed by various local associations, and the greater increase in social meetings amongst chemists generally, will tend to promote a state of things that will result in the chemists of this country forming a compact, strong, united, and active body.

Sevenoaks, January 5, 1898. E. M. Holmes, Ph.C.

OBITUARY.

Frost.—On November 26, 1897, Robert Kirton Frost, Chemist and Druggist, Sunderland. Aged 62.

Hares.—On December 19, 1897, Samuel Hares, Chemist and Druggist, Prees, Salop. Aged 81.

Bulmer.—On December 25, 1897, Thomas Porter Bulmer, Chemist and Druggist, York.

Foster.—On December 25, 1897, Frederick Foster, Chemist and Druggist, Brighton. Aged 92.

Wilson.—On December 26, 1897, Isaac Wilson, late of Crook, Durham. Aged 55.

ANSWERS TO QUERIES.

Powder for Sheep and Hoggets.—The braxy powder you send is simply a mixture of ground Epsom salts and nitrate of potash tinted grey with a little lampblack. [*Reply to* J. H.—2/34.]

What to Study.—You should get a good grounding in all the subjects, and would do well to consult our Students' Number (p. 231, *et seq.*), published September 11 last, for advice how to proceed. [*Reply to* S. P. S.—3/10.]

Taxine.—It is evident that your search "in many up-to-date works" has not included the *Pharmaceutical Journal*. In the issue for September 5 last, p. 215, you will find full details of all you require. Wortley (*Ph. J.* [3], xxiii., p. 182) states that the alkaloid only occurs in the male yew, and that the female tree is harmless. [*Reply to* X. Y. Z.—2/29.]

Microscope.—Get a Leitz stand fitted with $\frac{2}{3}$-inch and $\frac{1}{6}$-inch objectives, double nosepiece, and a sub-stage condenser. If, subsequently, you add a $\frac{1}{12}$-inch homogeneous immersion objective, you will have an outfit sufficient for any work you may require to do. C. Baker, optician, High Holborn, W.C., can furnish you with a list of Leitz stands and objectives. [*Reply to* S. P. S.—3/9.]

Chemistry of Ligustrum Vulgare.—According to Polex (*Archiv Pharm.* [2], xvii., 75), the leaves of privet yield a yellow bitter principle—ligustrin, which gives a blue coloration with sulphuric acid and they also contain mannite. Stenhouse (*P. J.*, [1], xiii., 384) states that the leaves of privet contain quinone. Reinweide isolated a colouring principle, which he called ligustrin, from the berries. We are unaware of any recent work upon the plant. [*Reply to* Hammond.—2/4.]

Glycerin Suppositories.—Stearin soap is recommended to make suppositories containing 95 per cent. of glycerin. The basis is made from stearic acid, 2½ drachms; sodium carbonate, 75 grains; glycerin, 5 ozs. by weight. Heat the stearic acid and glycerin together so as to just melt the former; then add the soda, and, when it has dissolved, pour into moulds. These suppositories are very elegant, but are said to become hard on keeping. Practically, the official form, containing 70 per cent. of glycerin, is quite as efficient as any, and that basis keeps well when properly treated. [*Reply to* J. E.—2/16.]

Linimentum Terebinthinæ, B.P.—A great deal depends on the quality of soft soap used, and more still on the degree of rubbing. Following the official directions and gradually adding the camphor and turpentine solution to the mixed soap and water in a mortar, a thick cream-like mass should ultimately result. Professor Redwood, who devised the formula, said (*P. J.* [3], xvii., p. 742) that it should be a thick permanent emulsion. A fluid liniment may be made in the same way by doubling the official quantity of water, but the result will not be lin. tereb., B.P. The variation in colour which you have observed is no doubt due to the soft soap employed. You will find a good deal of information on the subject in *Ph. J.* [3], xviii., pp. 473, 858. [*Reply to* S. P. S.—2/26.]

Beginning Botany.—As far as geographical location goes we cannot agree that you are unfavourably situated for learning botany. Your best plan will certainly be to join the Science and Art Department's class on that subject in your city, and supplement the lectures by work of your own. At first, use Holmes' 'Botanical Notebook' and Oliver's 'Lessons in Practical Botany,' or Scott's 'Practical Botany'; for field work, John's 'Flowers of the Field.' As you get more advanced take Green's 'Botany' and Bentham and Hooker's 'Handbook of the British Flora.' By thus combining reading and practical work you will find the work much more interesting and, therefore, more valuable. For histological work you will find Bower's 'Elementary Practical Botany' a good introduction to more advanced study, which should be based on Strasburger's classical work. We are always glad to answer such queries as yours, so do not hesitate to write again if you require assistance. [*Reply to* S. P. S.—2/27.]

COMMUNICATIONS, LETTERS, etc., have been received from

Messrs. Carter, Chambers, Christy, Curtis, Deed, Evans, Ford, Groves, Hogg, James, Jesper, Jolly, Kilner, Lee, Lewis, McDougall, Masters, Martindale Prebble, Rawling, Reade, Stainer, Stead, Wellburn.

Pharmacy and the Allied Sciences.

A REVIEW OF CURRENT WORK.

Percolation of Syrups.

J. K. Williams, whose useful practical paper was referred to last week (see p. 23), proposes a modification of the U.S.P. method of preparing syrups by percolation. In place of the plug of sponge, which is directed to be pressed down into the neck of the percolator, he inserts a grooved cork in the neck, and over that he places "a thin, broad piece of fine sponge, with a nipple-shaped projector, double the thickness of the rest, in the centre, to rest on the cork, serving as a diaphragm." A wedge-shaped stick is used to level and loosen the sugar in the bottom of the percolator, when nearing the end of the process, so that the dropping is maintained uniformly to the end and no channels are formed. Loaf sugar is preferred, and it is recommended that, as soon as the fluid begins to drop, the orifice should be closed for twelve hours, so that the sugar may be partially dissolved before percolation is allowed to proceed.

Extemporised Medicated Waters.

The same worker suggests that essential oil from which a medicated water is to be prepared, should be mixed with equal volumes of alcohol and glycerin. Two filter papers are then folded together, opened out again, and the oily mixture spread on the surface of the inner filter by means of a glass rod. Again fold the filters, place in a funnel capable of resisting heat, and pour in the full quantity of water at about boiling point. The first filtrate is received in the measure in which the oil has been mixed with the alcohol and glycerin, stirred with the glass rod, and returned to the filter. When the whole of the water has passed through, it is again returned, and this operation is repeated two or three times. Camphor water may be similarly prepared, if the camphor be first dissolved in its own bulk of alcohol, and the same quantity of glycerin then added. It is recommended that all medicated waters should be made every two or three weeks.

Pill-coating with Salol.

The following method is recommended in the *Pharmaceutical Era* for giving pills an attractive appearance when coated with salol. A little salol is melted in a dish, and the pills, which must be dry and hard and free from powder, are rotated in the melted substance. The coating will at first be rough, but may be made perfectly smooth by transferring the pills to an empty evaporating dish which has been heated just sufficiently to slightly re-melt the outer surface of the salol. By rotating them on this dish they soon become perfectly smooth and glossy; they should then be turned out on to a wooden slab or burnisher, as they will not stick to wood.

Purification of Wool-fat.

Hurwitz gives the following process for the preparation of medicinal wool-fat from the crude article or "degras." Melt the wool-fat on a water bath in a vessel of large capacity. Add to it sodium carbonate, stirring until the mixture is strongly alkaline to litmus, and add enough water to make a thin emulsion. Boil for about fourteen minutes, then add enough salt until the emulsion is broken up. Remove the partially saponified fat and empty the vessel. Again fill the vessel with water and boil, and while boiling add to it the saponified fat in small portions. Skim off the fat as it rises to the top, and after all is skimmed off knead it with successive portions of water until the liquid remains clear after being kneaded with the fat. Again heat the fat with water and while hot skim off the fat, afterwards evaporating on a steam bath until it is practically anhydrous. Crude wool-fat is bought on the market in America in large quantities at $2\frac{1}{2}$ cents per lb., and in small quantities would probably cost about 4 cents per lb. The cost of obtaining 1 lb. of purified wool-fat is said to be: $3\frac{1}{2}$ lbs. crude wool-fat, 15 cents; sodium carbonate and salt, 2 cents; fuel, 5 cents. Total 22 cents. If prepared on a large scale the cost ought to be, of course, considerably less. From this the author concludes that if the pharmacist uses it in large quantities it would pay him to purify the crude wool-fat himself. At any rate, it shows that the prices charged for the purified fat on the market are too high, even if a fair profit is allowed.—*New England Druggist*, ix., 650.

Commercial Picrotoxin.

According to Meyer, commercial picrotoxin is not constant in composition, the melting point of samples varying between 193° and 200° C. This should not be, since it is easy to obtain the pure article, melting at 199° to 200° C., by a few recrystallisations from alcohol and water. Picrotoxin is stated to be not a simple body but a compound containing 34 per cent. of picrotin, $C_{15}H_{18}O_7$, and 66 per cent. of picrotoxinin, $C_{15}H_{16}O_6$.—*Pharm. Cent.*, xxxviii., 421.

Sodium Flame in Polarimetry.

Those who have occasion to conduct many polarimetric observations will have found sodium chloride, the usual means of obtaining the yellow light, far from being satisfactory for the purpose. According to Dupont, a mixture of sodium chloride and tribasic phosphate, melted together in about molecular proportions, affords a very satisfactory means of producing monochromatic light. The mixture is more easily melted than the chloride alone, and gives a brilliant light of remarkable persistence.—*Ann. de Chim. Analyt.*, ii., 267.

Soluble Starch.

Syniewski reports that starch may be converted into the soluble form without production of dextrin by treatment with sodium peroxide. To a solution of 50 grammes of the peroxide in 500 C.c. of well-cooled water a mixture of 50 grammes starch with 500 C.c. water is added with stirring. A jelly is formed, which becomes perfectly liquid after an hour, copious evolution of gas taking place meanwhile. On adding alcohol (95 per cent.) a viscid precipitate is thrown down. It is separated, dissolved in cold water, neutralised with acetic or hydrochloric acid and again precipitated with alcohol, these operations being repeated until the product is quite free from ash. Finally, the precipitate is triturated with absolute alcohol, washed on a filter with ether, and dried in a vacuum; it then has the appearance of a snow-white amorphous powder, without taste or smell, having a composition represented by the formula $C_{18}H_{32}O_{16} = 3C_6H_{10}O_5 \cdot H_2O$, or a multiple of it. The substance is readily soluble in cold water; it gives, with iodine, a clear blue coloration, and the yield amounts to 90 per cent.—*Berichte*, xxx., 2415.

Densities of some Gases.

Lord Rayleigh, in a paper read before the Royal Society, states that the mean density of carbonic anhydride, after correction for errors of weights and for the shrinkage of the globe when exhausted, is 3·6349, corresponding to 2·6276 for oxygen, the globe being charged at 0° C., whilst the actual pressure was that of the manometric gauge at about 20°, reduction being made to 15° by the use of Boyle's law. Under similar conditions, the mean value for carbonic oxide was found to be 2·29906, and that of nitrous oxide 3·6359. The densities of various gases relatively to air (1·00000) were determined to

be :—Oxygen, 1·10535 ; nitrogen and argon (atmospheric), 0·97209 ; nitrogen, 0·96737 ; argon, 1·37752 ; carbonic oxide, 0·96716 ; carbonic anhydride, 1·52909 ; nitrous oxide, 1·52951. The value obtained for hydrogen upon the same scalc—0·06960—is stated to appear to be a little too high.

Composition of Gutta Percha.

Dr. E. F. A. Obach, who is summarising all that is known about gutta percha in a series of Cantor lectures, shows that the purified substance probably consists of a hydrocarbon (pure gutta), having the formula $C_{10}H_{16}$; albane, $C_{10}H_{16}O$; fluavile, $C_{40}H_{64}O_3$; and a variable component named guttane. Pure gutta possesses all the good qualities of gutta percha in a much enhanced degree, becoming soft and plastic on heating, and hard and tenacious on cooling, without being in the least brittle. The resins appear to be simply accessory components, which have a decidedly detrimental effect when they preponderate. Water, wood fibres, bark, sand, etc., occur, of course, merely as mechanical impurities of gutta percha. —*Journ. Soc. of Arts*, xlvi., 122.

Occlusion by Palladium.

In a paper read before the Royal Society, Drs. L. Mond, W. Ramsay, and J. Shields explain that in their investigation of the nature of the occlusion of gases by finely divided metals they have had occasion to examine the behaviour of palladium to hydrogen and oxygen. The metal was employed in the state of black, sponge, and foil, the palladium black having the following probable composition :—Pd, 86·59 per cent. ; PdO, 12·69 per cent. ; H_2O, 0·72 per cent. When heated in an atmosphere of oxygen the black absorbed the gas at least up to a red heat, with the formation of a brownish-black substance which did not again lose its oxygen at a dull red heat *in vacuo*. The amount of oxygen absorbed—nearly 1000 volumes—was about one and a-half times as much as corresponds with the formula Pd_2O, and it is stated that if the ignition had been sufficiently prolonged the whole of the palladium would probably have been converted into the oxide PdO. When exposed to hydrogen the palladium black absorbed more than 1100 volumes, but only 873 volumes of the gas were really occluded, the remainder having formed water with 139 volumes of oxygen originally contained in the black. Of the occluded portion, about 92 per cent. was pumped off slowly at the ordinary temperature, and almost the whole of the remainder at 444°. Increase of pressure of the hydrogen, from 1 to 4·6 atmospheres, had no influence on the quantity occluded at the ordinary temperature. New palladium foil could not occlude any appreciable quantity of hydrogen until it had been subjected to powerful ignition in the blow-pipe flame. The composition of fully charged palladium hydrogen was found to correspond closely with the formula Pd_3H_2, first suggested by Dewar.

Commercial Calcium Carbide.

H. le Chatelier states that the two elements most abundantly present as impurities in calcium carbide are silicon and iron. The iron is combined exclusively with the silicon in the form of silicide, some small crystals of which have been found to have the formula $SiFe_2$, whilst the excess of silicon appears to unite either with the carbon or calcium, according to the relative proportions of those two bodies. If there be an excess of carbon over calcium, carbon silicide crystallises in hexagonal plates which are generally of a blue colour. On the other hand, excess of calcium results in the formation of calcium silicide, which is found in metallic grains possessing the colour and lustre of zinc. There are apparently two distinct silicides of calcium, one of which is scarcely affected by nitric acid, whilst the other is easily attacked.—*Bull. Soc. Chim.* [3], xvii., 763.

Polymerisation of Chloral.

J. W. Mallet states that 250 Gm. of anhydrous chloral (trichloracetaldehyde), contained in a hermetically sealed glass vial, became suddenly polymerised without any apparent external disturbance. The vial was left on a lecture-room table over night, and next morning it was found in fragments, whilst a thin crust of meta-chloral covered a circular space on the table measuring about half a metre in diameter. The direct rays of the sun could not reach the table, and none of the surrounding bottles had been disturbed. It is assumed that polymerisation must have taken place so rapidly, and to such an extent, that the heat evolved in the unison of the smaller into larger molecules raised the temperature of the remaining liquid chloral to a point at which the tension of its vapour was more than the vial could withstand.—*Am. Chem. J.*, through *Chem. News*, lxxvi., 280.

East African Sandal Wood.

Stuhlmann and Volkens have discovered in East Africa a tree-like shrub, *Osyris tenuifolia*, Engl., belonging to the natural order Santalaceæ. The agreeable smell is due to a brown resin with which the wood vessels are filled ; this originates in the cells of the medullary rays and of the wood parenchyma. The wood is very similar to the genuine Indian sandal wood.—*Chem. Repert.*, xxi., 229.

Anatomy of the Solanaceæ.

According to F. Fedde, the Solanaceæ present a number of characters which differentiate them sharply from all allied orders, rendering it at the same time very difficult to distinguish the sub-orders by anatomical characters. Among the constant characters are the following :—The epiderm always consists of only a single layer of cells ; it is not lignified, and the cuticle is always thin. There is always a layer of collenchyme in the herbaceous parts of the stem. The vascular bundles are always collateral, and never have a protecting sheath. The vessels of the secondary xylem and the tracheids have bordered pits. In most of the genera there are very minute crystals in the cortical and medullary parenchyme and in the leptome. When these are wanting there are larger crystals, or thorns formed. The pith is usually composed of thin-walled cells, and these cells, when lignified, have large round pits.—*Bot. Centralblatt*, lxxii., 1897, p. 144.

Oil in Fruits.

According to C. Gerber, the oil contained in the ripe olive must have been formed at the expense of mannite or of some other carbohydrate. This is shown by the fact that the proportion between the carbon dioxide absorbed and the oxygen given off is less than unity. The same appears also to be the case with other fruits. The value of the proportion between the gases referred to resulting from this assimilatory process differs materially from the proportion in fermentation or in the production of acids.—*Comptes rendus*, cxxv., 1897.

Moisture and Vitality.

From a number of experiments on this subject, Dr. A. J. Ewart concludes that there is no truth in the statement often made that seeds, spores, and mosses can withstand complete desiccation without losing their vitality. It is impossible to deprive anything of a vital nature entirely of water without destroying its vitality. Dr. Ewart found that the minimum percentage of water sufficient to maintain vitality is from 2 to 3 per cent. of the dried weight of the organism. Protoplasm containing the minimum amount of water necessary to maintain vitality is perfectly dormant ; it can neither respire nor assimilate ; it can neither add to its substance nor diminish it.—*Transactions Liverpool Biological Society*, 1897, p. 151.

SOME EXPORTS OF SOUTH CHINA AND INDO-CHINA.

BY AUGUSTIN HENRY, M.A., L.R.C.P., F.L.S.
Corresponding Member of the Pharmaceutical Society.

CASSIA AND CINNAMON BARKS.—From the statistics issued by the Customs of China, and by the French Colony of Indo-China, there appear to be three diffcrent barks of commercial importance. Concerning only one of these, Chinese cassia bark, is our information at all definite or complete. As a result of Mr. Ford's investigations we know that the tree producing this bark is cultivated in the Chinese provinces of Kwangsi and Kwangtung, and the tree is *Cinnamomum cassia*, Blume. This bark reaches Hong Kong by steamer and by junk, and the statistics for 1896 are as follow :—

Canton, Export by Steamer :—

	Piculs.		Taels.
Cassia Lignea	3,333	value	33,432
,, Twigs	9,065	,,	6,040
,, Twig Bark	11,820	,,	25,457

Kowloon, Export by Junk :—

Cassia Lignea	70,138	,,	490,966
,, Broken	3,676	,,	12,865
,, Twigs	2,386	,,	1,731

Thicker barks are distinguished by the Chinese as cinnamon, and a small quantity of this is produced in the same locality as the cassia bark. The figures for 1896 are for cinnamon :—

	Piculs.		Taels.
Canton Export	89	value	4,494
Pakhoi ,,	10	,,	307

Mr. Ford says this bark is simply the thick bark of very old trees of the same species ; and this is correct as regards the cinnamon produced in Kwangsi and Kwangtung. However, the kind of cinnamon most valued by the Chinese is not a product of China ; it comes from the Laos States, now controlled by France.

LAOS CINNAMON.—Most extraordinary prices are paid for this by Chinese, who consider it to be a remedy for all diseases, as much as 50 dollars being given for a "pair of barks," each piece measuring about fifteen inches long by four inches broad. This cinnamon is conveyed by pedlars, merchants, etc., in small quantities, overland from the Laos States through Yunnan and down the West River to Canton, and as it does not touch any customs stations of Indo-China or China, no statistics are available as to its quantity or value. Concerning the botanical source, the only evidence is Thorel's statement in the botanical chapter of Garnier's 'Voyage d'Exploration en Indo-Chine' that *Cinnamomum cassia* grows wild in the forests of Indo-China situated about 19° latitude. He goes on to mention that "the bark of branches, the size of the thumb, is the more common ; but that the bark of great branches, taken off in large rectangular plates, is sent to the Chinese pharmacists, who sell it at an excessive price." I have grave doubts as to Thorel's identification of this wild tree, and it does not appear that he procured any botanical specimens. I do not know that there is in any herbarium a specimen of wild-growing *Cinnamomum cassia*, Bl. I am inclined to think that this Laos tree is different. As French officers are now stationed throughout the Laos States, it would be an easy matter for the Paris botanists to obtain through thcir Colonial Office herbarium specimens of the Laos cinnamon tree, which is so valuable.

ANNAM CASSIA.—The third bark of commercial importance is Annam cassia. It does not appear to be known in the London market, but it is largely imported from Hong Kong into the United States, where it is known as Saigon cassia or Saigon cinnamon. This name is a misnomer, as very little, if any, of the bark sent to the United States is produced in Cochin China, of which Saigon is the capital. It is really produced in Annam. The official figures for 1895 of the export of "Cannelle" are :—

	Kilog.		Francs.
Annam	280,633	value	428,168
Cochin China	1,381	,,	13,830

Nothing definite seems to be known about this article except that the trees occur in the wildest parts of Annam, and there is no evidence of any cultivation. No botanical specimens, so far as I know, have ever been gathered, and it is a mere assumption that the tree is *Cinnamomum cassia*, Bl. The bark is apparently distinct enough from the cassia bark of South China. In this case, as in the preceding, French botanists, by means of official channels, might easily settle an important botanical question.

Cardamoms form another interesting export from Indo-China. The figures for 1895 are :—

	Kilog.		Francs.
Cochin China	15,462	value	106,140
Annam	18,826	,,	17,035
Tongking	68,767	,,	74,489

It is probable that two or three different kinds are lumped together in the Customs statistics. Here again French botanists could do good service by demanding specimens of all the kinds of cardamoms known in the markets of Indo-China, supported by botanical specimens of the plants producing them. Less is known botanically about cardamoms than about any other class of drugs.

DYE-YAM.—This is the root of *Dioscorea rhipogonoides*, Oliver, and is the *Cunao* of the Annamese, *Shu-lang* of the Chinese, and *faux gambier* of the French. It is sent in enormous quantities from Indo-China to Southern China, where it is used for tanning fishing-nets and for dyeing certain fabrics, such as the coarse silk and cotton mixtures of Canton. The figures for 1895 are :—

	Kilog.		Francs.
Tongking export	3,675,176	value	372,176
Annam ,,	681,175	,,	44,521

It occurs in South China and in Formosa as well, but only in sufficient quantity to satisfy local requirements. Considering the cheapness and amount available of this dyeing and tanning material, it might be worth while making some experiments with it in England.

CAMPHOR.—In connection with a note by me in the *Pharmaceutical Journal* for March 6 last, p. 201, concerning the production of camphor on the Chinese mainland, I may now cite the figures shown in the Customs Returns for 1896. The export was : from Wenchow, 11 piculs ; Canton, 332 piculs ; Kowloon, 438 piculs ; Pakhoi, 404 piculs ; all undoubtedly produced in China. The port of Amoy showed an export of 1177 piculs, but there is reason to believe that this was Formosan camphor, smuggled over from the island in junks.

STAR ANISEED.—The tree producing the star aniseed of commerce, *Illicium verum*, Hook. f., is known to occur only in Kwangsi and Tongking. It is equally established that the Japanese species of *Illicium religiosum* (*I. anisatum*, Linn.) produces a very poisonous fruit, which may be distinguished by the Japanese name, "skimmi." It is astonishing then to find that year after year enormous quantities of "skimmi" are sent out of Japan to China. It is only in the statistics of a single Chinese port, Shanghai, that a distinction is made between the true article and its poisonous adulterant. During 1896 there was imported into Shanghai—

	Piculs.*		Taels.*
Star Aniseed	2490	value	52,181
Japan Star Aniseed	2514	,,	7,542

Of course in any other country than China steps would have been

* Picul = 133⅓ lbs. Tael = 3*s.* 4*d.*

taken before now to check an importation, which is not only deleterious to health but also one which must interfere with the profits derived by Chinese producers of the genuine article.

Pakhoi is practically the only port from which star aniseed is exported, the quantity for 1896 being 6691 piculs, valued at 133,817 taels. From Tongking there does not seem to be any export of the fruit itself; but the oil is now being sent in quantity from Haifong to France, as it benefits (over star aniseed oil imported from Hong Kong) by certain fiscal arrangements. Mr. Morse's report from Lungchow gives some particulars concerning the production of star aniseed oil. There appear to be three districts, Langson in Tongking, and Lungchow and Posê in Kwangsi. The export of the oil from Pakhoi in 1896 was 2053 piculs, valued at 410,692 taels. From Tongking, in 1885, the export was 3129 kilogrammes, valued at 36,148 francs; the figures for 1896 are not yet published, but will be much larger. Mr. Morse points out that the native mode of gathering the fruit so damages the trees that a good crop is only possible in one year out of three.

Needs of Economic Botany.—The preceding remarks on cinnamon and cardamoms show that even in a country like Indo-China, perfectly accessible to Europeans, many botanical questions remain unanswered. Residents and travellers in foreign countries are convinced erroneously that any article with a common well-known name must be known in all its bearings to science. For example, two travellers in Tibet and West China, whom I have known, made excellent botanical collections, but they omitted to procure any specimens of the plant yielding rhubarb, which they saw being prepared for the foreign market. When I asked them why this omission, both replied that they thought everything was known concerning such a common article as rhubarb. In the Admiralty 'Manual of Scientific Enquiry' there is a chapter on botanical desiderata, but I do not think, speaking from memory, that it is detailed or explicit enough. A new list ought to be made out of all the articles, like cinnamon, benzoin, etc., concerning which information and botanical specimens are required. Such a list might very well be distributed to Consuls in all parts of the world. But what is really wanted is a good text-book on economic botany, giving succinctly and accurately the facts already known, and pointing out the gaps to be filled in our knowledge. Willis's recently published 'Dictionary of Flowering Plants and Ferns' I find very interesting and useful, but the economic botany in it is far too meagre. A book on similar lines confined to economic plants would satisfy a great want. Such a work would necessitate great labour and involve some years in its preparation; but there is no greater benefactor than the author of a good text-book suitable to the requirements of the intelligent and grown-up public. Time so spent is perhaps as valuable as that devoted to the petty discoveries which everyone now feels bound to make in order to take rank as an "original investigator."

Excretion of Drops of Water from Leaves.—According to Dr. A. Nestler, while the excretion of drops of water from the leaves of plants is frequently effected by special organs (hydathodes), this is not always the case. In *Agapanthus umbellatus*, which has neither epitheme nor water pores, this excretion takes place partly on the upper side of the leaf, partly on the under side of its apex. In grasses it may be brought about in various parts of the leaf. In *Tradescantia viridis* the exudation is effected through water pores placed in a row on the margin of the upper side of the leaf, the only stomates on the upper surface. In *Phaseolus multiflorus* the club-shaped hairs do not appear to have any excretory function. —*Sitzber. k. Akad. Wiss. Wien*, cv., p. 521.

PHARMACEUTICAL SOCIETY.

MEETING OF THE COUNCIL.

WEDNESDAY, JANUARY 12, 1898.

Present:

Mr. Walter Hills, President.

Mr. G. T. W. Newsholme, Vice-President.

Messrs. Allen, Atkins, Bateson, Bottle, Carteighe, Corder, Cross, Grose, Hampson, Martindale, Savory, Symes, Warren, and Young.

The minutes of the last meeting were read and confirmed.

The Late Richard William Giles.

The President said since the last meeting of Council they had lost another of their veterans in pharmacy in the person of the late Richard William Giles, who was well known to many round that table. Mr. Giles was one of the earliest students of the Society, having been in the School in the years 1847 and 1848. He took prizes in chemistry, pharmacy, and materia medica, as well as a second prize in botany, and was one of the earliest to pass the Major examination. Mr. Giles served on the Council from 1853 to 1856, and was a member of the Board of Examiners from 1863 to 1868; he also gave an inaugural address to the students in 1874. A few minutes before coming into that room he (the President) had had an opportunity of running over that address, and he thought he could not do better than ask, especially the younger members of their craft, to read again that address. For grace of diction, its general composition, and for the sentiment which it contained, he could conceive of no better address for any who were interested in pharmacy to read. Perhaps that address was largely summed up in one sentence to be found in it, which all would agree represented the views of the late Mr. Giles in reference to pharmacy, and which was as follows:—"The status of pharmacy will be best raised by the diffusion of a higher educational tone amongst us, which must in the end command respect." Mr. Giles frequently addressed the annual meetings, and was one of the most fluent and forcible speakers on those occasions. He was a man of remarkable business capacity and great intellectual gifts, and in him they had lost one of their most distinguished members. It was a singular thing that Mr. Giles died exactly fifty-two weeks after his friend Mr. Schacht. These two gentlemen lived together for many years side by side in Clifton. It might also be mentioned that some twenty years ago Mr. Giles was called to the Bar in the Middle Temple. The resolution which he (the President) proposed, and to which he felt sure the Council would agree, was as follows:—

> That this Council learns with regret of the death of Mr. Richard William Giles, who rendered good service to the Society as a member of the Council, and subsequently as a member of the Board of Examiners for England and Wales, and that the President be authorised to convey to Mrs. Giles and the family the deep sympathy of the Council.

The Vice-President seconded the proposition, which was agreed to unanimously.

Deaths of Mr. C. Wheeler and Mr. Ernest Hart.

The President said he had also to refer with regret to the death on January 7 of Mr. Christopher Wheeler, of Hackney Road, at the age of 69. He had been a member of the Society for forty years, and was Divisional Secretary for Hackney. He might also refer to the recent death of an eminent man who had been somewhat connected with the work of the Society, viz., Mr. Ernest Hart, editor of the *British Medical Journal*, and a very prominent and active member of the British Medical Association. He had been a frequent visitor at their annual dinners, and took a great interest in the matters connected with pharmacy. Amongst other public services which he rendered he might refer to the fact that the present efficient administration of the Pharmacy Act with regard to secret remedies was almost entirely due to the persistency with which Mr. Hart represented to the Treasury the danger arising from the sale of such remedies. It would be remembered that there was a prosecution at Bow Street arising out of this matter, and it had now been held that secret remedies containing poisons came under the same provisions as similar preparations not bearing a revenue stamp.

The Boards of Examiners.

The Secretary reported that a letter had been received from the Privy Council office enclosing the official approval of the names of the examiners recently submitted.

DIPLOMAS.

The undermentioned, being duly registered as pharmaceutical chemists, were respectively granted a diploma stamped with the seal of the Society :—

Barrie, Thomas Stewart.
Burgin, Mark Fredk.
Evans, Thomas James.
Hacking, Chas. Harold.
Hayley, Benjn. Pawson.
Hill, Philip Robert.
Holmes, John.
Jones, Ernest William.
Pattison, Joseph.
Price, Edward George.
Shaw, William.
Shorrock, Mary.
Wild, Sydney.
Windemer, Oscar Roxburgh.

ELECTION OF MEMBERS.

Pharmaceutical Chemists.

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

Ecroyd, Walter ; Keighley.
Evans, Thomas James ; London.
Hacking, Charles Harold ; Darwen.
Haley, Benjamin Pawson ; Bradford.
Hamerton, James ; London.
Hankinson, William ; Manchester.
Martin, William ; Southampton.
Metcalfe, William Edward ; Bradford.
Morris, Ernest William ; London.
Pattinson, Joseph ; Wigton.
Shaw, William ; Huddersfield.
Thompson, Thomas ; Tooting.
Wild, Sydney ; New Mills.
Windemer, O. R. ; Tunbridge Wells.

Chemists and Druggists.

The following, who were in business before August 1, 1868, having tendered their subscriptions for the current year, were elected "Members" of the Society.

Burt, George Edward ; E. Dulwich.
Peck, George ; Cambridge.
Sage, Charles James ; Frome.
Schouver, Leon ; Oxford.
Thomson, George ; Aberdeen.

ELECTION OF ASSOCIATES IN BUSINESS.

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

Bennett, Albert Edward ; Tyldesley.
Blomfield, Thomas Nevill ; Hastings.
Blount, George W. ; Newcastle-on-T.
Bremner, William ; Port Erroll.
Briggs, Alfred Radley, Horbury.
Clark, Alexander Robertson ; Braemar.
Dennis, William ; South Shields.
Edmondson, Thomas ; Penrith.
Enoch, Abraham ; Tewkesbury.
Franklin, John William ; Kobe.
Hankinson, A. W. ; Grange-over-Sands
Hodder, H. G. ; Kingston-on-Thames.
Hughes, Richard ; Cardiff.
Lawson, Albert Edward ; London.
McCorquodale, John C. ; Markinch.
Moore, Leopold Frank ; Buluwayo.
Reid, James ; Dumfries.
Rigden, Hubert ; Harrow.
Smithies, William Henry ; Bradford.
Thomson, Gavin R. ; Campbeltown.

ELECTION OF ASSOCIATES.

The following, having passed their respective examinations and tendered their subscriptions for the current year, were elected "Associates" of the Society :—

Minor Examination.

Acton, James Rowland ; Battersea.
Barker, Charles ; Bishop Auckland.
Bennett, Charles Thomas ; Camborne.
Blackburn Albert E. ; Darlington.
Blaker, Ernest James ; Ashford.
Brickell, Ethelbert R. ; Worcester.
Burton, Harry ; Lichfield.
Cathro, Thomas Gorrie ; Dundee.
Coles, Sydney George R. ; Birmingham
David, Idwal ; Cardiff.
Dean, Charley ; Bury.
Dobie, James Turner ; London.
Dudgeon, Tom Skipsey ; Ripon.
Elgar, John Butler ; Fakenham.
Ellis, Hugh Edward ; Aberystwith.
Ellis, John ; Leicester.
Flemming, Thomas H. ; Huddersfield.
Gorst, William ; Warrington.
Grassie, William ; Aberdeen.
Hart, Samuel Henry ; Hull.
Heddle, James S. B. ; S. Ronaldshay.
Hickling, Alfred John ; Stamford.
Hoare, William Harold ; Derby.
Jenner, Percy Greenwood ; Liverpool.
Jones, William Bodwin ; Holyhead.
Jones, William Parry ; London.
Kenway, Ivor ; Neath.
Lacey, William James ; Norwich.
Larder, Frederic ; Louth.
Latham, William Henry ; Wigan.
Leefe, Bernard Wrapson ; Malton.
Low, Joseph ; Edinburgh.
MacKenzie, John Melville ; Edinburgh.
Mossom, Arthur Henry ; Darlington.
Park, Henry Marshall ; Tynemouth.
Porteus, J. P. ; Grange-over-Sands.
Potter, William ; Plaistow.
Pring, William Wallace ; Bromyard.
Profit, Thomas ; Wrexham.
Pyman, Harold ; Stowupland.
Reeves, Horace ; Cheltenham.
Richardson, Edwin ; Nottingham.
Simmons, Edward Harry ; Birkenhead.
Sutherland, James John ; Edinburgh.
Swinn, Charles Gosling ; Manchester.
Thackrey, Frank ; Pateley Bridge.
Todd, Arthur Higgs ; Belfast.
Westerman, Thomas K. ; Huddersfield.
Williams, John ; Nottingham.

Modified Examination.

Hales, Thomas M. ; Warrington.

ELECTION OF STUDENTS.

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

Allan, Richard Birrell C. ; Dumfries.
Allen, John Rex ; Bloxwich.
Allen, William F. ; Market Bosworth.
Andrews, Frank ; Redditch.
Ashkanazy, Albert W. ; Dartford.
Bailey, Edward Arthur ; Boston.
Barker, Donald William E. ; Cambridge.
Bate, Alexander ; Manchester.
Baxter, Adela Mary ; Cheltenham.
Black, William John ; Tweedmouth.
Bollom, Arthur Harry ; London.
Bunting, Sydney ; London.
Bye, William Luther John ; Llandilo.
Chrystall, C. G. W. ; Buckhurst Hill.
Churchill, Lionel A. ; Burton-on-Trent.
Clay, William Joseph ; Nottingham.
Clement, William Henry ; Barnstaple.
Cocking, Thomas Tustin ; Sheffield.
Cole, William Frederick ; Lowestoft.
Collings, Ellis A. ; Littlchampton.
Collins, Clifford ; Ipswich.
Darroll, John Walter ; Warminster.
Davies, Llewellyn Rhys ; Llanelly.
Davies, William John ; Pontypridd.
Dougall, Thomas ; Conway.
Dunlop, Margaret Kayes ; Glasgow.
Durbin, Herbert Samuel ; Putney.
Dyson, Joshua ; Brighouse.
Eaton, Harry Oswald ; Leeds.
Elliott, John Johnson ; Southport.
Enoch, David ; New Quay.
Falconer, C. ; Barrow-in-Furness.
Falding, Walter Bullock ; Wakefield.
Farnill, Thomas Bentley ; Goole.
Finnemore, Horace ; Seighford.
Foster, Frederick ; Kidderminster.
Frank, John William ; Guisborough.
Franklin, Arthur C. ; Stamford Hill.
Gair, Duncan ; Inverness.
Gale, George Thomas ; Barnstaple.
Gray, William ; Upton Manor.
Greening, Ernest H. ; Dorchester.
Griffiths, Robert Lloyd ; Anglesea.
Gunthorpe, George ; Lincoln.
Harris, John ; Neath.
Hughes, William Henry ; Birkenhead.
Hussey, Herbert Richard ; Weymouth.
Jones, George M. ; Birmingham.
Jones, Thomas ; Llanybyther.
Keall, John ; Cricklewood.
Kluge, Herman James ; Swansea.
Lennox, Sydney Marshall ; Bristol.
Lloyd, Hugh ; Ruthin.
Lord, Nettie ; Forest Hill.
McIntosh, John William ; Portsmouth.
McNeil, Thomas McM. ; Kennington.
MacSweeny, Eugene ; Nice.
Magnay, William ; Wigton.
Makepeace, Harold Edward ; London.
Manning, Henry Reginald ; Modbury.
Masson, Hedley George ; Torquay.
Milne, Peter Duffus ; Insch.
Morris, William ; Llanarmon.
Neal, Joseph Lloyd ; Liverpool.
Nicol, Mary Craigie ; London.
Parry, John Robert ; Clwt-y-bont.
Peck, Alfred Newton ; Newmarket.
Pickering, William ; Barnsley.
Privett, John Warren ; London.
Quibell, John William ; Newark.
Ransford, Arthur T. ; Folkestone.
Richardson, James A. ; Market Rasen.
Robertson, Sidney ; Norwich.
Salter, Leonard Eli ; Trowbridge.
Saltmarsh, Alice Isabella ; Hampstead.
Sinnett, William ; Milford Haven.
Skyrme, Harold Edgar ; St. Arvans.
Spencer, Herbert ; Southwark.
Stables, James Ernest ; Kendal.
Sterling, Joseph W. ; Annfield Plain.
Stevenson, R. H. S. ; Tunbridge Wells.
Stokoe, Thomas Joseph ; Hay.
Stovin, John ; Kilburn.
Summerfield, Alfred W. ; Middlewich.
Tabberner, Thomas K. ; Birmingham.
Thomson, Harry ; New Deer.
Tipping, Albert James ; London.
Vallet, Cyril Edward F. ; London.
Viret, Francis Mervyn ; London.
Walters, Joseph ; Sheffield.
Watt, Robert John ; Ammanford.
White, Gilbert ; Litcham.
Whiting, William ; Hornsea.
White, Charles Alex. B. ; Dunblane.
Whysall, George Ernest ; Grantham.
Wiley, Harold ; West Hartlepool.
Williams, F. J. ; Weston-super-Mare.
Williams, Sydney Rhys ; Llanelly.
Williams, William Parry ; Carmarthen.
Yates, Arthur Gurney ; Sheffield.
Young, Francis Joseph ; Leicester.

RESTORATIONS TO THE REGISTER AND TO THE SOCIETY.

The names of the following persons, who have severally made the required declarations and paid a fine of one guinea, were restored to the Register of Chemists and Druggists :—

Leonard Blakeley, Tower Road, Skirbeck, Boston.
Frank Hoad, 10, London Road, Ore, Hastings.
Charles Lear, 13A, Air Street, Regent Street, W.

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

REPORT OF THE FINANCE COMMITTEE.

The report of this Committee was read, including the recommendation that sundry accounts be paid.

The PRESIDENT, in moving that the report and recommendation be adopted, said there was nothing special to which he need call attention in connection with the General Fund. With regard to the Benevolent Fund, he had the pleasure of announcing that

another donation of £50 had been received from the directors of Camwal, Limited. There had also been a donation of five guineas from Dr. Stevenson, and it was very pleasing to find that a gentleman who was not connected with the Society, except as an honorary member, knowing what the work of the Benevolent Fund was, so highly appreciated it as to give a donation. That morning also £9 had been received from Mr. Moss, being the balance or surplus on the Attfield Testimonial.

Report of the Benevolent Fund Committee.

The report of this Committee included a recommendation of grants to the amount of £66 in the following cases :—

A chemist and druggist member (54), who had been in business for twenty-five years, but had to give up in July last, being a hopeless invalid, and is quite without resources. (London.)

A registered chemist and druggist (81), formerly in business, but for the last thirteen years has had only intermittent employment. (Leicester.)

The widow (68) of a chemist and druggist, who has had twelve previous grants. (Essex.)

The widow (64) of a chemist and druggist, who has had two previous grants. (London.)

The widow (60) of a pharmaceutical chemist, who recently died after a protracted illness, leaving her quite unprovided for. (London.)

A registered chemist and druggist (52), suffering from incurable disease. (London.)

A former pharmaceutical member and subscriber (59), and local secretary. (Sleaford.)

One case was deferred for further information.

The Secretary reported the death of two annuitants, Henry Machon, aged 70, of Saffron Walden, and Maria Collins, 81, of Hornsey. He also reported the resignation by Mrs. Elizabeth Woods of the annuity she has been receiving since 1880, having had a substantial legacy left her.

The Vice-President (as Chairman of the Committee) in moving the adoption of the report, said the Committee had thought it right to make a record, in the Benevolent Fund regulations, of the rules adopted in 1894 for the interpretation of Clause 12 relating to the reduction of annuities. He then gave several instances in which alterations had been made; in one case a lady annuitant, having had a substantial sum of money left to her, resigned her position on the Fund. Unfortunately, since their last meeting they had lost two annuitants, therefore it was felt that the Council had not done very far wrong when they elected six annuitants to the Fund at the last meeting. One old gentleman who had had a certain sum of money voted to him had been good enough to say that he did not require it, as, though over seventy years of age, he had found a situation, and was quite independent of it. Another case he might mention was that of an old gentleman who was over eighty years of age, and although he was obliged to take some little money from the Fund, he said he was not yet too old to work.

Mr. Atkins seconded the motion, which passed unanimously.

Library, Museum, School, and House Committee.

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

		Attendance.	Total.	Highest.	Lowest.	Average.
November	Day		418	27	8	16
	Evening		172	18	4	8

Circulation of Books.	Total.	Town.	Country.	Carriage paid.
November	238	109	129	£1 7s. 8½d.

Several donations had been received (*Ph. J.*, December 11, p. 532), and the Committee had directed that the usual letters of thanks be sent to the respective donors.

The Committee had recommended that the new volumes of the 'Flora of Tropical Africa' be purchased on publication.

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

		Attendance.	Total.	Highest.	Lowest.	Average.
November	Day		566	33	6	22
	Evening		58	7	1	2

Several donations had been received (*Ph. J.*, December 11, p. 532), and the Committee directed that the usual letters of thanks be sent to the respective donors.

The Committee reported that the microscopes had been placed under the care of the Curator. Also that Mr. Carteighe had presented to the Society as a memento of the Jubilee one of the medals struck by the Royal Mint in commemoration of that event.

The President moved the adoption of the report and recommendations. He said there had been a good deal of routine work before the Committee, but nothing to which he need call special attention. They were all much indebted to Mr. Carteighe for his kind thoughtfulness in obtaining for the Society one of the limited number of medals issued by the Royal Mint. The medal was a very beautiful object and well worthy the occasion.

Dr. Symes said he was very glad to hear that the microscopes had been put under the charge of the Curator, so that they would be kept in good order. He was sorry to say the students had not been as careful of the slides as might have been expected, seeing that they were supplied and kept for their especial benefit. In future those who really desired to use the microscopes for purposes of study would be able to have the full advantage of them.

The resolution was adopted unanimously.

Report of Examinations.

January, 1898.

	Candidates. Examined.	Passed.	Failed.
England and Wales :—			
Major	23	14	9
Minor	247	81	166
Scotland :—			
Major	2	0	2
Minor	146	46	100

First Examination :—Twenty-two certificates were received in lieu of the Society's examination.

Report of the Law and Parliamentary Committee.

The report of this Committee included the draft of a reply to the Pharmacy Board of Victoria on the subject of reciprocity in pharmaceutical certificates (see *P. J.*, lxx., 25). The proposed Pharmacy Act Amendment Bill (see p. 54) was further discussed, and with certain verbal amendments suggested by the Solicitor agreed to; it was also recommended that the President be authorised to take such steps as were necessary to secure the introduction of the Bill into Parliament.

The President, in moving the adoption of the report, said there were two matters especially referred to in it. One was with reference to a reply to a letter received from the Pharmacy Board of Victoria last July, and the other with reference to the proposed Pharmacy Bill. He had nothing to add to the recommendation of the Committee with reference to the latter subject. He wished to refer particularly to the letter which had been received from the Registrar of the Pharmacy Board of Victoria, asking the Council, if possible, to take steps in the direction of accepting certain certificates granted by different boards of pharmacy in Australia and elsewhere. When the letter was received last year they were in the midst of the Jubilee festivities, at which time, as now, there was a growing desire that there should be more and more drawing together of the different parts of the Empire, and it was agreed that the letter should be carefully considered. That had been done, and although there was not much doubt as to what the reply would be, it was well that the matter should be considered very thoroughly. He would read the letter (see p. 54) which the Parliamentary Committee suggested should be sent in reply, first reminding the Council that to a previous communication received some years ago a reply had been sent that the Council was not in a position to recognise any other certificates than those granted by its own Boards.

Dr. Symes said there had been a certain amount of feeling shown amongst pharmaceutical chemists in the country that a Fellowship should be instituted for those who took the higher qualification. He was not intending to advocate it on that occasion, but at the same time he thought, seeing there were a number of men throughout the country—friends of the Society—who held that view, some reasonable answer ought to be given to them, either that it was not practicable or desirable, or else that its feasibility should be discussed. The Council ought not to decide to go on with the Bill and officially ignore the feeling which was entertained by a large body of the members. At the recent meeting at Liverpool, at which there was not a very large attendance, it would have been quite easy to move a resolution supporting the Bill without saying anything farther, though it would have meant a division. But on adding, as a rider, that they regretted that the Council could not see its way to adopt some further title, the resolution was carried unanimously. If that was to be taken as an indication of the general opinion, would it not be possible either to adopt the suggestion of those gentlemen, or, on the other hand, to satisfy them

that it was undesirable? A lot of trouble had been taken not to introduce anything of a contentious nature into the Bill; it seemed as if it would satisfy everybody; but as this question had arisen he hoped the President would make some statement on it. This was not a new matter, for he remembered that ten years ago there were suggestions for the institution of a Fellowship. Of course, they could not institute a Fellowship under their Bye-laws, or in any way other than by an Act of Parliament, because they could not override their Charter.

Mr. MARTINDALE thought it very undesirable to introduce a class of Fellows of the Society. The mischief had been that there had been two grades within the Society, leading to dissatisfaction amongst those who held the lower grade. If anyone desired a higher title, he thought they should seek it elsewhere, but there should be in the Society only one standard for membership—that of the legally qualified man.

The PRESIDENT regretted that Dr. Symes had launched this question, as he was present when the draft Bill was agreed to, and did not then raise it. He had hoped that all who agreed with the report of the Committee would, when they got into the country, speak out and say what they thought of these matters. He did not gather that Dr. Symes was altogether in favour of a Fellowship, but he might say that the question had been considered on several occasions. One of the great objects of the Bill now proposed to be introduced was the consolidation of the Society, and if on one hand it was provided that a certain number of men who had not hitherto been eligible for membership should now be eligible, and on the other hand to push up other men into a superior class, it would be to a great extent undoing the good work which it was hoped to effect. What would be the use of a Fellowship granted by the Society under any conditions which would be possible? He was a Fellow of the Zoological Society, but he was not required to show any anatomical knowledge, but simply to pay a certain subscription. He believed he was entitled to put F.Z.S. after his name, but he did not know that would give him any better position, nor did he think that the title "Fellow of the Pharmaceutical Society" would be of any great value to anyone. He hoped the time was coming when there would be an enforced curriculum, and also when there would be some system whereby there should be some close relationship between the teaching universities throughout the country and pharmacy. When that time came there would be an opportunity for considering the question of any fresh qualification or title. At present he thought it would be a great pity to put this suggestion in the Bill; he hoped members throughout the country would consider the matter very carefully before taking any steps to oppose the Bill. No Bill could be proposed which would meet with universal approval, but there was a very general consensus of opinion in favour of the present Bill, and he would emphasise the appeal made to all pharmaceutical chemists by Mr. Carteighe when the draft Bill was read, to sink any question of this kind for the present in order to realise what they were all anxious to effect—the consolidation of the Society. If the point now mentioned were introduced in order to meet the wishes of a few of their friends, it would immediately raise up a new class of opponents.

Dr. SYMES said he was very glad of the explanation which the President had given. The last thing he wished was to oppose the passing of the Bill, and his only object in mentioning the matter was to elicit a little information for the benefit of their friends in the country. They were often accused of doing too much *in camera*, and he wished, if possible, to secure entire unanimity. He believed that those who had raised this question would to a great extent be satisfied with the reply given by the President, and at any rate that they would all see that the time was not opportune for pressing their particular views.

Mr. CARTEIGHE said he was disappointed to find that the present generation of pharmaceutical chemists who were taking an interest in legislative matters did not take the trouble to read something of the history of pharmaceutical legislation. This question of a Fellowship was raised more than thirty years ago; it was by no means a new one. In some countries logic was one of the subjects in the preliminary examination, and he sometimes thought it would be very useful here. He would remind some of the younger members that the Society was founded with the intention of incorporating the whole of those engaged in pharmacy in one body under the one designation of member, but as soon as examinations were introduced there was a separate grade established, that of associate. In early days associates were those who had the privilege of entering the house, but no other rights; they were comparable to the class of students in many institutions, such as the engineers. They had no votes—they were regarded as *in statu pupillari*, until they should become members, which happened when they went into business, that being for many years the qualification. Mr. Symes and himself, for instance, were associates for some time before they became members. In 1866 and 1867, when the Select Committee was dealing with a Bill with regard to pharmacy and the sale of poisons, there was much opposition on the part of chemists and druggists not connected with the Society, and eventually a sort of compromise had to be effected. It was then conceded that when a man was in active practice as a chemist he ought to be a member of the Society, and the question of what sort of examination he passed did not then arise. When the draft Bill now in question was brought forward a few months ago, the idea was to carry out the original idea of the 1868 Act. The view of Mr. Sandford and himself then, as well as of the Executive of the United Society of Chemists and Druggists (with whom he was on terms of intimacy), was that if the Minor examination was to be taken as the standard of what was necessary in a pharmacist, all who passed that standard should become members of the Society. But owing to the opposition of a certain number of Major men Mr. Sandford's draft Bill was altered at the last moment, and he was obliged by the force of circumstances to appeal to the Council of that day to agree to the alteration in order to secure the passing of the Bill. The present Bill was simply carrying out the definite aim of the most thoughtful men at that time. He would ask any pharmaceutical chemist how he could possibly claim to be put in a superior position as a practitioner because he possessed the advantage of a more complete training than some of his fellows? It was not done in other professions—in medicine, or in law. Men had different titles, but they were content to regard each other all as practitioners. It was very nice to see that a pharmacist was a Bachelor of Science, but were they prepared to tell the public that on that account he was a better pharmacist? Certainly not; he might be inferior. It was simply an indication that he was an educated man in a particular direction. He thought in this matter they might imitate the law. Solicitors had one general examination, and one position in connection with the Incorporated Law Society. If a man desired a higher qualification he took it at one of the Universities, as Bachelor or Doctor of Civil Law, but whoever passed the statutory examination was recognised as a lawyer. He held that it was non-ethical for any man to want a voluntary society to create a degree for which one of the main qualifications would be the payment of a sum of money. Under this Bill the title of pharmaceutical chemist was not touched, nor was that of chemist and druggist. When the law said that a person who passed the qualifying examination was entitled to practise, such a man ought to be a member of the Society. There was another serious drawback to the use of the title associate, for in the public mind it implied youth or semi-qualification—something incomplete. As for the idea that the conferring of titles would stimulate education, which had been suggested at various meetings, he was afraid there was not much in it. Thirty-five years ago he was enthusiastic in the belief that anyone who passed the Minor would, as a matter of course, go on to the Major and become a pharmaceutical chemist, but he had had to admit long ago that he was mistaken. The tendency of the age was to get into an occupation with the smallest amount of qualification, and in this respect pharmacists were no better or worse than other people; and if the Council had not been able from time to time to improve the minimum qualification, he feared the standard all round would have been very poor. He would appeal again, therefore, to pharmaceutical chemists to remember that this subject was not a new one; that the creation of new titles involved all sorts of difficulties, and that after all the educated pharmaceutical chemist, the Major man, had within himself all the benefits which he could, or ought to, desire to have—wider knowledge, greater intellectual enjoyment and so forth, and that he should be the last person to say that he wanted to add a few initials to his name. He ought to be glad to hold out the hand of fellowship to every qualified man who practised pharmacy.

Mr. ATKINS understood that Dr. Symes did not press his part of the argument with regard to the creation of a new title, and, if so, he was glad to hear it. He hoped the statement which the President had made that day would be regarded as a recognition of the opposition that had been expressed, and as an answer to the arguments which were then adduced. Personally he very much

regretted, and did not hesitate to say he was surprised to see, the confusion of ideas with regard to the question of membership. The answer which had been given would, he hoped, dismiss any antagonism in Lancashire, and if it did that he thought the Bill would have a very fair and smooth course.

The President thanked Dr. Symes for giving an opportunity of showing once more that there was practical unanimity at the Council, and said he was sorry he was not more prepared to answer his question, but he thought that what he had omitted to say, or had perhaps said imperfectly, had been largely supplied by his friend Mr. Carteighe, and he hoped their remarks taken together would have some influence with their pharmaceutical chemist friends throughout the country, who were more or less threatening opposition to the Bill.

Dr. Symes said if that were so, his object in bringing the matter forward would be fully served.

The resolution passed unanimously.

The Scheduling of Carbolic Acid.

Mr. Bateson desired to ask if the time had not arrived when further reprcsentation should be made to the Privy Council, urging the necessity of carbolic acid being placed in the Schedule.

The President said the subject was a very important one, and deserved the consideration of the Council. On three different occasions the Council had resolved that carbolic acid should be included in the Schedule, viz., in February, 1882, February, 1886, and October, 1888. Since that time the subject had been brought on two or three occasions before the House of Commons, and on each occasion the answer had been practically the same. The last attempt was made by his predecessor at the request of the Council in 1891, when a letter was written to the Privy Council, asking if their attention was still being directed to this important subject, and the answer was not from their point of view satisfactory. In July last a communication was received by the late Mr. Ernest Hart from the Privy Council, which stated that body did not propose to assent to the inclusion of carbolic acid in the Schedule of the Pharmacy Act, 1868, but that a Bill restricting the sale of such substances was under consideration, and might be introduced into Parliament. With that before them he confessed that he thought it would be impolitic, if not undignified, to approach the Privy Council on this question, unless the Council were furnished with more evidence of a strong public feeling, such as ought to be manifested in some shape or form in the House of Commons. If Mr. Bateson would get his Parliamentary representative to ask a question dealing with the subject in the House of Commons, he thought it might be advantageous, but pharmaceutical chemists might be quite easy in their consciences that the many deaths that occurred through the indiscriminate and careless use of carbolic acid did not lie at their doors.

Mr. Bateson thanked the President for his reply, and said he would take an opportunity of bringing the subject forward on notice.

The British Pharmacopœia, 1898.

The President said he wished to refer to a letter which he had received that morning as President of the Pharmaceutical Society, and as being in that capacity the Chairman of the Pharmacopœia Committee appointed by the Council to work with the Medical Council in the production of the forthcoming Pharmacopœia. The letter, which was from Dr. Tirard, was as follows :—

"Dear Sir,—As Secretary of the Pharmacopœia Committee of the General Medical Council, I am instructed to forward the enclosed to you for publication. This enclosure has also been forwarded to the various medical and pharmaceutical journals: 'With reference to an article in the *Chemist and Druggist* of January 8, 1898, purporting to publish the first part of a critical review of the forthcoming British Pharmacopœia, we are officially informed that such publication is entirely unauthorised by the General Medical Council, and that criticism at present is not possible because the work is still incomplete. We are also officially informed that the article already published contains numerous inaccuracies, and that it bears evidence of having been based upon an early unrevised proof.

"Yours faithfully,
"Nestor Tirard."

Other Correspondence.

A letter had been received from Mr. Walter Gibbons of Manchester, communicating resolutions passed at a meeting of chemists at Manchester on December 17, and suggesting amendments to the proposed Pharmacy Bill. A letter had also been received from the Exeter Association of Chemists, through its Hon. Secretary, enclosing a resolution in favour of the proposed Pharmacy Bill. Those letters would be handed over to and duly considered by the Law and Parliamentary Committee. Letters had been received from various members of the Board of Examiners, thanking the Council for their appointment.

As the subject of carbolic acid had been referred to, he would call attention to a letter which had been received from the Coroner for Rochester, who stated that at an inquest held in that city touching the death of a woman the jury found the cause of death was poisoning by carbolic acid, and expressed the opinion that the sale of this acid in its crude state should be restricted in the same way as other poisons. This gentleman went on to state that this was the third case of suicide by the same means within a period of less than a month, and he hoped the Society would take the necessary steps to get carbolic acid added to the Schedule, as it could at present be purchased without any check at all.

A letter had been received from the New Decimal Association inviting the Society to take an active part in promoting the use of the metric system, and enclosing a report of the work of the Association, which, it was proposed, should be handed over to the consideration of the Library and House Committee.

Report of the General Purposes Committee.

This report, which dealt exclusively with legal matters, was taken as usual in committee. On resuming, the report and recommendations were received and adopted, and special resolutions were passed, authorising the Registrar to institute proceedings against the persons named in the resolution.

EXAMINATIONS IN LONDON.

January, 1898.

MINOR EXAMINATION.

Candidates	examined	247
,,	failed	166
,,	passed	81

Archer, Samuel.
Baker, Thomas.
Barnes, Arthur Swaby.
Barron, James.
Bellamy, William Arthur.
Bennett, Charles Thomas.
Brickell, Ethelbert Richard.
Burton, Harry.
Butcher, Robert Johnson.
Chaff, Thomas Waycott.
Clarke, John.
Clarkson, James Selfe.
Coles, Sydney Geo. Reading.
Davies, John Osborne.
Davis, Charles.
Davis, Henry.
Doughty, Thomas Herbert.
Drakes, George.
Dudgeon, Tom Skipsey.
Eley, Philip George.
Elgar, John Butler.
England, Reginald Arthur.
Evans, John Owen.
Exelby, George Henry.
Fawcett, Harry Rowland.
Flemming, Thomas Henry.
Greaves, Henry Eldred.
Hall, John William.
Hardman, James Chevalier.
Hebden, John.
Hovenden, Sydney Churcher.
Hughes, Martin Smith.
James, John Earl.
Jarvis, John.
Jenner, Percy Greenwood.
Jones, David.
Jones, William Bodwin.
King, Arthur Edward.
Lacey, William James.
Larder, Frederic.
Leefe, Bernard Wrapson.
Lester, William Henry.
Lindsey, Robert William.
Livesey, Hy. Ayrton Alexr.
McCarthy, William Alfred.
Martindale, Wm. Harrison.
Mason, Hugh.
Miles, Alfred.
Morgan, Ernest Harper.
Moses, Walter Williams.
Parry, William Henry.
Parsons, Harold James.
Paterson, Ernest Livingstone.
Pearmund, George Edgar.
Pick, Frank Phillips.
Plowright, Alfred.
Potter, William.
Pring, William Wallace.
Pyman, Harold.
Rayner, Alfred.
Reeves, Horace.
Rhead, Alfred.
Richards, Evan William.
Richardson, Edwin.
Rushton, Frank Harvey.
Seaborne, Lionel Dunsford.
Smallwood, Fredk. Wm.
Swinn, Chas. Gosling.
Taylor, William.
Thomas, Isaac Evan.
Todd, Arthur Higgs.
Town, George Ernest.
Trebilco, Arthur James.
Turner, George.
Waddingham, George Albert.
Whitehead, Thomas.
Whitworth, Frederick Wm.
Williams, John.
Wise, Guy William.
Wood, William Frost.
Wright, Herbert Henry.

FIRST EXAMINATION.

Certificates by approved examining bodies were received from the undermentioned in lieu of the Society's Examination :—

Butchers, William H. ; Wrexham.
Dunford, Walter Henry ; Clevedon.
Elliott, John Johnson ; Southport.
Finnigan, George ; Hove.
Gardiner, William Z. ; Edinburgh.
Hellyer, Wm. Woodmason ; Plymouth.
Jesson, Albert Robert ; Leicester.
Jones, Henry ; Bedale.
Kieft, Edward James ; Swansea.
Morgan, William ; Kington.
Nation, Arthur William ; Exmouth.
Owens, James Alfred ; Kington.
Pescod, Leonard ; Eastbourne.
Pugh, Richard Jones ; Ogmore Vale.
Richards, Thos. Teverson ; Ashford.
Richardson, Thos. Evans ; Liverpool.
Royce, Septimus ; Oakham.
Scott, Robert Baird ; Wigan.
Sutcliffe, William ; Bradford.
Swire, Percy Wignall ; Halifax.
Walton, Ralph ; Maidenhead.
Wilson, Thomas Ellick ; Southwark.

EXAMINATIONS IN EDINBURGH.

January, 1898.

MAJOR EXAMINATION.

Candidates examined and failed..... 2

MINOR EXAMINATION.

Candidates examined	146
,, failed	100
,, passed	46

Bastide, Ernest.
Bennett, Frederick William Moncrieff.
Bowman, Edward.
Caine, John Caesar.
Cockburn, Bertram.
Cousins, George Herbert.
Cummings, Robert.
Doig, William.
Dutton, Herbert Goddard.
Erskine, Edwin.
Fowden, William Joseph Vaughan.
France, John Richard.
Freer, Arthur Harry.
Gauld, James.
Gorst, William.
Grassie, William.
Halley, Robert.
Hardie, John Davidson.
Henderson, Alexander Kello.
Hepplewhite, William George Thomas.
Hope, William John.
Hunter, William Wight.
Killon, Alfred Ernest.
Latham, William Henry.
Lowe, James Tasker.
McCutcheon, Alexander.
Macdonald, Robert.
Martin, Frederick John.
Oliver, Joseph.
Park, Henry Marshall.
Robinson, John Newton.
Scobie, Lawrence.
Stewart, Jeanie.
Taylor, John Prentice.
Thomson, Peter.
Thomson, William.
Tipping, Joseph.
Wells, Louis John.
Welsh, Thomas.
West, Frederick Marshall.
White, Thomas William.
Wilson, Edward Taylor.
Wilson, John Lochhead.
Wootton, Joseph Frederick.
Wright, John.
Young, Harold Shaw.

"FIRST" EXAMINATION QUESTIONS.

January 11, 1898.

LATIN.

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

I. For all candidates. Translate into Latin :—

1. My brother is in the house.
2. These things render life safer.
3. We do not praise a judge by whom all laws are violated.
4. I cannot call myself fortunate on this account.
5. He said he did not know where you were spending the summer.

II. Translate into English either A (Caesar) or B (Virgil).

(Candidates must not attempt both authors.)

A.—CAESAR.

1. Quibus rebus cognitis, quum ad has suspiciones certissimae res accederent ; quod per fines Sequanorum Helvetios traduxisset ; quod obsides inter eos dandos curasset ; quod ea omnia non modo injussu suo et civitatis sed etiam inscientibus ipsis fecisset ; quod a magistratu Aeduorum accusaretur, satis esse causae arbitrabatur, quare in eum aut ipse animadverteret, aut civitatem animadvertere juberet.

2. Dum paucos dies ad Vesontionem rei frumentariae commeatusque causa moratur, ex percontatione nostrorum vocibusque Gallorum ac mercatorum, qui ingenti magnitudine corporum Germanos, incredibili virtute atque exercitatione in armis esse, praedicabant, saepenumero sese cum his congressos, ne vultum quidem atque aciem oculorum ferre potuisse, tantus subito timor omnem exercitum occupavit, ut non mediocriter omnium mentes animosque perturbaret.

GRAMMATICAL QUESTIONS.

(For those only who take Caesar.)

1. Give the nominative singular and the gender of *suspiciones, fines, obsides, magistratu, eum, vocibus, mercatorum, virtute, mentes, animos.*

2. Give the principal parts of all the verbs in Passage 2.

3. Write in Latin :—11, 29, 76, 105, 19th, 28th, ¼ ; and give the Roman numerals for 1898.

4. Give examples of the different ways in which "to," denoting purpose, may be translated into Latin.

B.—VIRGIL.

1. Olli subridens hominum sator atque Deorum
Vultu, quo coelum tempestatesque serenat,
Oscula libavit natae ; dehinc talia fatur :
Parce metu, Cytherea ; manent immota tuorum
Fata tibi ; cernes urbem et promissa Lavini
Moenia, sublimemque feres ad sidera coeli
Magnanimum Aenean ; neque me sententia vertit.

2. Tum sic regnam alloquitor, cunctisque repente
Improvisus ait : Coram, quem quaeritis, adsum
Troius Aeneas, Libycis ereptus ab undis.
O sola infandos Trojae miserata labores,
Quae nos, relliquias Danaum, terraeque marisque
Omnibus exhaustos jam casibus, omnium egenos,
Urbe, domo, socias ! grates persolvere dignas
Non opis est nostrae, Dido, nec quidquid ubique est
Gentis Dardaniae, magnum quae sparsa per orbem.
Di tibi, si qua pios respectant numina, si quid
Usquam justitia est et mens sibi conscia recti,
Praemia digna ferant.

GRAMMATICAL QUESTIONS.

(For those only who take Virgil.)

1. Give the nominative singular, and the gender, of *hominum, Deorum, metu, sidera, undis, labores, maris, Gentis, orbem, numina.*

2. Give the principal parts of all the verbs in Passage 2.

3. Write in Latin :—11, 29, 76, 105, 19th, 28th, ¼ ; and give the Roman numerals for 1898.

4. Give examples of the different ways in which "to," denoting purpose, may be translated into Latin.

ARITHMETIC.

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

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

1. Divide the sum of 30 ac. 2 ro. 17 per., 17 ac. 3 ro. 38 per., and 22 ac. 1 ro. 27 per. 4 yd. by 3.

2 If a bankrupt's debts are £1920, and his assets only £414, how much in the £ can he pay his creditors?

3. Reduce $\cdot 36\dot{3}$ of £2 1*s.* 3*d.* to the decimal of $\cdot 7\dot{2}$ of £3 6*s.*

4. Divide the product of 2·1825 and ·0046 by ·0002425.

5. A man buys 500 quarters of wheat at 56*s.* per quarter, of which he sells one-half at 6*s.* per bushel. At what rate per bushel must he sell the remainder so as to gain £25 by the whole transaction?

6. A person invests £1365 in the 3 per cents. at 91 ; he sells out £1000 Stock when they have risen to 93½, and the remainder when they have fallen to 85. How much does he gain or lose by the transaction?

The following question must be attempted by every candidate :—

7. Write out the Metric Table of Capacity.

If 61 litres of seed are required for 1 are of land, how much seed will be required for 2 hectares 2 ares?

ENGLISH.

Time allowed—from 3 *p.m. to* 4.30 *p.m.*

1. Analyse :—

"On Linden, when the sun was low,
All bloodless lay the untrodden snow,
And dark as winter was the flow
Of Iser, rolling rapidly."

2. Parse fully :—"Thrice is he armed that hath his quarrel just."

3. Give the meanings of the following prefixes, and a list of words of which they form a part, one for each :—*vice, un, hypo, ante, anti, contra.*

4. In the following passage, supply the necessary capital letters, and put in the stops and the inverted commas where necessary :—this time he believed her he saw that whether she deceived herself or not she thought some deadly peril awaited himself what will they do he asked and why should they seek to kill me she answered almost sullenly i have told you a score of times and so has the girl muriella that you are hated because you are a stranger a meddler as folks think a reformer as you call it you would never believe us because we were women.

The following question must be attempted by every candidate :—

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

(i.) The evils of extravagance.
(ii.) The reign of Queen Elizabeth.
(iii.) Arbitration in trade disputes.
(iv.) The treasures of the deep.

DRAFT PHARMACY ACTS AMENDMENT BILL.

The object of this Bill is—
To render "Apprentices or Students" eligible to become "Student-Associates" of the Society, instead of "Students," as heretofore;
To render every person whose name appears on the Register of Chemists and Druggists eligible to become a Member of the Society;
To provide for the retirement of one-third of the Council every year by rotation instead of by ballot as is provided by the Charter;
and
To enable the Secretary to receive voting papers for the election of Council up to and on the day of election.

A DRAFT BILL

INTITULED

The Pharmacy Acts Amendment Act, 1898.

1. In this Act—
The term "Chemist and Druggist" shall have the same meaning as in the Pharmacy Act, 1868; and "The Society" shall mean the Pharmaceutical Society of Great Britain. — Interpretation.

2. Every person who at the time of the passing of this Act shall have been duly registered as an "Apprentice or Student," and who, under the provisions set forth in Section X. of the Pharmacy Act, 1852, has been admitted to and at that time remains in the Society as a "Student," shall be registered as a "*Student-Associate*" of the Society; and every person who at the time of the passing of this Act shall have been duly registered, or who thereafter shall become registered as an "Apprentice or Student," shall be eligible to be elected a "*Student-Associate*" of the Society according to the Bye-laws thereof. — "Apprentices or Students" eligible to be elected "Student-Associates."

3. Every person who at the time of the passing of this Act shall have been registered as a Chemist and Druggist or who shall hereafter become registered as a Chemist and Druggist shall be eligible to be elected a member of the Society according to the Bye-laws thereof. — Registered Chemists and Druggists eligible to be elected Members.

4. In lieu of the provisions contained in the Royal Charter of Incorporation of the Society, whereby it is provided that two-thirds of the members of the Council shall in every year go out of office, the following provisions shall, after the passing of this Act, have effect:— — Retirement of Members of the Council by rotation.

(1.) On the ordinary day of election of members of the Council in every year seven members of the Council shall go out of office, and the vacancies shall be filled by election, the retiring members being eligible for re-election.

(2.) The seven members who go out shall be the members of the Council who have been longest in office without re-election.

(3.) If and whenever the number of the members of the Council who have been longest in office without re-election shall exceed seven, the members of the Council to retire shall be determined by lot.

5. At all meetings of the Society at which votes shall be given for the election of officers, all or any of the votes may be given either personally or by voting papers, in a form to be defined in the Bye-laws of the said Society, or in a form to the like effect, such voting papers being received by the Secretary, under cover, not later than twelve o'clock noon on the day on which the election takes place. — Voting papers for election of officers.

6. This Act shall not extend to Ireland. — Extent of Act.

7. This Act may be cited as the Pharmacy Acts Amendment Act, 1898. — Short title of Act.

8. The enactments mentioned in the Schedule to this Act to the extent specified in the third column of that Schedule are hereby repealed. — Repeal.

SCHEDULE.

Enactments Repealed.

Session and Chapter.	Short Title.	Extent of Repeal.
15 and 16 Vict. c. 56	Pharmacy Act, 1852	In Section ten the words, "and every such person duly registered as an Assistant shall be eligible for admission as an Associate of the said Society."
31 and 32 Vict. c. 121	Pharmacy Act, 1868	Sections eighteen, nineteen, twenty, and twenty-one.

PHARMACEUTICAL RECIPROCITY.

LETTER TO THE VICTORIA PHARMACY BOARD.

The following letter was approved at the meeting of the Pharmaceutical Council on Wednesday last, and ordered to be sent:—

THE PHARMACEUTICAL SOCIETY OF GREAT BRITAIN,
17, BLOOMSBURY SQUARE, LONDON, W.C.

Dear Sir,

Your letter of June 1st suggesting the amendment of our Pharmacy Acts with the object of empowering the Registrar of this Society to receive certificates of skill and competency other than those signed by the respective Boards of Examiners appointed by the Council of this Society has been carefully and sympathetically considered.

The general conclusion which has been arrived at is that the time is not yet ripe for any general amendment in this direction.

I may remind you that we are at present in a transitional state. Bye-laws have recently been approved by the Privy Council effecting a considerable improvement in the standard of general education required from those who after August, 1900, seek to enter Pharmacy in Great Britain.

There will, no doubt, be many Colonial, Indian, and Foreign Universities and Colleges amongst the Examining Bodies whose Certificates in general education will be accepted by the Council of this Society.

It is felt, however, that at present it would be almost impossible to ensure in the different parts of the Empire a practical uniformity in the scope and stringency of the technical Examinations.

One step in this direction would be accomplished if the Pharmacy Boards in certain groups of Colonies—for example, those in Australia and New Zealand—could succeed in establishing such uniform Examinations as a basis of Intercolonial reciprocity.

The chief difficulty of extending reciprocity lies in the absence of an adequate compulsory Curriculum applicable to the whole of the Empire, and the removal of this difficulty could be accomplished by obtaining from the different legislatures powers to impose a uniform and sufficient course of study.

My Council regrets that public opinion is not sufficiently advanced to enable us to obtain powers for a compulsory curriculum even in Great Britain, but it is hoped that in the course of time legislation in this direction may be practicable.

I am, dear Sir,
Yours faithfully,
(Signed) WALTER HILLS, President.
To the Secretary to the Pharmacy Board of Victoria.

INFLUENCE OF NUTRIENT MEDIA ON THE DEVELOPMENT OF FUNGI.—A variety of experiments have recently been made on this subject. J. Ray (*Bonnier's Rev. Gén. de Bot.*, vol. ix., 1897), in a lengthy series of observations on *Sterigmatocystis alba*, finds the one character which remains constant under all conditions to be the size of the spores. Almost all other characters, which are usually relied on as specific, he found liable to vary; while those which are regarded as generic are more constant. The size of the cells of which the hyphæ are composed is especially variable. W. Schostakowitsch ('Flora,' 1897, 'Ergänzungsband,' p. 88) finds *Mucor proliferus* to vary greatly according to the temperature and the nature of the nutrient fluid. The height may vary between 0·5 Mm. and 7 Cm. The spores are, in this case, subject to extraordinary variation in size, between a minimum of 2 and a maximum of 67μ; and their form is also exceedingly different under different conditions. From experiments made chiefly on *Aspergillus niger*, *Penicillium glaucum*, and *Botrytis cinerea* (Pringsheim's 'Jahrbuch,' vol. xxx., pp. 665-688), H. M. Richards states that many nutrient substances, both organic and inorganic, have a distinct influence on the growth of fungi. But an increased activity of growth of the mycele is frequently accompanied by a retardation in the production of spores. The colour of the spores is often sensibly affected by the chemical composition of the nutrient medium.

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LONDON: SATURDAY, JANUARY 15, 1898

BRITISH PHARMACOPŒIA, 1898.

A COMMUNICATION has been received from Dr. NESTOR TIRARD, as Secretary of the Pharmacopœia Committee of the General Medical Council, with reference to an article in the *Chemist and Druggist* of January 8, 1898, purporting to publish the first part of a critical review of the forthcoming British Pharmacopœia. We are officially informed that such publication is entirely unauthorised by the General Medical Council, and that criticism at present is not possible because the work is still incomplete. We are also officially informed that the article already published contains numerous inaccuracies, and that it bears internal evidence of having been based upon an early unrevised proof.

THE COUNCIL MEETING.

AFTER the reading of the minutes of the previous meeting, the PRESIDENT referred to the loss sustained by the death of the late Mr. GILES, and in mentioning the various relations in which he had been connected with the Society's work since 1847, spoke especially of the inaugural address delivered by him at the opening of the School session in 1874 as containing matter that might still be usefully read by anyone interested in the advancement of the status of pharmacy, and he quoted one passage from that address as expressing its general sentiment, as well as the principle underlying all the Society's work. A resolution was then passed expressing regret for the loss of a member who had rendered such good service to the Society and authorising the PRESIDENT to convey to Mrs. GILES and the family the deep sympathy of the Council in their bereavement.

The PRESIDENT also mentioned with regret the death of Mr. WHEELER, who had been a member of the Society for forty years and was divisional Secretary for Haggerston (Shoreditch), and lastly made reference to the death of Mr. ERNEST HART, the editor of the *British Medical Journal*, who had taken great interest in pharmaceutical affairs, and to the fact that, among other public services rendered by him, the present effective administration of the Pharmacy Act in regard to secret remedies containing scheduled poisons was largely due to the persistency of Mr. HART'S representations to the Government authorities of the danger arising from the sale of those preparations contrary to the provisions of the Pharmacy Act.

The SECRETARY reported that a letter had been received from the Privy Council Office approving of the recent appointments of examiners.

The additions to the Society comprised 19 members, 70 associates, and 101 students.

The report of the Finance Committee did not contain any details calling for comment, except the pleasing circumstance mentioned by the PRESIDENT that several donations to the Benevolent Fund had been received—among them a sum of fifty pounds had been received from the directors of Camwal, five guineas from Dr. STEVENSON, and nine pounds from Mr. Moss as an unapplied balance from the Attfield Testimonial Fund.

On the recommendation of the Benevolent Fund Committee, several grants amounting in all to sixty-six pounds were ordered to be paid. The SECRETARY reported the death of two annuitants, and the resignation of one who has had a substantial legacy left to her. In connection with the latter circumstance the VICE-PRESIDENT mentioned that the Committee had in the report made a note referring to the regulation adopted in 1894, as to reduction or discontinuance of annuities, and he mentioned several instances in which annuitants had voluntarily resigned their annuities when their circumstances improved.

The report of the Library Committee gave the usual account of attendances in the Libraries and Museums and of donations, stating also that the microscopes had been placed in charge of the CURATOR, and that Mr. CARTEIGHE had presented to the Society one of the medals struck at the Royal Mint in commemoration of the sixtieth anniversary of Her Majesty's reign.

Dr. SYMES spoke approvingly of the microscopes being placed under the care of the CURATOR, as it would ensure their being kept in good order and properly used.

The report of the Law and Parliamentary Committee included the draft of a letter (see p. 54) to the Pharmacy Board of Victoria on the subject of reciprocity in regard to examination certificates, and a recommendation was adopted that the PRESIDENT be authorised to take such steps as might be necessary for introducing into Parliament the Pharmacy Act Amendment Bill, in which some verbal alterations have been made (see p. 54).

In moving the adoption of the report, the PRESIDENT explained that since the receipt of the letter on the subject of reciprocity in examinations from the Registrar of the Victoria Pharmacy Board, the Council had very carefully considered the possibility of taking steps in that direction in sympathy with the desire, expressed there and elsewhere, that the various parts of the Empire should be drawn closer together, and the conclusion arrived at was set forth in the letter (see page 54).

In reference to the Pharmacy Bill, Dr. SYMES spoke of a desire prevailing with some pharmaceutical chemists that a Fellowship should be instituted for those taking the higher qualification, and though not intending to advocate that proposal, he suggested that a statement might be

officially given showing its impracticability or undesirability, and with the view of removing possible opposition that might be offered to the Bill.

In the discussion that followed, Mr. Martindale expressed the opinion that the institution of a Fellowship is undesirable, because there should be but one standard for admission to membership of the Society, viz., qualification to practise pharmacy.

The President expressed regret that Dr. Symes had not raised the question when the draft Bill was agreed to, adding that though the subject of a Fellowship had been considered on several occasions, any attempt to establish such a distinction between those now eligible as members and those proposed to be admitted to membership would be inconsistent with the object of the present Bill, which is merely to consolidate the Society.

He failed to perceive what use there would be in a Fellowship granted by the Society, as it would be no indication of superior knowledge or give any better position than the protected title of pharmaceutical chemist, unless the institution of a Fellowship were accompanied by an enforced curriculum of education or some close relationship between pharmacy and teaching universities throughout the country. He therefore hoped that pharmaceutical chemists would consider the appeal made to them by Mr. Carteighe to sink personal considerations in order to realise the consolidation of the Society, which all were anxious for.

Dr. Symes thanked the President for his explanation, which he thought would be satisfactory to those who had raised the question, as they would see that the time was not opportune for pressing their views.

Mr. Carteighe expressed disappointment at finding that some pharmaceutical chemists taking interest in legislative matters did not make themselves acquainted with their history. More than thirty years ago this question of a Fellowship was raised, and it would be useful to consider it logically in connection with the original object for which the Society was founded—the incorporation of all persons engaged in the practice of pharmacy in one body and under the one designation of member. When examination was established, the grade of associates was for those who were more or less *in statu pupillari*, and qualification for membership consisted in being in business on their own account. In 1866 and 1867, when the Select Committee dealt with the Pharmacy Bill, it was conceded that all those actually in business should be admissible as members, irrespective of examination. The idea of the present draft Bill was to carry out that original plan. In regard to connection with the Society, the pharmaceutical chemist could not reasonably claim a better position or advantage over his fellows any more than in other occupations, such as the professions of medicine or the law. Solicitors also had but one position in connection with the Incorporated Law Society. If a higher qualification were desired it was taken at a University, but everyone who passed the statutory examination was recognised as a lawyer. In like manner a person who passes the examination giving qualification to practise pharmacy ought to be admissible as a member of the Society. Moreover, there was a practical objection to the title of associate, as it implied youth or partial qualification—something incomplete. The idea that conferring titles would stimulate education he had come to recognise as mistaken. Thirty years ago, when he was younger and more enthusiastic, he fully believed that anyone who passed the qualifying examination would, as a matter of course, go on to the Major and become a pharmaceutical chemist, but he was mistaken. The tendency is to be content with the smallest amount of qualification, and if the Society had not been able to improve the requisite minimum qualification, the standard all round would have been very poor. He appealed, therefore, once more to pharmaceutical chemists to remember that the object of the Bill was not to create new titles, but to consolidate the Society, to consider also that pharmaceutical chemists, possessing a superior education and all the benefits of wider knowledge, should be the last to wish to add a few initials to their names, but should, for the sake of the necessary consolidation of the Society, hold out the hand of fellowship to all qualified to practise pharmacy.

Mr. Atkins hoped that the President's remarks would be taken as an answer to the arguments put forward by the opponents of the Bill. He expressed regret and surprise at the confusion of ideas prevailing as to membership of the Society, and hoped the answer given would dispel all antagonism. Reference may be made to several of the letters appearing in the present number of the Journal as being calculated to exercise influence in the same direction if regard is shown for the facts stated in them, and if Mr. Carteighe's advice is followed to observe the rules of logic in arriving at conclusions from those facts.

The President thanked Dr. Symes for giving opportunity for showing that the Council was practically unanimous, and he hoped his remarks, together with those of Mr. Carteighe, would have some influence on pharmaceutical chemists disposed to object to the Bill, and Dr. Symes added that if that were the case his object would be fully served.

Mr. Bateson asked whether further representations should not be made to the Privy Council urging the necessity of adding carbolic acid to the Poison Schedule, and the President in reply stated what has already been done in the matter, adding that it would be impolitic if not undignified, to go further unless the subject were brought before Parliament. In any case the fatalities caused by carbolic acid did not lie at the door of pharmaceutical chemists. Mr. Bateson, however, announced his intention of giving formal notice to bring the subject forward on some future occasion.

The President then drew attention to a letter from Dr. Tirard, which is printed at page 52, and to a statement relating to a publication purporting to be a "critical review" of the British Pharmacopœia, 1898, which was declared to be entirely unauthorised and inaccurate. Reference was also made to a letter from Mr. Walter Gibbons, communicating a resolution passed at the meeting at Manchester (see *P.J.*, lix., 575). Another letter from the Exeter Chemists' Association enclosed a resolution in favour of the Pharmacy Bill, and various members of the Board of Examiners wrote thanking the Council for their appointment. A letter from the Coroner for Rochester related to the subject of carbolic acid, and another from the Decimal Association requesting the Society to take an active part in promoting the use of the metric system. These letters were referred to committees for consideration.

That part of the General Purposes Committee dealing with legal business having been considered, resolutions were passed authorising proceedings to be taken for infringement of the Pharmacy Act.

ANNOTATIONS.

Mr. Ernest Hart, whose death occurred on Friday, January 7, will be greatly missed in the medical world, where he had attaincd a position of great authority as editor of the *British Medical Journal* and chairman of the Parliamentary Bills Committee of the British Medical Association. In the latter capacity, he was in great measure instrumental in securing the more comprehensive application of the Pharmacy Act, 1868, during recent years, and at the Council Meeting on Wednesday due recognition of that fact was accorded by the President (see p. 48). Mr. Hart received his early education at the City of London School, and subsequently studied medicine at St. George's Hospital, where he had a distinguished career. He became a Member of the Royal College of Surgeons in England in 1856, and acquired an extensive consulting practice as an ophthalmic surgeon. But his energies were chiefly devoted to journalistic work, first as a member of the staff of the *Lancet*, under Thomas Wakley, and later as editor of the *British Medical Journal*, a position he occupied until his death. Mr. Hart was also an occasional contributor to the leading reviews and other publications, the prevention of disease being his favourite subject. He received the honorary degree of D.C.L. from the University of Durham in 1893.

A New Journal on Food and Allied Products has made its appearance, the interesting and valuable periodicals dealing with food products and allied subjects known as the 'Forschungs-Berichte' and the 'Jahresbericht über Fortschritte der Nahrungs und Genussmittel,' which were edited by Dr. Hilger and other collaborateurs, having been combined. The new journal will in future be issucd as a monthly journal under the joint editorship of Drs. A. Hilger, J. König and Buchka, who are chemists well-known in relation to food products. The new periodical will be known as the 'Zeitschrift für untersuchung der Nahrungs und Genussmittel,' and gives promise of being invaluable to all chemists who are interested in the chemistry of food products. In its first number we find original work by König on the determination of fibre in fodder and other products, and by other authors on the analysis of butter, fat, wine, etc., as well as abstracts of many interesting papers on food and forensic chemistry. We wish the new journal the success it deserves to obtain.

The Chemists of Plymouth and District are to be congratulated on losing no time in seeking support for the new Pharmacy Bill. Our readers are doubtless all aware that a Parliamentary contest has just been decided in Plymouth, and in anticipation of that event, on Saturday morning last a deputation, including Mr. J. Cocks, President of the local Association, Mr. C. J. Park, Councillor of the Pharmaceutical Society, Mr. R. E. Roper, and Mr. W. H. Woods, interviewed both candidates, with the object of obtaining promises to support the Bill. It was explained that the proposed amendment would be brought forward to introduce essential alterations of the present Pharmacy Acts, the principal object being to entitle all chemists and druggists to full membership of the Pharmaceutical Society, and that the only fear was that the House of Commons might be counted out when the Bill was introduced. Both candidates promised to support the amendment when it was brought forward, as also did Sir Edward Clarke, M.P., who has asked that a reminder may be sent to him when the Bill comes up for consideration. This is an example which should not be lost sight of in places where elections are pending, whilst existing M.P.'s should be freely canvassed on the same subject.

The Chemists' Ball will take place at the Portman Rooms Baker Street, W., on Wednesday next January 19, and a final reminder of that fact is now published for the benefit of all who have not yet secured tickets. The Honorary Secretary, Mr. W. Warren, 24, Russell Street, Covent Garden, W.C., requests us to state that all further applications for tickets should now be sent direct to him without delay.

Electric Telegraphy without Wires, according to Professor Oliver Lodge—in his concluding lecture at the Royal Institution, on Saturday last—does not differ so much from ordinary telegraphy with wires as is sometimes supposed. Electric and magnetic waves constitute the basis of both systems, but when a wire is not employed the waves spread in all directions, like sound, and cannot be compelled to travel in one direction only, as when a wire is employed. Nevertheless, the waves may be intercepted at a distance if suitable instruments are provided for their detection. The nature of these instruments will be understood when it is explained that there is an analogy between their behaviour and that of tuning-forks. Air waves from one tuning-fork in vibration set up vibrations in another, provided the latter be tuned in syntony with the first, and a similar plan is resorted to for the detection of electric oscillations. Thus, it is known that the oscillations given off by a Leyden jar arranged to discharge through knobs can be detected by a similar independent Leyden jar arranged with a small overflow circuit. Every time a spark passes between the knobs of the first jar a spark is also seen to pass between the knobs of the overflow circuit of the second, if the two main circuits are tuned to each other, and by lengthening or shortening one circuit —tuning the apparatus, in fact—the sparks cease. On placing the overflow knobs so close as almost to touch, and introducing a battery and bell into the circuit, cohesion sets in between the knobs and the bell rings whenever a spark passes.

The Coherer thus formed is somewhat crude and requires very delicate adjustment, but it serves to illustrate the general principle of coherers. A Leyden jar arranged in this way, however, does not give electro-magnetic waves, such as were discovered by Hertz, who spread out the two coverings of a Leyden jar in space so that the current from an induction coil could induce a magnetic field round the wire and create an electrostatic field in the coverings or plates, which then radiated true electro-magnetic waves. The best method of detecting these waves is by means of Branly's coherer, which consists of a tube filled with metal filings, giving a number of loose contacts as in the microphone, and responding to electric waves. An electric wave falling upon such a coherer causes the filings to conduct a current, and they continue in that state until they are decohered by a mechanical jar or knock. In another form of coherer a needle rests lightly on a piece of watch spring. Marconi, a young Italian, who has recently been prominent in directing attention to the possibility of wireless telegraphy, uses a form of the Branly coherer, with relays and suitable mechanical arrangements for decohering, and has succeeded in sending signals over a distance of nine miles. Another method of signalling electrically across space, successfully tried by Preece, is based on the use of the inductive effects produced in one wire by currents passing in another.

An Ideal Hospital Ward is claimed to exist at the Temperance Hospital, Hampstead Road, London, in a new aseptic room that has just been brought into use there. It is described as being a comparatively small apartment—14 feet long by 11 feet wide and 13 feet high—but it is a model of lightness and cleanliness,

with modulated warmth and scientific ventilation. The room has been designed by Dr. Collins, surgeon of the hospital and Chairman of the London County Council, and the ward is intended to serve the double purpose of an operating theatre and a room for convalescents, as required. It is walled with pale pink enamelled glass tiles, floored with marble mosaic, lighted by means of a large single sheet of plate glass, which constitutes one-fifth of the west wall, and warmed by a Teale grate below the window. The beds, furniture, fittings and surgical apparatus are all in the newest style, glass being largely employed. The total cost of the new ward is estimated at five hundred pounds, which has been defrayed by five donors, and the room is to be called the Frank Wright Ward, in memory of a late member of the board of management.

WEIGHTS AND MEASURES are the subject of a report by the Board of Trade, which, somewhat late in the day, records the fact that an Act has been passed to legalise the use in trade of weights and measures of the metric system. It is also noted that a new scientific standard of the imperial yard measure, made of "iridio-platinum," has been obtained during the past year, and a table of new equivalents of metric weights and measures is appended to the report. In this table, which is based on comparisons made by the Comité International des Poids et Mesures, Paris, and by the Standards Department, the value of the metre is given as 39·370113 inches, the square metre = 1·19599 sq. yard, the cubic metre or stere = 1·307954 cub. yard, the litre = 1·7598 pint, and the gramme = 15·432 grains avoirdupois, 0 03215 oz. troy, or 0·77162 scruple (apothecaries' weight). On the other hand, the inch is represented as equivalent to 25·4 millimetres, the square inch = 6·4516 sq. centimetres, the cubic inch = 16·387 cub. centimetres, the fluid ounce = 2·84123 centilitres, the pint = 0·568 litre, the ounce avoirdupois = 28·35 grammes, the pound = 0·45359243 kilogramme, the ounce troy = 31·1035 grammes, and the scruple (apothecaries' weight) = 1·296 gramme.

THE PHILADELPHIA COLLEGE OF PHARMACY, which formerly arranged its classes in accordance with a systematic two years' course of instruction, has now ceased to grant "degrees" except to graduates of the College who have taken a complete three years' course. The reason of the change, reference to which has previously been made in these columns, is that the period of two years has been found too short to educate professional pharmacists. The title of "Doctor in Pharmacy" will henceforth be conferred upon graduates of the College, but in addition to having devoted three years to the acquisition of a pharmaceutical education, they must be prepared to produce ample evidence that the three years of study have been profitable ones, for, as the Philadelphia College authorities pertinently remark, there is no room in the world for half-educated pharmacists. Students from other colleges may be admitted to advanced standing in the College on passing the necessary examination and otherwise giving satisfactory evidence of their ability to derive benefit from advanced instruction, and graduates from other recognised colleges of pharmacy may be admitted to the third year's course.

MATRICULATION AT LONDON UNIVERSITY is conditional at the present time upon an examination being passed in Latin and one other foreign language, English (language, history, and geography), mathematics, mechanics, and one other scientific subject. In January next, however, new regulations will come into force, and will have the effect of lightening the syllabus to some extent. Latin and English will then remain the only compulsory languages, and mechanics will become optional. The complete list of subjects will be: (1) Latin; (2) English; (3) mathematics; (4) general elementary science, including the rudiments of mechanics, heat, light, electricity, and non-metallic chemistry; and (5), one other foreign language or a branch of science. The requirements in Latin and mathematics remain unaltered; in English, elementary questions on English literature will be added; in French or German, easy translation from English will be required; and in chemistry, both the non-metallic and metallic elements must be studied. Modifications are also to be introduced in connection with the intermediate and degree examinations of the University.

THE PHARMACEUTICAL SOCIETY OF CAPE COLONY, which fills the gap left by the extinction of an older society some years ago, ought to have a useful and successful career, and we hope before long to find it in a position to regulate all matters pharmaceutical in the colony. The report at page 60, for which we are indebted to Mr. W. Fick, Secretary of the infant Society, shows that the new organisation will not lack ideas for realisation so long as the first president holds the reins.

THE ROYAL BOTANIC SOCIETY starts the year with more hopeful prospects than the members have been familiar with for some time past. A year ago the outlook was particularly gloomy, as the lease of the gardens was about to expire, there was an accumulated balance of some thousands of pounds on the wrong side of the account, and the Society was prevented from giving prizes at the various fêtes and shows as liberally as could be desired. But the position has been resolutely faced, and the Society is now perfectly solvent, the accumulated debt which has so long been a source of trouble and anxiety having been swept away. Moreover, a new lease for the maximum term of thirty-one years has been promised by the Commissioner of Woods and Forests. As is well known, the gardens are open for study to the pupils of the various medical institutions, and a School of Practical Gardening has recently been started with the aid and concurrence of the London County Council, whilst the Middlesex and Herts Councils have approached the Society with a view to sending students. Further, the Council of the British Astronomical Association is taking steps to erect and equip an observatory in the gardens.

AT THE ROYAL INSTITUTION on Tuesday next, January 18, Professor E. Ray Lankester, F.R.S., the recently-elected Fullerian Professor of Physiology in the Institution, will begin a course of eleven lectures on "The Simplest Living Things"; on Thursday, January 20, Professor Dewar, F.R.S., will deliver the first of a course of three lectures on "The Halogen Group of Elements"; and on Saturday, January 22, Professor Patrick Geddes will begin a course of three lectures on "Cyprus."

BOTANICAL ENTERPRISE IN WEST AFRICA is the subject of an article in the *Kew Bulletin*, in which it is pointed out that the earliest station was started at Lagos by Sir Alfred Moloney, in 1888, and the next at Aburi, on the Gold Coast, in 1890, under the supervision of Sir W. Brandford Griffith, whilst the station at the Gambia was established in 1894, and in 1895 Sir Frederic Cardew was successful in arranging for a station at Freetown, Sierra Leone. In addition to these, a station was established in 1891, under the Foreign Office, in the Niger Coast Protectorate. It is stated that the early attempts to start these stations were necessarily of a tentative character, but the measure of success which attended their efforts to develop the material progress of the West African Colonies led to a desire to place them on a more permanent footing. Accordingly, at a conference held at the Colonial Office, in September, 1893, at which the four West African Governors were present,

steps were taken to extend the botanic station system and to improve the position and standing of the curators. As a result of this conference, the botanic stations in West Africa have been placed on a similar footing to those existing in other parts of the Empire, and their influence and usefulness are steadily increasing. The health of the curators has, on the whole, been satisfactory, the only death having occurred at Aburi, in 1895, when Mr. W. Crowther, a remarkably promising man, died after nearly four years' service. But there is said to be no doubt that the special leave on full pay granted to West African officers is absolutely necessary to the preservation of health in that part of the world. In order to create an efficient body of native officers to assist in the work of the botanic stations, and take charge during the absence of the curators, arrangements have been made to train negro boys in horticultural work, and to make a selection of the most promising for further training in the West Indies or at Kew. Two such boys from Lagos were trained by the Botanical Department in Jamaica, and afterwards received at Kew for nearly eighteen months, returning to West Africa in May, 1894. One is now in charge of the Government House garden and grounds, while the other is Assistant Curator at the Botanic Station. It is hoped that efforts will be made to train similar men in the other colonies, and in the meantime it has been sought to increase the efficiency of the curators themselves, and to afford them opportunities for becoming thoroughly acquainted with the possibilities of development of West African industries.

THE BOTANIC STATION AT SIERRA LEONE is in charge of Mr. F. E. Willey, a member of the staff of the Royal Gardens, who had previously acted temporarily as curator of the botanic station at the Gold State, and Mr. James E. Hartley, a foreman at the Hope Botanic Gardens, Jamaica, acts as overseer under Mr. Willey. The duties of the overseer are to undertake the experimental cultivation of coffee, cacao and other economic plants, and to assist in training native boys in horticultural work. The site selected for the botanic station consists of two pieces of land, one of which—the lower or north garden—is about a mile from the centre of Freetown, at an elevation of 250 feet above mean sea-level, and well sheltered from the prevailing winds. There is a perennial stream flowing through the gardens, and it is intended to tap this at a higher level, and lead the water in small rivulets or in pipes all over the ground. The soil is not all equally good. It is described as rather poor and shallow in places, "while from three to four acres are covered with slab rock and laterite." There is, however, a sufficient area of good soil, especially along the banks of the stream, for nurseries and propagating grounds. Other parts are suitable for being laid out in lawns, and capable, by the addition of manure and soil, for growing specimen trees in specially prepared holes. The other portion of the station is, unfortunately, not accessible from the lower garden. It is an isolated plot situated on a slope at an elevation of 600 feet above the sea, and contains the remains of a small coffee plantation. The trees are looked after and regularly weeded and pruned, but beyond this it is not possible to afford them further attention at present. Mr. Willey has been on leave in this country during the past year, and in accordance with an arrangement made with the Colonial Office he and the Curator of the Gambia Botanic Station have spent eight weeks at Kew in the study of African plants and products in the houses and museums connected with the Royal Gardens, and in acquiring information in the city and elsewhere respecting the commercial value and method of treatment of subjects likely to be successfully and remuneratively taken up in West Africa.

REVIEW OF THE SOCIETY'S CALENDAR.

THE CALENDAR OF THE PHARMACEUTICAL SOCIETY OF GREAT BRITAIN FOR 1898. Price 2*s.*, or by post 2s. 4d. Sent post free to Subscribers to the Society. London: 17, Bloomsbury Square, W.C.

The modern passion for record-making seems to have extended to official publications, for the 1898 issue of this Calendar, which has just emerged from the press, is quite a week in advance of the most forward of its predecessors. This is as it should be, for few things deteriorate so rapidly as compilations of this kind, and it does not add to the prestige of a learned society to attach the corporate seal of proprietorship to a volume which is partially obsolete on the date of its birth. The present Calendar is fairly abreast of pharmaceutical events, and contains the recently approved Bye-laws, together with the modifications in the regulations of the Boards of Examiners necessitated thereby. Time-honoured features are preserved in the examination papers set during the past year for the First, Major, Scholarships, and Prizes examinations, the lists of subscribers to the Society and Benevolent Fund, and the Statutes relating to pharmacy in Great Britain. The information thus afforded should merit a large share of attention among students who desire to shape their studies for the examination room, and it would be well, too, for chemists in business to have available, in a convenient form, the Pharmacy Acts, concerning which they not infrequently come in conflict with coroners and others whose knowledge of the law is sometimes rather nebulous.

The most important part of the Calendar, however, from a business point of view, is that portion which formerly enjoyed the somewhat inappropriate title of the "appendix." It was a collection of statutory scraps, and though one readily concedes its undoubted value, the want of arrangement seriously militated against its practical utility. Recent years have witnessed some improvement in the direction of editing this portion of the Calendar, but much further work is still necessary to render the legal matter what it ought to be and is capable of being—a valuable, if not the best, handbook of the statutes and regulations affecting the pharmaceutical calling issued during the year. In the book under review a further step onwards has been made in disinterring and rendering available for easy reference information on Excise matters which has hitherto been buried deep under the generic epitaph of "Inland Revenue General Orders." Exporters will find, duly headed, the latest modifications in the regulations for packing medicinal spirits, essences, and perfumes; whilst those whose interests make it incumbent upon them to fathom the mysteries of "drawback" or "waste allowance" will find that due provision has been made for their requirements.

Among fresh items in the Calendar are the new regulations relating to naval dispenserships. These positions are to be filled by open competition, quite in the same way as men and boy clerkships of the lower division of the Civil Service. Chemists will receive a rude shock on reading these regulations and discovering that examination by the Pharmaceutical Society is not officially recognised by the Admiralty as sufficient for a person who dispenses for our sick sailors. Other additions include the regulations governing the sale, storage, and conveyance of petroleum; a somewhat tardy note on the position of collodion cotton in relation to the Explosives Act; the 1897 Metric Act and standards; and a memorandum respecting acetylene gas. With a little condensation and arrangement of the somewhat dreary and complex pages which are devoted to the Petroleum Acts and the Sale of Food and Drugs Acts, an already admirable Calendar might be rendered stil more valuable.

PHARMACEUTICAL SOCIETY OF CAPE COLONY.

Some time ago a large gathering of chemists and druggists took place at Cape Town, the matter for discussion which came before the meeting being the formation of a Pharmaceutical Society for the Cape Colony, upon a similar basis to the parent society of Great Britain. Mr. Pocock, who was appointed chairman, gave an explanation of the objects of the meeting and said it was a fitting opportunity to resuscitate the defunct Cape Pharmaceutical Society, which was established exactly ten years ago, but had never assumed a practical form. He felt sure all present would agree with him that the establishment of such a society would greatly benefit the pharmaceutical profession, as it would always be the object of such a society to protect the trade as well as professional interests of all its members. He said that he confidently looked forward to the time when the society would have for its members chemists residing in all parts of the Colony, so that ultimately by obtaining the Government Charter the chemists and druggists would have entire control of all matters affecting them as pharmacists. It would also be one of the chief objects of the society to form a school of pharmacy for the better instruction of the rising generation, and thus afford a better means of of educating apprentices for their future calling. A provisional committee was appointed to draft the rules and regulations and to bring up the same at the next meeting, which took place on November 25 last in the large hall of the Y.M.C.A. Mr. Pocock was again unanimously voted to the chair, and the following gentlemen were present:—Messrs. J. Jones, A. Mathew, jun., L. Mally, H. Cope, W. Jeffreys, Merrington, Fleming, Hutchinson, Edgar, North, Radclyffe, Vogelgezang, M. Tothill, F. Thomas, Smiles, Dunsdon, E. McKenzie, Bull, jun., Carman, Evans, T. Rowe, Wood, Swain, Millar, Linley, Hamilton, Main, Skinner, Yeo, Buckle, Walkden, and W. Fick.—Mr. Pocock stated that the rules would be read *seriatim*, and that the meeting could alter, amend, or rescind them.—After some discussion all the rules were passed with only a few alterations.—The following were then balloted for and elected as office-bearers for the ensuing year:—President, W. Pocock; Vice-Presidents, J. Jones and A. Mathew, sen.; Secretary, W. Fick; and ordinary members of the Council the following:—Messrs. Evans, A. H. Mathew, jun., Thomas, Helmore, Carman, North, M. Tothill, and Gardner. The latter gentleman not being at present in the Colony, his election will be subject to his approval; but in the event of his refusing to be elected, then Mr. Smiles, who was the next highest on the list, will fill the position. After a vote of thanks to the Chairman the meeting adjourned until further notice.

PHARMACEUTICAL SOCIETY OF IRELAND.

On Wednesday, the 5th instant, the monthly meeting of the Council was held at 67, Lower Mount Street, Dublin, the President, Mr. Downes, in the chair, and the other members attending being the Vice-president (Mr. Beggs), Mr. Grindley (Hon. Treasurer), Messrs. Wells, Simpson, Kelly, Baxter (Coleraine), Pouter, Bernard, McKnight, O'Sullivan, Burns, Hayes, Conyngham, Professor Tichborne, Dr. Merrin, and Dr. Walsh. The report to the Lord Lieutenant of Sir George Duffey, M.D., the Visitor of the Examinations, was read. He complained that candidates continued to exhibit a great deficiency in the knowledge of Latin and French, especially the parsing of Latin. The discussion of the report was deferred until the next meeting. A report of the School Committee made certain recommendations as to the marking at the examinations.—These were discussed, and on the motion of the President, seconded by the Vice-President, it was resolved that in future candidates who entered at any examination, but did not afterwards present themselves, should forfeit half the examiners' fees, and that the forfeited half-fees should be given to the examiners.—On the motion of the President, seconded by Mr. Wells, the minimum percentage in the pharmacy part of the Licence examination was raised from 45 to 50; and on the motion of Mr. Kelly, seconded by Mr. O'Sullivan, the maximum marking in the subdivisions of that examination was fixed as follows:—Compounding, 40; paper, 20; prescription reading, 20; British Pharmacopœia, 20.—The following proposals, moved by the President, in relation to the Preliminary Examination were then partly discussed, and the further consideration of them reserved until the next Council meeting:—That the examination shall occupy two days; that on the following subjects and their subdivisions the candidate must obtain 50 per cent.—English, Latin, chemistry, arithmetic, and the British and metrical systems of weights and measures; that 20 per cent. must be obtained in each of the other subjects, and on the entire course 60 per cent., to enable the candidate to pass; spelling and handwriting to be taken into account. In the subdivision the marking is to be as follows:—Latin translation, 10; parsing, 10; English composition and grammar, 10; dictation 10; arithmetic, 10; weights and measures, 5; algebra, 10; geometry, 10; chemistry, 15; optional subject, 10. In the course of the discussion letters were read from the Examiners, Mr. Brown and Dr. Tweedy. The former thought 60 per cent. too high a percentage on the whole course, and Dr. Tweedy said a two-day examination would be inconvenient to both examiners and candidates, and could be avoided by making geometry optional. Four new members of the Society were admitted, and the Council, after having disposed of other business, adjourned.

LINNEAN SOCIETY.

At the meeting of this Society, held on December 16 last, Mr Frank Crisp, LL.B., Treasurer and Vice-President, occupied the chair.—Mr. W. J. H. McCorquodale was admitted a Fellow of the Society, and Messrs. A. Fryer and G. C. Champion were elected Associates.—Mr. W. Carruthers, F.R.S., then exhibited and made remarks upon a fungus, *Rossellinia ligniaria*, which had been found to attack living ash trees, eventually causing the death of the tree.—Additional observations were made by Mr. George Murray and Professor Farmer.—Mr. Edward Step exhibited two specimens of a hermit crab, *Eupagurus prideauxi*, from Portscatho, Cornwall. Both were found naked and in rock cavities, and special interest attached to the fact that, in the absence of the well-known Molluscan shell which the species affects, each specimen was incrusted at precisely the same regions of its exterior by "acorn-shells."—The Rev. T. R. Stebbing gave an account of the habits of this and other species of the genus *Eupagurus*, directing special attention to the work of Aurivillius; and Professor Howes remarked that it was on record that in the absence of a shell the bowl of a clay-pipe did not come amiss to these animals, and that they will readily utilise broken test-tubes.—Mr. H. M. Bernard, read a paper on the affinities of the Madreporarian genus *Alveopora*. The question discussed was one of much interest, owing to the claim advanced by Dana, that *Alveopora* is a survival of the great Palæozoic family *Favositidæ*. This claim was rejected by Milne-Edwards and Haime, but nevertheless was founded on close similarity of structure. Other important characters in common were now indicated, viz., the similarity of the earliest growth-stages and of the method of budding. These were described, and it was urged that there was now no reason to doubt the relationship between *Alveopora* and *Favosites* other than that which arose from the immense interval of time which had elapsed since *Favosites* flourished and from the scarcity of intermediate forms. One only had been described, viz., the genus *Koninckia* from the Cretaceous. Mr. Bernard then discussed the relationship of *Alveopora* with the recent *Poritidæ*, in which family it is usually classed. The author contended that *Alveopora* and the *Poritidæ* stand about as far apart as possible in the madreporarian system, and with regard to the evolutionary stages of the madreporarian skeleton he concluded that the original columniform polyp must be considered to have had the lower portion of its body clothed with a stiff secretion which formed a cup into which the upper flexible portion could be invaginated. This epithecal cup was the primitive madreporarian skeleton. Within this cup—mainly by infoldings, at first simple, but soon increasing in complexity—a new internal skeleton had been developed which had largely superseded the primitive epithecal skeleton. This internal skeleton, he thought, was as much a product of the epitheca as the apodematous systems of Arthropods are products of the chitinous cuticle.—Messrs. H. and J. Groves communicated a paper on some *Characeæ* collected by Mr. T. B. Blow in the West Indies, one of which appeared to be new to science. Specimens of the plants described were exhibited.—Mr. B. Daydon Jackson referred to a correspondence which had taken place between the first President of the Society, Sir J. E. Smith, and Dr. Peter Camper at a time when it was proposed to elect the latter a Foreign Member, an honour which for curious reasons he declined. The correspondence, it was stated, might be produced on another occasion.

PHOTOGRAPHIC NOTES.

The Record Price for Silver Nitrate was lately reached of 23¾*d.* per ounce. Considering the very large quantities used by the manufacturers of gelatin dry plates, bromide and printing-out papers, one would expect a corresponding reduction in the price of these commodities, but so far there has been no sign of such reduction. Glass has advanced considerably in price, but that can hardly account for the delay in the reduction in the price of plates, and possibly the engineers' strike or something else keeps up the price of papers. It has been stated that it does not pay silver mines when the price falls below 2*s.* per ounce, so possibly a closing down of some of the mines, or a corner, may put the price up again considerably.

Phosphalbin or Protalbin Paper are the name of two new papers for printing out, which have been prepared from the results of researches of Drs. Jolles and Lilienfeld, of Vienna. These experimenters have been able to isolate the proteids from maize and other husked seeds, and to prepare a paper which is superior to the old albuminised paper as regards the glaze ; the gradation is good and the shadows are deep and brilliant. As the vehicle contains no sulphur as albumin does, it is probable that more stable prints will be obtained.

Backing Plates.—Dr. E. Vogel strongly recommends the use of coloured collodion for backing plates to prevent halation, and for colour-sensitive plates he strongly recommends the following :—

Acridine Yellow	10 Gm.
Fuchsine	4 Gm.
Alcohol, Absolute	120 C.c.

To make the backing take of—

The above solution	10 C.c.
Plain Collodion (4 per cent.)	25 C.c.
Castor Oil	1 C.c.
Ether-alcohol (p. æq.)	14 C.c.

This need not be removed from the back of the plates prior to development, and it may also be used to make window and lamp screens for the dark room. The only objection to the mixture is that it is by no means easy to coat a sensitive plate with collodion in the dark room.

Ortol Developer.—According to Vogel and Hannecke, ortol developer is a combination of 2 molecules methyl-ortho-amidophenol with 1 molecule hydroquinone. This acts more quickly than pyrogallol, does not colour the plate yellow, and produces as good a negative. By a small addition of potassium bromide the desired development of a well covered negative is obtained. A comparison of a reducing strength of ortol and pyrogallol shows that the developing strength of ortol is as 10 : 8. Ortol as a developer is very economical, and is not quickly exhausted. In the production of bromo-silver paper prints it is said to give excellent results.—*Chem. Zeit.*, xxxv. 304.

Platinotype Paper.—The paper may be prepared by immersion in the following solution :—Iron and ammonium oxalate, 20 grammes ; water, 100 grammes ; solution of potassium chloroplatinite (2 per cent.), 5 C.c. After drying, the paper is ready for exposure. The developer for this paper is composed of water, 250 grammes ; silver nitrate, 1 gramme ; citric acid, 1 gramme ; oxalic acid, 1 gramme ; ammonio-citrate of iron, 2·5 grammes ; solution of potassium bichromate, 10 drops. After washing, the image is fixed in the following bath :—Water, 200 C.c. ; solution of ammonia, 4 grammes ; sodium citrate, 4 grammes. A toning solution may be used composed of (*a*) uranium nitrate, 1 gramme ; water, 100. (*b*) Potassium ferricyanide, 1 gramme ; water, 100 grammes. When required for use, 50 C.c. of (*a*) and 20 C.c. of (*b*) are mixed and 50 C.c. of acetic acid added. Kuhn obtains brown tones by substituting the palladium salt for platinum and intermediate effects by mixtures of the two metals. Another toning effect is produced, according to Pockham, by allowing the prints to remain in a bath obtained by adding to a litre of water 4 C.c. of a 1 in 20 solution of catechu. After three or four minutes' immersion the liquid is decanted and the print treated with 28 C.c. of alcohol.—*Moniteur Scient.* [4], xi., 561, after *Dingler's Journ.*

NEW REMEDIES.

Tannone.—Tannone is a name applied to a condensation product of tannin and urotropin, which, according to Dr. Schreiber (*D. Med. Woch.*, 1897, 49), is useful in affections of the intestines. Tannone contains 87 per cent. of tannin and 13 per cent. of urotropin. It is a light brown, tasteless powder, and is almost insoluble in water, weak acids, alcohol, and ether, but it dissolves slowly in weak alkalis. After its administration, urotropin can be detected in the urine. Schreiber recommends doses of 1 gramme 3 to 4 times daily for adults, and 20 to 50 centigrammes several times daily for children.—*Pharm. Zeit.*, xlii., 828.

Iodocrol.—This name has been applied by Cohn to carvacrol iodide, which is introduced as a substitute for iodoform, and is stated to be a powerful antiseptic. It is soluble in ether, chloroform, and sulphur, and combines the antiseptic properties of carvacrol and of iodine, and possesses the advantage over iodoform of being odourless and five times the strength in bactericidal power.—*Pharm. Zeit.*, xlii., 828.

Extract of Chelidonium Majus in Cancer.—Winter and Schmidt do not report favourably on the action of extract of chelidonium in cancer. After trying it in twelve picked cases, both by injection and by the mouth, they find that it is practically without any beneficial influence on the disease, while the injections are extremely painful and add to the sufferings of the patient. The only beneficial effect observed was the stoppage of the hæmorrhage in three cases.—*Les Nouveaux Remèdes*, xiii., 509, after *Centralb. f. Gyn.*

Parachlorophenol as a Disinfectant.—Dentu reviews the statements of Girard (*Ph. J.* [4], i., 551) with regard to the toxicity and antiseptic properties of parachlorophenol. He finds that it is more toxic than stated by the former investigator, the lethal dose being 25 to 26 centigrammes per kilo., according to Dentu, while Girard gave the figure as 1 gramme per kilo. Dentu finds that a 1 per cent. solution has a marked action on instruments, even on nickel. Besides its microbicidal power being four times greater than phenol, its less powerful and persistent odour, and its less irritating properties are advantages, and it is less toxic, since a 1 in 100 solution is equivalent to a 1 in 20 solution of phenol ; nevertheless its absorption readily gives rise to darkening of the urine, and therefore its employment requires careful watching. Under certain conditions parachlorophenol is to be preferred to phenol.—*L'Union Pharm.*, xxviii., 449.

Antiseptic Inhalation in Phthisis.—Riley has found the following inhalation, combined with other means of treatment, serviceable in cases of pulmonary tubercule. Oil of Scotch pine, 30 M. ; oil of eucalyptus, 60 M. ; oil of cassia, 30 M. ; menthol, 20 grs. ; fluid extract of balm of Gilead buds, 60 M. ; creosote, 60 M. ; tincture of benzoin, 60 M. The patient is placed in a closed chamber, the air of which is saturated with the vapour produced by nebulising this mixture.—*Mod. Med.*, vi., 185.

Quinosol as a Disinfectant.—According to Giovannini, quinosol is not only inferior to corrosive sublimate as a disinfectant, but even less active as a germicide than phenol.—*Therap. Woch.*, iv., 1006.

Urea in Nephritic Calculus.—Klemperer prescribes the following powder in half-teaspoonful doses four or five times daily :—Bicarbonate of sodium, carbonate of calcium, pure urea, equal parts.—*Therap. Woch.*, iv., 479.

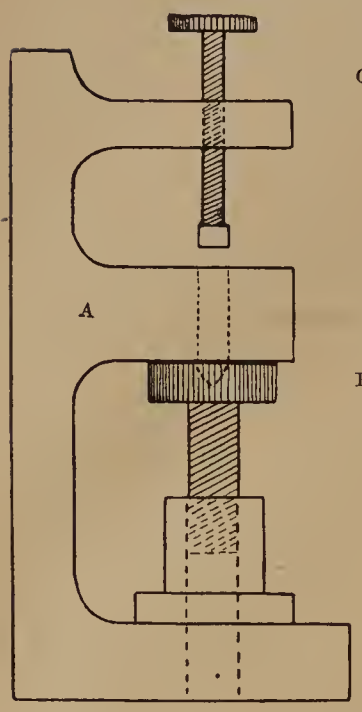
Mercuric Chloride Ointment for Ringworm.—An ointment of 2 grains of mercuric chloride to an ounce of lard thoroughly rubbed into the affected area twice daily, and a daily washing of the affected part with common yellow soap is the remedy suggested by Robinson for ringworm. If the parasite occurs on parts covered with hair this should be cut to the length of half an inch.—*Med. Press.* (*n. s.*), lxiv., 290.

Mercuric Cyanide in Anthrax.—By the use of a 1 per cent. solution of cyanide of mercury combined with cocaine salicylate, Kedroff has successfully treated two cases of anthrax ; a whole syringeful was injected at once, and the part covered with sublimate dressing.—*Rev. de Thérap.*, 235.

NOVEL APPLIANCES,

PHARMACEUTICAL AND CHEMICAL.

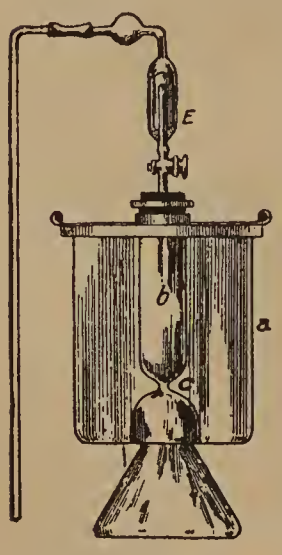
New Suppository Mould.



The suppository mould referred to in Messrs. White and Braithwaite's paper read at an Evening Meeting of the Pharmaceutical Society on November 16 last, and subscquently exhibited to those present at the meeting, is intended to prepare suppositories of equal weight and medicinal strength by compression. The mould is formed by a cylindrical hole drilled through the middle limb of the frame A, and a conical cavity drilled in the top of the screw B. In using the mould the screw B is raised until its upper surface is pressed firmly against the lower surface of the middle limb of the frame. The material to be moulded is then introduced into the cavity in A, and pressure applied by means of the screw C, which carries a plunger accurately fitting this cavity. After applying the necessary pressure the screw B is lowered and the moulded material expelled by further depression of the screw C. The design of the mould is provisionally protected, and it is hoped shortly to place the apparatus on the market.

Voeller's Gas Generator.

This new apparatus is available for the generation of Cl, H, SO_2, H_2S, CO_2, etc. As seen from the accompanying figure, it consists of a cylindrical glass vessel of about 3 litres capacity, whose lower end is contracted and again widened, so as to assume the shape of a Scheibler's dessicator. This vessel holds the acid. The substance to be acted upon by the acid is placed into another cylinder of about 700 C.c. capacity, which is also contracted near the bottom to about 2·5 Cm., and then widens out into an open bell, 5 Cm. high and 8 Cm. wide. The opening at *c* is either closed with a perforated stopper or covered with broken glass to prevent the falling of any of the substance into the acid. The upper opening of the cylinder is closed with a rubber stopper, through which passes the exit tube. Upon opening the stop cock the acid rapidly rises into the cylinder, but can be so regulated as to attack only the lower portions of the material. The resulting solution of salt formed, being heavier, sinks and fills the space beneath the inner cylinder. Upon closing the stop cock the acid is forced back, and the subsequently developed gas fills the bell-shaped extremity of the cylinder. The exit tube can be directly connected with a gas washing apparatus E, as shown in the accompanying figure. The apparatus is made by Kaeher and Martini, Berlin.—*Merck's Bullet.*, after *Ph. Review*.

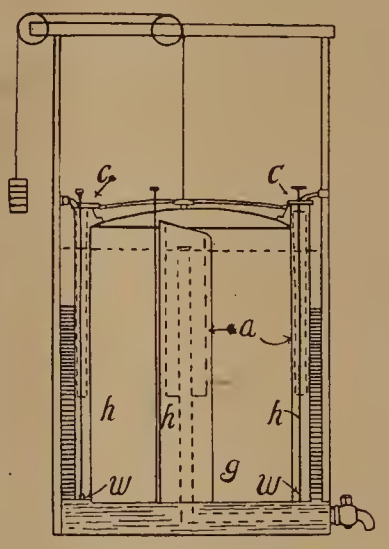


A Simple Self-measuring Tablet Compressor.

A steel cylinder A, turned from a piece of shafting 1 inch in diameter, and 2 inches long, is drilled through its length. The hollow tube thus produced is filled exactly with an upper and lower dies, B and C. The upper die B is graduated into millimetre divisions and is the same length as the cylinder, while the lower die, C, is much shorter. If a convex surface to the tablet is required the face of each die must be slightly hollowed out. The powder, previously slightly damped with an atomiser with or without the addition of acacia, is passed through a sieve and the amount needed for a tablet weighed out and introduced into the cylinder, the latter being held as in Figure 2. The die is now moved up until the powder is level with the top, the number of divisions indicated on the piston read off, the lower die inserted from above and the compressor inserted in a hole F, made for the purpose in a block of wood, and struck a sharp blow with a mallet.

It is then lifted from the lower die and placed in the second hole E, which is open beneath ; a gentle tap suffices to dislodge the tablet. In preparing the succeeding tablets it is only necessary to introduce a quantity of the powder into the box, move the piston up to the same mark, remove excess of powder and proceed as before.—*Merck's Report.*, vi., 400.

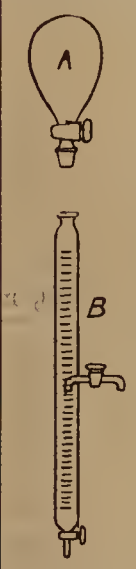
Gasholder for Acetylene.



The calcium carbide chambers H are fitted with perforated sides A, and attached to the movable gasometer G, with which they are connected by apertures C and W. The lower aperture W allows the water to enter into the calcium carbide chamber, while the upper valve C allows the gas generated to pass into the gasholder G. As the formation of a gas proceeds the gas tank rises, and when it is three-fourths filled with acetylene the calcium carbide is raised out of the water and action ceases. As the gas is drawn off the receiver again sinks, and the carbide again comes in contact with the water when evolution of gas is renewed. —*Chem. Zeit.*, xxi., 443.

Woosnam's Apparatus for the Schmidt Process of Butter Analysis.

In order to obviate the error which may arise from a slight loss of butter-fat in the ordinary Schmidt process, Woosnam has devised the apparatus here figured. It consists of (A) a boiling flask with tap, the mouth ground to fit the top of B. (B) A graduated 100 C.c. burette with a small side tap, preferably placed at about the 50 C.c. mark. In making a determination, 25 C.c. of milk are pipetted into the boiling flask A, and about 28 C.c. (roughly) of strong hydrochloric acid added. For this purpose a 25 C.c. pipette, with stem sufficiently small to pass through the tap, is recommended. The flask is then placed in boiling water and agitated frequently until the contents assume a pale brown colour. This will generally take place in about two minutes, and it is important that the action should not be allowed to proceed too far, or the sugar caramelised will be to some extent extracted by the aqueous ether at the next stage. The flask is now cooled thoroughly and 50 C.c. of ether added. The tap with which the flask is fitted is then closed, and the whole shaken vigorously for some moments, after which it is fixed firmly into the top of the burette B, the ground surfaces making a tight joint. When the ether layer has separated the tap is turned on to allow the liquids to flow gently into the burette. The measurement of the ether layer is next read off, and after adjusting the levels of the liquids by manipulating the two taps of the burette, an aliquot part of the ether layer is drawn off from the side-tap into a suitable weighed vessel, the ether driven off, and the fat weighed in the usual manner. The apparatus is made by Müller and Co., 148, High Holborn.



EXTRACTS FROM CONSULAR REPORTS.

OLIVE CULTIVATION.—An effort is being made to introduce the olive tree into the Australian and South African colonies for commercial purposes, and as large numbers of the trees have been exported from the district of Naples, Consul Neville-Rolfe has prepared a very interesting report on the cultivation of the olive in Italy. The origin of the olive is first dealt with, the wild olive or oleaster being described as a tree of small and stunted growth, which can be raised from seed or from the fungoids which olives bear underground at the point where the roots separate themselves from the trunk. The fruit yields very little oil, but a cultivated olive, grafted on the stem of the oleaster, produces good results. The olive tree is evergreen and commences to flower at the base of its foliage. The best crops are obtained when the trees flower early in the spring, but they are very susceptible to cold, and if checked, the flowers do not appear until towards June, when a failure of the crop frequently follows. The various classes of olive, the uses of the oil, the methods of cultivation, together with the climatic conditions under which the tree flourishes most successfully, are described in detail by Consul Rolfe, who hopes that the report may prove useful to the colonists who are importing the tree with a view to its cultivation. Both the cultivated olive tree and the wild variety appear to be very independent of soil, and flourish equally well on a rocky hillside or on the deep soil of the plains.

THE OLIVE GROUND IN ITALY is officially estimated at 908,072 hectares (roughly 2,270,180 acres), and the total produce of oil at 3,350,143 hectolitres. The finest table oil is produced in the small province of Lucca, and in the south of Italy the oils of Bari have the greatest repute.

THE ENEMY OF THE OLIVE most dreaded by the cultivator is a small fly, the *Dacus oleæ*. The female has a spur like a wasp, with which she punctures the fruit and deposits an egg in the lesion. These eggs develop into larvæ, which completely tunnel the olive, leaving nothing but the outer shell and the stone. It is calculated that a single fly will thus destroy three or four hundred olives. The *Coccus oleæ*, another pest, is a parasite which attacks the boughs and leaves, but lime-washing and petroleum sprays are both successful in destroying this pest.

THE LIQUORICE ROOT CROP of 1896-97 in the consular district of Batoum (Russia) is stated to have been of average quantity, but bought at high prices, owing to the scarcity of labour for collecting, curing, and pressing the root. The total crop was approximately 11,000 tons, of which about 3000 tons have been shipped to America. The prospects for the coming season are reported to be doubtful.

CAMPHOR TRADE MONOPOLY.—According to a recent Consular report, there is a probability that in the near future the world's camphor trade will become almost, if not entirely, a monopoly of the Japanese Government. Japan and Formosa are almost the only sources of supply, and as the lands in Formosa, where camphor trees abound, are not privately owned, the Government can appropriate the camphor-producing districts without interfering with vested interests. Formerly the mode of obtaining supplies of camphor from Formosa was for foreign merchants through Chinese agents to advance money to the savage chiefs, in whose country the camphor trees are found, for permission to cut down trees. Stills were erected at the expense of the foreigners, who paid a tax of 8 dollars a still to the Chinese authorities, and a local tax of 10 dollars on each ficul (133 lbs.) of camphor produced. Since the island was ceded to the Japanese there has been a fear amongst the foreigners that they would be debarred from distilling or purchasing camphor in the interior, in which case they would have suffered heavy losses in abandoning the capital already sunk there. But as the present treaty with Japan—which, if strictly enforced in Formosa, would cause foreigners to retire to the treaty ports—has only two more years to run, the Japanese Government has consented to let matters remain as they were. Under the new treaty, foreigners obtain the right to settle anywhere in the interior, and will therefore be able to erect camphor distilleries, but it is expected that the preparation of camphor will be controlled by the Government.

LETTERS TO THE EDITOR.

PROPOSED GENERAL INDEX TO THE 'PHARMACEUTICAL JOURNAL.'

Sir,—I commend to all pharmacists the admirable letter in last week's *Pharmaceutical Journal* on the above subject from Mr. E. H. Holmes. As a reader of the Journal for more than twenty-five years, indeed from the commencement of my apprenticeship, I can fully bear out all that Mr. Holmes says with respect to it. It was my good fortune some years ago to secure bound copies of the Journal from the commencement. The perusal of these has been a source of considerable pleasure and a good deal of business profit to myself, the latter an item which is, I am afraid, even at this day, largely overlooked by many of your readers. To make the past numbers of the Journal more valuable in this direction, it is most important that there should be an index covering the time since 1880, and I trust that the attention called to the matter will be the means of inducing many others to send in their names for copies of the index.

January 10, 1898. PH.C.

THE NEW PHARMACY BILL.

Sir,—It has been with considerable disappointment that I have read the letters addressed to you by pharmaceutical chemists, in opposition to the draft Pharmacy Acts Amendment Bill. Eliminating those that have been written in ignorance of the Pharmacy Acts and the scope of the draft Bill, the feeling expressed in the remainder is one of displeasure because no provision is to be made for some compensation to pharmaceutical chemists for the loss of exclusive eligibility to the membership of the Society. All the arguments that can be urged in favour of the Bill have already been adduced by yourself and others. I cannot hope to put them in a more cogent form; but I should like, if you will allow me, to give the reasons which induce me to give my support to the Bill. And I should like to ask my fellow pharmaceutical chemists to consider them yet once again before they attempt actively to oppose the measure. It does not seem to me to be just or in accordance with modern British views of government that a man who has fulfilled the requirements of the Legislature in qualifying himself for his calling, and the protection of the public, should be prevented from having a direct voice, if he wishes, in the promotion of further legislation affecting his calling. But the chemist and druggist is so prevented unless, in deference to a small body representing only 30 per cent. of the entire pharmaceutical community, he passes an honours examination which the Legislature does not consider necessary for the efficient discharge of his public duty. It is plainly only just that this disability should be removed. It is conceivable that in some circumstances an aristarchy may be a good and desirable form of government; but the circumstances in which pharmacy is placed scarcely seem to be such as to require this form of government which now prevails. In an educated community, especially in one with no very wide divergence of attainments and social rank, a democratic government is undeniably the most acceptable and the most useful. The chemists and druggists form 86 per cent. of the pharmacists on the registers, and 62 per cent. of the qualified men attached to the Pharmaceutical Society. The whole of this predominating class is debarred from representation upon the Council. I do not forget that chemists in business before 1868 are eligible for membership, but that class is a diminishing one and may be ignored in so far as my argument is concerned. There is probably no other body of men in the country that would have endured such a state of things for the last thirty years. There is nothing generous in asking these men to take the places they have a good right to claim. If pharmaceutical chemists are so unwise as to oppose this measure I hope that every chemist and druggist will make his claim in so emphatic a manner as to leave no uncertainty concerning his position in the mind of his Parliamentary representative.

Another reason why I support this Bill is that I am wishful to see pharmacy occupy a higher place in the esteem of the medical profession and the public than it does at present, and I do not see how that is to be brought about, except in individual cases, without more extended Parliamentary powers. Exactly what those extended powers should be it is not now the time to discuss; but it is pretty generally allowed that there is not much hope for real progress without an extended Pharmacy Act. Recent history indicates that, with the present meagre membership, the Pharmaceutical Society cannot make a very great impression upon Parliament. The

average layman, unacquainted with the details of the Society, is excusable if he is indifferent to the desires of a body having, apparently, a membership of only about 2000 out of a possible 15,000. The Consolidation Bill will increase the membership to about 4600, and may possibly still further increase it by attracting fresh adherents to the Society. As a necessary step to further desirable legislation, it is expedient that pharmaceutical chemists should support the Bill. My sympathies are with those who ask for consideration for those who have spent time and money in securing a title which they fear will lose its distinction if this draft Bill becomes law. There is much force in the contention that this is a virtual annulling of the contract made with pharmacists when they passed the Major examination. But I understand that the Bill is not an end in itself; it is a means, and a necessary means, to an end. Without it there appears to be no chance of the amendment of the Pharmacy Acts; but with it pharmaceutical chemists may hope for the betterment of pharmacy and the adequate recognition of their own rights. It would be a great pity, in these circumstances, if pharmaceutical chemists, who have been so loyal in the past, should allow personal interests of doubtful value to interfere with the unanimity of the pharmaceutical body in promoting this Bill.

Manchester, January 12, 1898. William Kirkby.

Sir,—The qualification of pharmaceutical chemist has always carried the optional title of M.P.S. Is this membership of any value to the holder? If so, then to allow persons to become members who are not pharmaceutical chemists lessens such value. Again, is the Pharmaceutical Society a scientific body, or is it a trade union? If the former, then the qualification necessary before membership can be obtained should have a recognised scientific value. The Minor examination is not purely scientific, and the standard of work required is comparatively low, so that whatever claim the Society now has to be regarded as a learned body would fail under the proposed Bill, not perhaps because there would actually be less learning in the ranks, but because of the possibility that the Society might be composed of and governed by Minor men only. Thus the position of the individual pharmacist and the status of the Society compared with kindred societies would both be lowered. This is what the opponents of the Bill, acting with the object of upholding the dignity of the craft and as friends of the Society, wish to prevent, and there appears every indication that they will be successful.

Manchester, January 11, 1898. F. Pilkington Sargeant

*** All Members of the Pharmaceutical Society are not pharmaceutical chemists, nor are all pharmaceutical chemists Members of the Society. As matters stand, pharmaceutical chemist members are in a majority, but if every chemist and druggist at present entitled to become a member availed himself of that privilege the pharmaceutical chemists would be in a minority even now. It is difficult to see, therefore, what force there is in Mr. Sargeant's arguments. [Ed. *P. J.*]

Sir,—Is the pharmaceutical body to remain another forty years in the wilderness? Wisdom and worthiness are of slow growth. Petty jealousy and selfishness seem to be the natural characteristics of the retailer of drugs, and it may take the time required for the evolution of a new species before the pharmacist learns that his jealousy of his neighbour acquiring the "M.P.S." at less cost than himself looks petty in the eyes of the public, and is petty and unworthy of any man who professes to have a good education and a respect for progress. When I first became associated with the Pharmaceutical Society, half a century ago, I had good hopes of what the Society would accomplish. Then I was young, but now I am old. Then the Allens, and Squires, and Bells, and Hanburys, did not grudge the title of Pharmaceutical Chemist to the smaller men who had not borne the burden of study or the stamp of genius. In the brave days of old the heroes were not afraid to associate with their Minor brethren. They saw no glory in a tinsel title, but in the good fruits of an unselfish life when it is done. There is gold without the guinea stamp, and there is many a guinea stamp without the gold. The men who grind that they may be stamped M.P.S. are only false coin. The genuine man of mettle studies that he may be a better and an abler man, and he profits by his superiority—not by his titular letters. Thirty years ago I wrote (*P. J.* [2], ix., 33, July, 1867): "Self-interest has been much too prominent in the letters of several of your recent correspondents. The question 'How it affects me' is one unworthy of being introduced into the consideration of any measure for the public good." I could scarcely say anything more applicable to the present circumstances, but I fear the opponents of the proposed Bill are all too young to see the wisdom of anything that was said thirty years ago. Other thirty years of sticking in the mud may teach them that Jupiter and titular letters will do little to raise them out of the mire. Let us hope that they may at the same time learn that conscientious industry will effectually accomplish that end. The aim of pharmaceutical legislation should be the ensuring that the dealing in drugs should be in the hands of men who are safely to be trusted with that work. Safety is better secured by pharmacists being men who study for improvement and progress rather than those who are satisfied with passing the first mile post. That is "M.," mile; P.S., post. My regret is that it is not at present possible to give the title of pharmaceutical chemist to all who pass the Minor. I should rejoice to see this within the range of practical politics. If public safety requires that a man who is himself qualified to deal in poisons should not entrust his work to juniors in his absence, the law should not require him to absent himself on jury service. The number of Minor men who are thus compelled to close their shops or run the risk of illegal sales and public danger must be much greater than the number of Major men who are exposed to the same difficulty. So long as there remains evidence of the drug trade being moved by selfish motives, so long as the "qualified" men complain of their inability to compete with the unqualified, so long as they seek the aid of Parliament to protect them from competition, fair or foul, so long will Parliament and the public look upon pharmaceutical legislation as a thing unworthy of attention and to be avoided. The Bill now proposed is not likely to accomplish much, but it may prepare a foundation for better things, and I trust all opposition to the efforts of the Council will be withdrawn.

Newcastle-on-Tyne, January 10, 1898. Barnard S. Proctor.

Sir,—The action of the Council in drafting a Pharmacy Bill, and the intention to press it forward if possible during the coming session, will, I hope, commend itself as a wise and proper proceeding to all in our ranks who have the best interests of the profession and trade at heart, and who have given serious consideration to the present position of our affairs. The Bill has been purposely made so non-contentious (or at any rate was thought to be so until quite recently) that I do not stop here to consider whether it ought or ought not to have been of wider scope. I take it as presented by the Council, having for its one great object what they believe to be essential, both as a matter of justice and expediency, viz., the consolidation and the knitting together of the whole body of chemists under the term "Member." And I am very sure it has been so received and approved of by the immense majority of our people of all ranks. Though it may be the case that few direct expressions of approval have been sent to the Council or to the Journal, yet that is by no means either unusual or to be taken as a sign of hostility, but rather that "silence gives consent." Exactly the same thing is constantly seen in political and other spheres. It is therefore with some surprise that I have noticed recently reports of meetings or letters to the Journal condemning the Bill as being unjust to pharmaceutical chemists or to members of the Society (it is not quite clear whether the alleged injustice is to only one or to both those important sections of our community). But it is, I submit, abundantly clear that neither the legal aspect of the case nor due consideration of the facts relating to our business have been correctly thought out or studied from a broad point of view by those gentlemen who have sounded a note of opposition to the Council. And first, I think it is somewhat hard upon the Council that now only at the eleventh hour should they hear of opposition to their Bill, when for the past few years it has been well known that action upon the very lines of this Bill was contemplated, and appeared to give great and general satisfaction to everybody concerned. In 1894, if I remember rightly, there was little or no opposition to the proposal to admit chemists and druggists to membership, and now that the distinction then proposed (to limit the number of such to the Council) has been omitted, I for one certainly thought the Council would have the cordial support of all its members in its efforts to place this Bill before Parliament.

The next point I refer to is the implied or expressed notion that the Bill is demanded only by, or is likely to benefit only, the Associates of the Society. Nothing, I think, could be more inaccurate. I, at least, have always understood it is the leading men of the Society, whether

Major or Minor (and I take the Council as representative of them), who desire to take the steps they consider necessary for the good of the whole body at this present time, and that it is neither for the sake of one section nor another alone, but for the best interests of the Pharmaceutical Society as a whole that this effort is made to unite the members together for the common good. It is probably not necessary to go into great detail on this point; it is, however, well known that the Society wants to attract as many chemists as possible to join its ranks so that a foundation may be laid for concerted action in the future. And this, I suppose, applies to Major as well as to Minor men, it being true, I regret to find, that many of both grades do not join the Society under present conditions. I have referred previously to the legal position, and think it is worth some attention. Whether the decision of Parliament in days gone by was right or not is hardly the question now, but it is certain the exact position of both pharmaceutical chemists and chemists and druggists was clearly defined. The former title was reserved to the Major man, and was the essential thing secured to him (not membership of the Society). It is, of course, true that in future pharmaceutical chemists only were to be eligible for membership, though many thousands of chemists then in business were also eligible without any examination; but membership is quite optional, and can be taken up or dropped at pleasure, and I am told by a high authority it is not a legal title. If, therefore, it is correct to say that the title pharmaceutical chemist and exemption from jury service were the only real legal privileges secured to Major men (beyond others shared by the Minor men), how can it now be successfully contended when both are left intact to be enjoyed by Major men only that any injustice is being done to them? But I look at the question from a broader view than one of privilege. Even if any great change were proposed it might be quite a reasonable thing to do now under the altered position of affairs, if intended and calculated to do good to the whole body, even though it might entail some sacrifice to a part of the community. It might as well be said we have no right to increase the stringency and fees of the Minor examination, yet pharmaceutical chemists and others were quite ready to do so because it was thought to be a necessary and proper act.

Do any of the gentlemen who object to the Bill contend it is quite proper and fair to make the Minor Associates in Business pay the same subscription to the Society's funds as do the members, and yet not allow them the same opportunity of taking part in the work and government of the Society? If so, I venture to say they would soon find out their mistake on the floor of the House of Commons. And when the financial question is further considered, it becomes more apparent that every reasonable and fair-minded person must allow to the body of men who contribute by far the most to the Society's funds, and without whose aid it could not be carried on under its present conditions, the same opportunity of taking part in its work if they wish as is now enjoyed (or shall I say endured) by its members. It will be surmised from the above that I am unable to view the matter from the standpoint that pharmaceutical chemists only have either the better right or are the better fitted to be entrusted with the affairs of the Society. In truth, I am unable to distinguish between them and their *confrères*, though I am most anxious not to say one word to discourage any or all of our students from taking the higher degree, which I believe it will be less difficult to do in the future, provided a man has been well and properly trained before passing the Minor. I do not think it is necessary to enter into or to refute the statements made which appear to suggest personal motives to anyone: it will probably be thought by your readers better to avoid anything of the sort, though I must confess the temptation is not small. Further, it is desirable that the utmost goodwill should be cultivated among our members, and, if possible, we should get rid of the disunion that we are told has in the past been the cause of failure in the consolidation of the Society. I do not wish to repeat what has been previously said or written either by myself or others, but it is impossible not to give some attention to the numerical position of the Society. And may I also add, the Journal has powerfully demonstrated in recent numbers how unwarranted is the attack on the policy of the Council by these opposing gentlemen, and has shown in which direction the future of the Society appears to be rapidly advancing. The Council, in my opinion, may be perfectly assured that their Bill is properly understood by the vast majority, and they need not hesitate to proceed with it to the utmost of their power.

I conclude with the following brief figures and statements:—There are 1584 pharmaceutical chemists who subscribe and belong to the Society, and 669 who do not. Twenty years ago there were over 2000 pharmaceutical chemists who subscribed to the Society, and 259 who did not. The number of chemists and druggists and Associates who subscribe and belong to the Society has, on the other hand, largely increased during the past twenty years, and I believe I am correct in putting the number at the present time at over 3200, some 500 or 600 only of whom are members by reason of being in business when the Acts passed. The Pharmaceutical Society does not belong to or exist chiefly for any one only of these classes. Every person admitted into its fold has certain legal rights. When the ratio of its subscribing members has so materially changed, it is reasonable and proper to enlarge the area of membership. It is the duty of the Council to propose any change they may decide to be necessary for the good government of the Society. The change now proposed is a very moderate one, and does not appear unjust or likely to do injury to the pharmaceutical chemist or anyone else. The Society cannot be kept going by the present members only. It is therefore desirable to make some effort to extend its influence and power for future usefulness. Let us all unite to promote this most desirable and laudable object.

January 11, 1898. R. A. Robinson.

Sir,—The argument put forward in last week's "Annotations" to show the folly of having a "Fellowship of the Pharmaceutical Society" seems in itself very strange. If it should lower the dignity of the Pharmaceutical Society to give a Fellowship to one who has not passed an examination intended for that degree, does it not lower it in the same manner if a Minor man who has passed an examination for the degree of Associate (when a subscriber to the Society) is given that of a member, "who obtain admission without much trouble after nomination and payment of certain fees"? I think it quite as much a "tinsel decoration" to give an associate the title of "Member" as to give a member the title of "Fellow," and am at a loss to understand how the Council, composed mainly of pharmaceutical chemists, has been influenced to agree unanimously to give an unfair title to associates, and no equivalent benefit to existing members, and shall do what little I can to prevent the same becoming law. I have no objection to allowing an equal number of associates to sit on the Council, but, as the Bill now stands, it is most unjust to Major men, and I do not think many will remain members if it passes, as one of the attractions for passing the Major examination would be done away with. I may state that I consider a proper curriculum for everyone wishing to qualify for the business of pharmacy is only what should be, and trust that it will soon be brought about.

Halifax, January 10, 1898. Walter Haigh.

*** We can only repeat that membership of the Pharmaceutical Society is in no sense a qualification, whilst a fellowship ought to be one if it is to possess any real value, but it cannot be regarded as such unless those who hold it have passed through a real curriculum of study prior to examination.—[Ed. *P.J.*]

Sir,—I read with much satisfaction the numerous letters now appearing in your columns relative to the injustice which would be imposed upon pharmacists, and especially those who have passed the Major examination, should the proposed Pharmacy Bill become law. Being myself much interested in the controversy, and as a member of the Manchester meeting convened by Mr. W. Gibbons, I noted with much regret what appeared to me to be a misrepresentation of facts forming the subject of your leading article in the issue of December 25. After reading the published report of the meeting, I am unable to find where the confusion of ideas referred to exists. Your article states that those present assume that there is a necessary connection between "member of the Pharmaceutical Society" and the pharmaceutical chemist qualification. I fail to understand how such an assumption could be deduced from the report, and I believe I am expressing the opinion of those present at the meeting when I state that only this much of a connection was implied—that the majority of pharmacists displaying the letters M.P.S. have only been enabled to do so by treading the narrow and difficult path of the Major examination. The knowledge of this fact is, I think, generally admitted to be fairly well established in the minds of medical men and the educated public, with the obvious sequence of advantages. Such being the case, a Bill which would give to Minor men the privilege of becoming members of the Society would indirectly aim a blow at the qualification "pharmaceutical chemist," and certainly must be confusing to the public generally. The object which the promoters of the Bill have in view, viz., that of strengthening the

Society, is a very desirable one, and in my humble opinion, worthy of support on all sides, and the grievance of Minor men—for it undoubtedly is a grievance—in their lack of representation on the Council, deserves the greatest consideration; but the method of procedure as set forth in the proposed Bill is distinctly revolting to the mind of the modern pharmacist, and unless a little more of the *quid pro quo* principle obtains, the Bill cannot possibly receive that unanimity of support which is so desirable. In conclusion, the opposition which is becoming so extensive leads me to think that the much-wished-for consolidation of the Society would not be attained even though the Bill became law, as that very unsatisfactory state of things, a house divided against itself, might come to pass.

Withington, January 11, 1898. Thomas Woodruff.

Manchester Pharmaceutical Association Resolutions.

Sir,—At the last meeting of the Manchester Pharmaceutical Association, on December 8, the resolutions as below were passed after discussion:—"(1) That the consolidation of the Pharmaceutical Society would be promoted by making eligible for election as members of the society all those who pass the Minor or qualifying examination. (2) That it is desirable that a conference should be called to consider the desirability of formulating a curriculum, and making such other recommendations as may be thought necessary to ensure a satisfactory pharmaceutical education, and that the President of the Pharmaceutical Society be asked to preside at the conference."

Manchester, January 10, 1898. A. Blackburn, Hon. Sec.

ANSWERS TO QUERIES.

The New B.P.—The work is not yet published; in fact, it has not yet emerged from the "draft" form, and is not expected for some time yet. You may be able to procure a copy about midsummer, but it is impossible to say with any degree of certainty. [*Reply to* H. H.—3/15.]

The New B.P.—"Minor" candidates will doubtless be expected to have a reasonable acquaintance with the contents of the book, as soon after publication as possible. Meanwhile, however, there is no occasion to worry yourself about probabilities. Do not make the mistake of assuming that the Pharmacopœia is a book to be crammed, but study it carefully and do not rest until you can explain the why and wherefor of every word it contains. No time that you may spend in studying the existing work will then be lost, as all the facts you learn from the book will be equally true when its successor appears, and the results of your experience with the one will be applicable in the case of the other. [*Reply to* Ajax.—3/11.]

Widal's Test for Typhoid.—On adding a drop of serum from a patient or a drop of blood from the tip of the finger, to ten drops of a young culture in bouillon of typhoid fever bacilli, the bouillon becomes clear and a precipitate is thrown down, which is seen under the microscope to consist of agglomerations of bacilli. See the *Lancet* of November 14, 1896, for further particulars. In a modification of the test by Fiocca, a drop of a recent culture of Eberth's bacillus is spread on a cover-glass in a thin layer, and a minute quantity of the blood to be tested is mixed with it. The cover-glass is then inverted over the cavity of a hollowed-out slide, and examined. The reaction is regarded as conclusive if all the bacilli are motionless, but is not so certain in its indications if any remain free and active. [*Reply to* Bacteriologist.—3/7.]

Picric Acid as an Explosive.—No, picric acid in the free state does not detonate under concussion, and although it burns fiercely, does not explode unless the detonator is used. But its salts are, some of them, powerful explosives. The Memorandum of the Home Office of 1883, and the Explosive Substances Act of that date, rightly includes picric acid in the same way as it includes glycerin, not because it is itself explosive, but because it may be used to manufacture destructive agents. However, picric acid is very inflammable; that is probably the reason railway companies class it as a dangerous body. [*Reply to* A. E. H.—1/33.]

Toilet Powder.—Probably the following will suit you:—Rice starch, 5 ounces; white bole, 5 ounces; boric acid, 2 ounces; French chalk, 2 ounces; apple blossom perfume, *q.s.* to scent nicely; carmine, *q.s.* to produce a pale pink. [*Reply to* Kino.—2/28.]

Affixing Labels to Drawers.—You will find nothing better for the purpose than Remington's flour paste, made as follows: Mix thoroughly 4 ozs. (troy) of wheat flour, 10 grains of boric acid, and 16 fl. ozs. of water; strain the mixture through a sieve, add 1 fl. dr. of nitric acid, then apply heat, with constant stirring, until the mixture thickens. When nearly cold, add 5 minims of clove oil, and strain the paste through coarse muslin if not perfectly smooth. This paste keeps well and improves on keeping; even when dried up it may be rendered fit for use by adding water. If labels are to be pasted on tinned surfaces, add 10 per cent. of glycerin to the above. [*Reply to* S. H.—3/13.]

Lactic Acid in Buttermilk.—This is not a constant quantity, and varies with the progress of lactic fermentation. Fresh buttermilk contains scarcely any, but the quantity rapidly increases, as you will note by the increased "sourness." When the formation of acid has reached a certain point it arrests further fermentation, but if it is neutralised as formed a considerably greater amount may be obtained. In actual practice chalk is employed for this purpose. The following may be taken as approximating to the composition of buttermilk, besides about 90 per cent. of water:—Casein, 4·5 to 5; milk sugar, 4·3 to 4·8; calcium phosphate, 0·2; magnesium phosphate, 0·04; potassium chloride, 0·14; sodium chloride, 0·03; with traces of iron as well as other sodium compounds, and varying traces of unremoved fat. [*Reply to* J. H.—2/33.]

Concentrated Infusion of Hyoscyamus.—Infusion of hyoscyamus is not official in either the U.S.P. or the 'Codex,' but the former allows any herb, at the discretion of the physician, to be administered as an infusion, to be made on the general formula of 1 part of the finely comminuted dried herb to 20 parts of boiling water, infusing for half an hour. The concentrated infusions are generally made by percolating 8 times the quantity of the herb required in the normal infusion, with very dilute alcohol; thus, you could make a concentrated infusion of hyoscyamus as follows: Hyoscyamus, in No. 20 powder, 8 ozs.; water, 4½ fl. ozs.; proof spirit to produce 20 fl. ozs. Mix the spirit and water, damp the powder with a little of the menstruum, pack in a percolator, and slowly percolate with more of the menstruum until 20 fl. ozs. of percolate have been obtained. Of course, 1 volume of this will require diluting with 7 volumes of water before use. [*Reply to* W. J. S.—3/1.]

CORRECTIONS.

Hydrastine Monocalcium Phosphate.—On page 24, column 1, line 49, for "7·01 per cent." read "71·0 per cent."

Pharmacy in France.—On page 31, column 2, line 39, for "of the doses" read "if the doses."

OBITUARY.

Cleghorn.—On December 13, 1897, Alexander Cleghorn, Chemist and Druggist, Cape Town. Aged 47.

Waters.—On December 13, 1897, William Allen Waters, Chemist and Druggist, Rye, Sussex. Aged 66. Mr. Waters had been a member of the Pharmaceutical Society since 1869.

Margetts.—On December 29, 1897, William Burgess Margetts, Chemist and Druggist, late of Kettering. Aged 38.

Wheeler.—On January 2, Christopher Wheeler, Pharmaceutical Chemist, Hackney Road, London, N.E. Aged 69. Mr. Wheeler had been a member of the Pharmaceutical Society since 1854, and was Divisional Secretary for Shoreditch (Haggerston), where he had been in business nearly fifty years.

Dennis.—On January 5, James Edward Dennis, Chemist and Druggist, Nottingham. Aged 63. Mr. Dennis had been a member of the Pharmaceutical Society since 1895.

Stacey.—On January 7, at Elmhurst, Tottenham, Mary, the wife of Samuel Lloyd Stacey, J.P., of the firm of Corbyn, Stacey and Co., one of the Pharmaceutical Society's auditors. Aged 70.

COMMUNICATIONS, LETTERS, etc., have been received from Messrs. Adams, Bell, Blackburn, Clarke, Cowley, Cracknell, Dulau, Dunlop, Fick, Gair, Gerrard, Gibbs, Gilligan, Haigh, Hardwick, Harrie, Harvie, Hogg, Johnston, Lloyd, Lothian, MacEwan, Mann, Pater, Pirie, Rankin, Shorthouse, Thompson, Vibert, Wilson, Woodruff, Woods.

Pharmacy and the Allied Sciences.

A REVIEW OF CURRENT WORK.

Acetone as a Solvent.

E. T. Hahn has been able to obtain a larger yield of resin from jalap, podophyllum, and scammony by employing acetone as a solvent, than when alcohol is used. Thus, commercial powdered jalap exhausted with alcohol by the U.S.P. process yielded only 6·5 per cent. of resin, whereas acetone extracted 7·5 per cent. under similar conditions. In the case of powdered podophyllum, alcohol extracted 4 per cent. of resin and acetone 4·5 per cent., whilst scammony yielded identical amounts of resin to boiling alcohol and boiling acetone, the yield amounting to less than 60 per cent. for the drug in its original moist condition, or 63 per cent. after drying the scammony to a constant weight. There was no marked difference between the samples of resin extracted from the same drug with the two solvents, and that there was a great similarity in the products is clearly indicated by the fact that they were found to be equally soluble in alcohol and acetone. —*Amer. Journ. Pharm.*, lxx., 21.

Extract of Liquorice.

Working on commercial powdered extract of liquorice, C. O. Kinzey has found a great variation in the amount of glycyrrhizin present in different samples, some containing as little as 5·28 per cent., and others nearly 28 per cent. The insoluble matter present ranged from 5·95 to 36·52 per cent., the moisture from 5 to 9·19 per cent., and the ash left was from 3·7 to 8·18 per cent. The solvent found to give the most satisfactory results for the extraction of glycyrrhizin was a mixture of ammonia water (sp. gr. 0·960), 40 C.c.; alcohol (sp. gr. 0·820), 240 C.c.; and water to make 1 litre.—*Amer. Journ. of Pharm.*, lxx., 23.

Liquid Benzoin.

This name is given by R. M. Shoemaker to a solution of benzoin, used for benzoating lard on similar lines to those recommended by J. K. Williams (see *ante*, p. 23), the object being, of course, to avoid the variable products obtained by using commercial benzoin direct. To prepare the solution, macerate 20 Gm. of benzoin in 40 C.c. of ether for 12 hours; then filter, with proper precautions to avoid loss of solvent, dissolve 15 Gm. of castor oil in the filtrate, and distil off the ether carefully. The deep amber-coloured product contains the benzoic acid and other volatile principles of the benzoin, whilst the residue left after the ether treatment is destitute of odour or taste. To prepare benzoated lard add 15 Gm. of the liquid benzoin to a mixture of 965 Gm. of dehydrated lard and 20 Gm. of white wax. The product should be a yellowish-white solid, possessing in full the characteristic odour of the volatile proximate principles of benzoin. In warm weather 5 per cent. of the lard may be replaced by white wax.—*Am. Journ. Ph.*, lxx., 9·

Soluble Ferric Phosphate.

W. A. Puckner, in a paper read before the American Pharmaceutical Association at its last meeting, explained how soluble ferric phosphate may be prepared. He mixes 20 C.c. of sulphuric acid (92·5 per cent.) with 240 C.c. of water, then adds 156 Gm. of ferrous sulphate in clear crystals, and warms gently until all is dissolved. The ferrous sulphate is oxidised by adding 12 Gm. of potassium chlorate and heating for half an hour, or until a distinct green colour is no longer produced with potassium ferricyanide solution. Next, the oxidised solution is added slowly and with constant agitation to 340 C.c. of ammonia water, and after diluting the mixture with 4000 C.c. of hot water, the precipitate is allowed to subside for half an hour, and the supernatant liquid then decanted. The precipitate is thoroughly washed with 2000 C.c. of hot water, and the operation repeated six times, at least six hours being allowed for complete subsidence to take place on the last occasion. When the supernatant liquid is finally removed, 120 Gm. of citric acid and 200 Gm. of uneffloresced sodium phosphate are added to the moist precipitate, the mixture is warmed gently until solution results, and then evaporated on a water-bath at a temperature not exceeding 60° C. until the solution weighs 500 Gm., when it is spread on glass plates and further evaporated to form scales. If the solution be evaporated until it measures exactly 500 C.c., each 2 C.c. will be equivalent to 1 Gm. of the soluble ferric phosphate.

Sugars in Beetroot.

Friedrich Strohmer points out that the opinion expressed thirty years ago by H. Schacht—that the quality of beetroots depends on the number of developed leaves and the length of life of the plant—is now shown to be free from objections. Sugar is produced in the leaves, either directly as reducing sugar or from starch or other carbohydrate, and migrates through the leaf stems to the root, the production depending on the amount of light, whilst the form and position of the leaves are of importance. When the sunlight passed through white or yellow glass, leaf production was vigorous, but with blue or red glass feeble; and the weight of roots under the influence of yellow light was nearly twice as great as when blue or red light was employed. The percentage of sugar under the different conditions was 7·4 to 8·1 with yellow, 6·4 to 7·4 with red, and 8·0 to 8·4 with blue light. For producing total organic substance in beetroot, rays of medium wave-length are the most favourable, but for converting the products of assimilation into sugar, the so-called chemical rays seem to have a prominent *rôle*. The results of field experiments are said to show that sugar production begins at an early stage in the leaves, but is greatest from the beginning of August to the middle of September, though under favourable conditions there may be a not inconsiderable accumulation of sugar even later. As from the beginning of July, the sum of the percentages of water and sugar in the roots is constant, whilst the percentage of sugar in the roots increases until the leaves die, it would appear that the sugar remains in the roots when once stored there. It is only when the roots are taken out of the soil and the leaves cut off, that the sugar begins to be used up in maintaining the life of the plant and in preparation for a second year's growth.—*Journ. Chem. Soc.* (Abstracts), lxxii., 581.

Action of Nitric Acid upon Tin.

Engel finds that several different compounds, according to circumstances, are formed by the action of nitric acid upon tin. The degree of dilution of the acid, and the temperature at which reaction takes place, have a marked influence on the result. (1) Ordinary nitric acid, diluted with twice its volume or more water, and cooled to 0° C., dissolves the tin in the form of stannous nitrate. (2) When diluted with only 1 volume of water at the same temperature, stannic nitrate is formed as a syrupy liquid, from which the salt may be precipitated by excess of acid. (3) Ordinary undiluted nitric acid gives with tin a white precipitate of the same salt; this is entirely soluble in water, and the same salt is formed at ordinary temperatures; thus the action of the acid upon tin does not differ from that on other metals. But the stannic nitrate so formed is decomposed by water or by heat, and is almost at once converted into stannic acid or a basic nitrate. The second of the above solutions gives a gelatinous mass when diluted with water, and the precipitate obtained from

the third solution soon loses its solubility, and becomes converted, for the most part, into stannic acid. In the presence of water, or on drying, this becomes converted into metastannic acid, and by boiling the metastannic acid for several hours with water parastannic acid, $Sn_5O_{11}H_2,3H_2O$, is formed.—*Compt. rend.*, cxxv., 709.

Cuprous Sulphate Solution.

A. Joannis has made some unsuccessful attempts to isolate cuprous sulphate, but the results of his experiments seem to show that cuprous sulphate can be formed under certain conditions. If finely-divided, obtained by electrolytic deposition on a platinum plate, metallic copper be digested with a solution of cupric sulphate, in the presence of carbon monoxide, slow absorption takes place, the copper dissolving and the solution becoming decolorised. The conditions of the experiment may be varied to some extent, without difference in the result, and it is assumed that cuprous sulphate is probably formed and combines with the carbon monoxide to form a compound analogous to that obtained when that gas is absorbed by a solution of cuprous chloride. Decomposition of the solution resulted, when the gas was removed by the mercury pump, as soon as the pressure was reduced to about 2 or 3 Mm., a pellicle of metallic copper forming on the surface, whilst the solution became blue, the reaction between cupric sulphate, copper, and carbonic oxide being thus shown to be a reversible one.—*Compt. rend.*, cxxv., 948.

Mercuroso-Mercuric Iodine.

Maurice François has repeated the experiments of Boullay, who first prepared what he claimed to be the intermediate iodide of mercury, Hg_4I_6, and whose statement has been accepted in all works on chemistry since 1827. The author finds that the so-called salt is nothing but a mixture, separable by treatment with ether into mercurous and mercuric iodide. The mercurous iodide left insoluble by this solvent was found to be of a bright yellow colour. By fractionally precipitating a solution of freshly-prepared mercurous nitrate with a solution of iodine in iodide of potassium of the strength prepared by Boullay, it was further found that the first three fractions consisted entirely of mercurous iodide and the remainder chiefly of the mercuric salt. Further, that when recently precipitated mercuric iodide was placed in contact with excess of mercurous nitrate solution, yellow mercurous iodide was slowly formed according to the equation $HgI_2 + HgNO_3 = Hg_2I_2 + Hg2NO_3$. On the other hand, when mercurous iodide was treated with a solution of mercuric nitrate, the red iodide is formed thus :—

$$Hg_2I_2 + Hg2NO_3 = HgI_2 + 2HgNO_3.$$

These separate reactions explain the successive formation of mercurous and mercuric iodide under the conditions indicated by Boullay as leading to the formation of the intermediate salt.—*Journ. de Pharm.* [6], vi., 443.

Formation of Chlorophyll.

W. Palladine finds that oxygen is essential for the reproduction of the green colour in etiolated leaves, and in greater quantity than is necessary for respiration. Thus when leaves which had been etiolated for forty-eight hours in the dark in a 10 per cent. solution of saccharose, were exposed to the light, immersed in water in a test-tube, it was found that the green colour was restored most rapidly to those leaves which were in the upper part, in contact with the air, although the light was equally distributed over the whole length of the tube. The action of solutions of various carbohydrates on the formation of chlorophyll was also experimented with. Thus leaves almost entirely free from carbohydrates were obtained by etiolating them in boiled water. A portion of these, when exposed to light, still immersed in water, showed scarcely any development of chlorophyll. When immersed in a 10 per cent. solution of saccharose, however, an intense green colour was developed; raffinose in a 5 per cent. solution acted in a similar manner. Dextrose and fructose gave rise to the green coloration somewhat more slowly, and with galactose, for the first five days, the leaves showed no colour; after then the colour developed very rapidly. Dulcite solution, mannite, asparagin, urea, alcohol, and ammonium hydrochloride prevented the formation of chlorophyll, while inulin and tyrosin appear to be neutral in their action.—*Comptes rendus*, cxxv., 827.

Formation of Antitoxins.

Dr. H. A. Cummins suggests that the principal purpose served by the formation of antitoxins (alkaloids and others) in plants is to protect them against the action of injurious bacteria in the soil. This is confirmed by the fact that the production of poisonous principles varies in the same species with the nature of the soil. Thus, *Cicuta virosa* is said to be not poisonous in the neighbourhood of Edinburgh; while the sale of *Agaricus campestris* is forbidden in the markets of Italy because of its poisonous properties. The antiseptic principles appear usually to be produced as the result of irritation of the cells caused by the entrance of organisms (bacteria), which produce fermentation of the juices of the plant; the antitoxin then killing the invading organism.—*Proc. Asiatic Soc., Bengal*, 1897, p. 15.

Fixing Iridescent Films.

An ingenious method of fixing iridescent films has been devised by C. Henry, Director of the Physiological Laboratory, at the Sorbonne. A sheet of impermeable paper or other material is placed at the bottom of a rectangular vessel furnished with a tap which allows it to be completely emptied. The vessel is filled with water, and a few drops of a solution of a resin, bitumen or tarry body, dissolved in a volatile medium, is dropped on the surface of the water; as the solvent volatilises it leaves a pellicle which is beautifully iridescent. If a whistle or other musical instrument be blown above the surface of this film, the colours will be observed to change, with the vibrations of the particular tone produced. When evaporation has proceeded far enough the tap is opened and the water allowed to run out slowly. In this way the pellicle is fixed to the surface of the paper, which when dried reproduces the iridescence in a very striking manner. A very fine specimen of paper so prepared, which accompanies the note, in appearance resembles watered silk, or the glossy iridescence which is seen on the feathers of certain birds, or scales of insects.—*Répertoire* [3], ix., 493.

Sounds and Colours.

Dr. W. S. Colman describes a number of cases of "colour-hearing," such as are well known to psychologists, in which a sensation of colour associates itself with certain sounds, the colour seen being definite and invariable for the same sound. In one class of cases a crude colour sensation, often very beautiful, is associated with each of the vowel sounds, musical notes, or particular musical instruments, the appearance being usually that of a transparent coloured film, similar to a rainbow, in front of the observer, but not obscuring objects. In a second class there are colour sensations whenever letters or written words (symbols of sound) are spoken or thought of, so that when a word is uttered the subject visualises the letters, each having a distinctive tint. Dr. Colman is of opinion that the phenomena are "associated sensations," analogous to the cutaneous sensation of shivering in certain parts of the body, which vary in different individuals. The tints excited are very definite and characteristic, each for its own sound, and they do not vary as time goes on. The colours are scarcely ever the same in two individuals.—*Lancet*, 3879, 22.

OIL OF THEOBROMA.

ITS SPECIFIC GRAVITY UNDER CERTAIN CONDITIONS.

BY EDMUND WHITE, B.SC. (LOND.), F.I.C.,
Pharmaceutist to St Thomas's Hospital.

In a paper* read before an Evening Meeting of the Pharmaceutical Society, in November last, on Suppositories, by J. O. Braithwaite and myself, certain sources of inaccuracy in the methods of manufacture usually adopted were discussed. We considered it eminently desirable that the sp. gr. of the official suppository masses should be determined, as well as the displacement value in terms of oil of theobroma of those medicinal substances commonly employed in suppository form. Working in this direction I have obtained results which seem to render futile any attempts to arrive at uniformity by this means. For I find that the sp. gr. of oil of theobroma taken at intervals after being melted and cast in moulds increases progressively from about ·950 to ·995 in round numbers, only attaining the highest value after several days. Moreover, the sp. gr. at a constant interval after solidification is slightly affected by the length of time during which the oil has been previously heated, prolonged exposure to heat causing a depression of the sp. gr., which, however, in all cases seems to attain a constant value after a few days. The general trend of these results might easily have been predicted from *à priori* considerations. I was, however, astonished at the magnitude of the variation (·950–·995), and do not think any exact observations have been hitherto published.

My attention was drawn to the matter by some attempts I was making to determine the sp. gr. of suppositoria iodoformi. The values obtained by successive observations on portions of the same material never coincided, and in order to eliminate possible variation due to the iodoform, I returned to the examination of oil of theobroma alone. A portion of oil was cut from a block, some of which had been used in experiments recorded in the paper on Suppositories previously referred to. Its sp. gr. was found to be ·992. Another portion of the same material was then placed in a wide-mouth bottle and just melted at 40° C. A portion poured out and solidified had a sp. gr. of ·969 thirty minutes after solidification. The bottle containing the rest of the oil was then placed in a water oven and heated continuously for eight hours, a portion being poured into a mould at intervals of one hour. The sp. gr. of each portion, taken as before, varied between ·950 and ·975. Although no direct connection could be established between the sp. gr. and the duration of the exposure to heat, the lowest figure was obtained after eight hours in the water oven. The determination of the sp. gr. of each portion was continued at intervals of two hours during the whole day, and repeated daily for the next two days. The total result may be summarised as follows :—The sp. gr. increased during the first day from about ·950 to ·980. On the second day the nine samples ranged from ·984–·986, and on the third day from ·986–·991.

Attention was next directed to the samples of oil of theobroma prepared by Braithwaite and myself from cocoa of known origin. In our paper on Suppositories we published a table of sp. grs. of five varieties obtained after more or less exposure to heat. The observations were not made at the expiration of the same time in each case after solidification, since the serious variation introduced by want of attention to this point was then unknown to us. From what I have already stated, and from the observations now to be recorded, it is evident that the table of results previously published must be rejected.†

* *Pharmaceutical Journal*, November 20, 1897.
‡ *Pharmaceutical Journal*, Nov. 20, 1897, p. 439.

Portions of the five samples of oil were just melted and cast in small porcelain crucibles so as to have, after solidification, the form of flat cakes. This form was adopted in preference to the conical suppository form, as there seemed less risk of including air bubbles in the former case. The sp. gr. of each sample was determined an hour later, then on the three succeeding days, and finally three weeks later, with the results embodied in the following table :—

Variety of Oil.	Specific Gravity.				
	1st day.	2nd day.	3rd day.	4th day.	3 weeks later.
Guaiaquil	·977	·983	·984	992	·995
Grenada	·978	·986	·990	·993	·997
Trinidad	·983	·991	·992	·992	·994
Ceylon	·975	·982	·989	·991	·991
Caraccas	·979	·984	·987	·998	·998

The sp. gr. was in all cases determined by floating the cakes of oil in dilute alcohol at 15° C. The sp. gr. of the alcohol was afterwards determined by a picnometer form of hydrometer, the graduations of which had been carefully standardised by comparison with the results obtained by a Regnault's bottle. It is advisable to keep at hand a series of diluted alcohols so as to get approximately near, at the first attempt, to the sp. gr. required. Final adjustment should be made by addition of more or less dilute alcohol—not strong alcohol, since the latter fluid causes a sensible rise of temperature if it be added to weaker alcoholic fluids. It will usually be found that some air bubbles remain obstinately attached to the piece of floating oil. These may be detached by smartly tapping the piece of oil beneath the surface of the fluid with a glass rod. It is always best to get the substance into a form free from sharp ridges or angles, and with a polished surface.

In order to determine whether the great variation observed in the sp. gr. of moulded portions of oil within the first few hours of solidification might be due to the interior portion of the oil not having attained the temperature of 15° C., the following experiment was made :—A thermometer with a short bulb was fixed centrally by means of a clamp in the cavity of a two-drachm pessary mould. Melted oil was then poured in, covering the bulb entirely. A few minutes after solidification the thermometer stood at 24°·5 C.; the mould was then opened, and the thermometer, with its adherent mass of oil, suspended freely in the air, the temperature of which was 15°·5 C. After twenty-two minutes the thermometer stood at 16°, and five minutes later at 15°·5. The arrangement was then immersed in melting ice, and after fifteen minutes registered 1° C., and five minutes later fell to zero. It was next taken out, wiped carefully, and again suspended in the air. In twenty minutes the thermometer stood at 15° C. It is therefore evident that the observed variations were not due to the cause just mentioned, but originated in some molecular disturbance caused by the heat applied in melting, the effects of the disturbance not passing away entirely until the expiration of several days.

I find that from this cause alone a variation of half a grain in the weight of a 15-grain suppository is possible, according to the time allowed to elapse between the solidification of the mass and its trimming and removal from the moulds.

TOXOIDES.—Erlich declares that toxoides are a modification of toxines produced by bacteria. They are weaker than but still possess affinities to antitoxines. According to the degree of the affinity, protoxoids, syntoxoids, and epitoxoids are distinguished. It is said that toxines frequently change partly to toxoides, as they are extremely unstable.—*Ph. Centr.*, xxxviii., 720.

PHARMACEUTICAL ORGANISATION.*

BY JOHN TAYLOR (BOLTON).

Looking over the letters and papers on this subject contributed to the Journal during the autumn and winter I do not find that they give us much light on the matter. An exception should, perhaps, be made in the case of Mr. Newsholme's contribution. I will say at the outset I do not flatter myself I can illuminate your minds to any greater extent. We have a Charter of Incorporation and Acts of Parliament which confer on us as a trade certain duties and privileges, and up to a certain point lay down the lines of our organisation. In these conditions there is no provision for compelling the adherence of members of the trade to the organisation set up by the Charter. It seems to me rightly so. The problem, then, is this: How shall we best supplement the organisation we have and secure the complete or nearly complete adherence of the trade by its free consent to that Society to which the State has committed certain important duties, viz., the examination and registration of State-licensed sellers of poisons? In dealing with this problem I am not going into the beginnings and history of the Pharmaceutical Society. I am not come to bury the pharmaceutical Cæsar or to praise him, for it seems to me that on these occasions far too much time is taken up with dilating on the heroes and doings of the past. But, to prevent misconception, let me say I acknowledge to the full our indebtedness to those who founded our Society and initiated our organisation. If I say little of them, it is not because I have no reverence for them or admiration of their works, but because the world has moved since their time and their problems are largely not ours. Let us not imitate that class of Christians who refer to the day and hour of their conversion very glibly, and who are so much amazed at the work of grace then accomplished that they make no further advance.

What the Society can do.

The Pharmaceutical Society has a difficult task. Besides the quasi-State functions imposed upon it, it has taken up and well discharged the duty of seeing to the progress of pharmacy. In these respects I think it is very little open to criticism. But when we turn to the commercial side of the problem, I think it must be held to have largely failed. It has dwelt too completely on the scientific and professional side of our calling, to the exclusion of the commercial. I will say at once that I do not hold with the view held by many and voiced by Mr. Newsholme in his address as follows:—"In regard to trade protection in the sense of attempting to regulate prices or solving any other problem of purely commercial importance, the Society and Council cannot take action. It must always be remembered that the Pharmaceutical Society is to some extent an under department of State, and, as such, it must ever maintain itself beyond the suspicion of attempting to fill the pockets of its members at the expense of the public which has delegated to it certain powers." I admit that prices are outside the power of the Society to regulate. I contest the rest of the argument. It is indeed notorious that the Pharmaceutical Society, in doing its work, as an under department of State, has been charged repeatedly with trying to fill its pockets and those of the trade by the prosecution of illegal traders. See, especially, the photographic press. These allegations are as unfounded as they are unjust. My point is that they will continue to be made, and will have to be reckoned with. They should not prevent the Society, as a trade union, safeguarding the interests, commercial and otherwise, of the trade. So much is it felt to be necessary to see to those interests, that for years past the best brains amongst us have been devising schemes and organisations to make up for this shortcoming in our pharmaceutical organisation.

The Local Organisation Scheme.

The latest is the local organisation scheme now being boomed so largely. I have no more faith in the ultimate success of the federation scheme than I had when I last addressed you, now at least three years ago. I think it is based on a wrong idea of the situation. It accepts what I cannot accept, the argument that the Pharmaceutical Society "cannot" take cognisance of commercial or purely trade questions, and that therefore we must erect alongside the incorporated Society a purely trade union to be its complement and recruiter. I say recruiter, for there seems to be an idea that in some mysterious way, when once we are locally well organised, we shall see the trade joining the Society almost in a body. Mr. Newsholme, while disclaiming any intention of pointing to the Society as an easy way out of our difficulties, says, "When any chemist fully realises the full value of combination for mutual defence and professional advancement, it will not be long before he perceives that the Society offers the simplest means of alleviating his position." That is to say the simplest means of alleviating his position is to join a society of which even its most devoted adherents say it cannot or it will not take action on purely commercial questions! Please remember that these same "purely commercial questions" are, for the qualified chemist, the most important. Let us clear our minds of pharmaceutical cant. If the Society is simply to exist to carry out State functions deputed to it, it does not require and need not seek the adherence of the trade. Properly administered and cared for, the funds allocated to it by the State will be sufficient, and it needs not the money of subscribers to carry on its functions. If, then, that is all it is to do, let us be done with the complaint that the trade will not support the Society. On those lines the Society does not need such support. Local organisation is to do all the Society cannot do, and so we shall have two societies virtually, if not in name. I think this is a somewhat clumsy expedient, and also, from the point of view of those who hope that local organisation will lead to a large accession of strength in the case of the Society, a somewhat dangerous one. For, I fear that, if the trade ever becomes commercially well organised, unless the control of such organisation is in the hands of the Society, it is more than probable that it will be antagonistic to the Society. Mr. Newsholme says, "The crying need of the time is a system of local organisation amongst pharmacists which shall embrace the whole body." I agree with him, but I want to see that organisation begun, carried out and sustained by the Pharmaceutical Society of Great Britain. I think that Society should take for its motto, "Nothing that is of interest to pharmacists is foreign to us."

A Trade Union Needed.

You will say that is trade unionism pure and simple. It is, and it is none the worse on that account. Moreover, whatever action the Society takes under its State-delegated powers is credited to its trade unionism by the general public. So there need be no false shame as to the proper discharge of those functions. So long as they are fairly and impartially discharged there will be no discredit to the Society, even if the result be to help to fill the pockets of legally qualified men. We need a trade union. Despite all that can be said, and justly said, of the professional and personal sides of our calling, we are mainly traders, and the law deals with us as such. The only thing that will unite us all—assuming such union to be desirable—is the trading aspect of our calling, for it is given to few to earn a living by such a practice of pharmacy as will deserve the status of a purely professional man, *i.e.*, one who sells his services alone. Assuming then that we need a Society which shall do for us what a trade union does for its members, I think it a mistake to waste money, time, and energy in setting up any new organisation. We have at hand—in the Pharmaceutical Society—a basis for the union desired. I advocate the adaptation of that Society to all that we mean to do for ourselves by union. It cannot regulate prices. Short of the regulation of prices, we ought to be able to do for ourselves, through the Society, all that we propose to do by a federation of local associations. I do not agree with the Editor of the Journal when, writing August 28, 1897, he says the Pharmaceutical Society is practically powerless to deal with such problems as the maintenance of fair prices, the fixing of railway rates, the interpretation of Acts of Parliament by local authorities, etc., etc. Some of you will remember the meeting in this city eight or nine years ago, when Mr. Carteighe addressed a meeting of the trade, at which I spoke. Replying to my remark that the guinea was a consideration not to be overlooked by many small chemists, he pointed out that the cotton-spinner or engineer paid as much or more to his union, and that what they could do, surely we could. Certainly, I reply, for the same value. But it is precisely concerning those things in which we are told the Society "cannot" do anything, that the artisan's union takes the keenest interest. Moreover, when employers want to influence the Railway Commission, or a local authority, they do not despise the help and presence of trade union officials on a deputation. Not to speak of the fact that a member of any trade union is helped when sick or supported if unemployed, these other "purely commercial questions" engage the attention of highly-trained officials, men whose technical skill is of a high order.

* Report of an address to the Manchester Pharmaceutical Association, delivered on Wednesday, January 19, 1898.

A Good Example.

We have, however, a better example than the artisans' unions afford us. The Incorporated Law Society is a body largely analogous to our Society. It examines and registers those who qualify to practise as solicitors. All who practise have to pay to it an annual licence. In that respect it has a great advantage over our Society. All practising solicitors have a voice by vote in its affairs, and every solicitor is eligible for election to its Council or any office under it. It interests itself keenly in the scientific and State aspects of law and legislation. But it does not disdain to look equally keenly after what may be called "the purely commercial" aspect of the solicitors' profession. Let public or private efforts interfere with the financial interests of its members, and it will be found to promptly champion their cause. Most local associations are affiliated with it, and keep it in touch with professional feeling. I am aware this last fact seems to confute my contention as to the undesirability of multiplying associations. Really it does not, for, in fact, every member of a local Law Society is also a member of the Incorporated Law Society of the United Kingdom. These small societies, therefore, amount in practice to branches of the Incorporated Society.

A Few Suggestions.

Since I hold that anyone who criticises existing institutions should attempt constructive, as well as destructive, criticism —otherwise he becomes a mere carper—I therefore offer a few suggestions. The Pharmaceutical Society should be re-organised. Its constitution should be placed on a thoroughly democratic basis. Not only should every subscriber have a vote, but every subscriber should also be eligible for office. The distinction for the office of Councillor should be abolished utterly. When that is done it will, of course, be necessary to safeguard the interests of Major men so far as honours are concerned. I am not now going to suggest how it is to be done. I will only say that if it is made clear in the public mind that a Major man has passed a superior examination the pharmaceutical chemist will have nothing at which to grumble. May I quote my last address (see *P. J.* [3], xxv., 513) to you on this part of the subject? "What we want is not a title; it is the reality of power. We can have that without robbing any man of his rights. We want to meet, as regards the working of the Society, on perfect equality—equality of subscription, equality as members, equality in having the right to fill any office to which the constituency may think it proper to elect us. Give us these things, and as regards titles of honour and merit, or scholarship, let them go to the men who honestly earn them." But I would not rest with re-organisation of the Council and headquarters. For reasons with which you are more or less familiar, I would advocate the division of the contituency, and apportion a certain number of councillors to each, keeping the head offices where they are, adopting, in fact, what has been called the territorial system of representation. Each local association should be affiliated with the parent Society—be a branch of it—and its secretary the local secretary of the Society. These branches, inasmuch as they would affect the voting at any election, would keep the headquarters in touch with the provinces. We might also, I think, with advantage follow the example of the solicitors, and hold the annual meeting of the Society in various places. If that were done it would be possible to make the British Pharmaceutical Conference true to its name.

The Society and Trade Matters.

These are only broad outlines of what may be done. Details would be best settled by a convention. Then I would suggest that the Society openly abandon its neglect of commercial questions. Where the interests of a single member of the trade are involved in such a way as to be of importance to the rest of the trade, the Society ought to intervene. It could, for instance, place at the disposal of the trade for proper remuneration the services of an expert solicitor or expert witnesses. In questions of railway rates, or interpretations of Acts of Parliament by local authorities, the Society could bring to bear as representing a large and important body of traders, an amount of prestige and expert evidence which only the very richest pharmacists could otherwise command. In many ways, a strong trade union—such as the Pharmaceutical Society could be made—can help traders without abuse or abrogation of its quasi-State functions. Briefly, the policy of the re-organised Society should be to safeguard in every possible way the educational, professional, and commercial interests of pharmacists. Suppose the Society were re-organised on the above basis, what would be the good of it and what could it do? Those are fair questions to ask. The first good accomplished would be that it will be possible then to get the support of the trade for the Society. I suppose that would be good. At all events it is what almost all of us want to see. Not 25 per cent. but 75 per cent. of the drug trade in the Society. When men saw themselves in line, pride and interest would point out ways of using their strength. As to what the Society could do if it had the support of the majority it is not easy to dogmatise. It could not save us from competition in the prices of those articles we handle in common with other traders, and ought not to attempt that. Such salvation, if needed, must be got in common with those competitors. But I believe firmly that if seventy-five per cent. of us were members of a society or union, term it what you will, there would grow and strengthen a feeling that would mitigate unfair and unneighbourly competition within our ranks. An ethical code would begin to form.

Another Case in Point.

Many of you know the Cyclists' Touring Club. Its membership has reached at least twenty-five thousand. Some time ago, when it numbered only twenty thousand or less, it was powerful enough to get into the Local Government Acts clauses establishing equal bye-laws over England and Scotland. It has had a powerful effect on the agitation for universal lights, and has even secured from railway companies important advantages, not only for its members, but for all cyclists. In face of facts like these, who shall say that a large and powerful society of pharmacists can have no effect on legislative action? The question of jury service, for instance, would be powerfully affected. Those of you who know me personally will know that I have a strong conviction of the value and need of education to all men. I am in deep sympathy with the attempts to keep up pharmaceutical education to the highest possible level. "Man cannot live by bread alone," but neither can he exist on education alone. Apart from its national and altruistic aspects, a high standard of pharmaceutical education has its chief attraction for those who read it in the added financial value of their attainments. But of what use is such attainment if all except a few find that for lack of union with others of the same class they have not the strength to command a fair return for it and fair conditions under which to exercise it. In the fierce competition and constantly occurring fresh conditions of modern trade, a strong union can be of great service to its members, and those trades will come best out of the conflict which are best organised and most strongly united. You will say, the re-organisation of the Pharmaceutical Society is what our American cousins call

"A Large Order."

It is, but not near so large an order, in my opinion, as the taking in hand the organisation of the scattered members of the drug trade and uniting them in such a way that, whilst on commercial questions they are to fend for themselves, they are to live in closest touch and sympathy with a Society which cares for none of those things. The energy required to do this is sufficient to re-organise the Pharmaceutical Society, and I think with a greater chance of success. Still, it is a great task. Who will undertake it? Are there none of the princes of pharmacy who can be fired with the desire to devote their time and energy to the task? Is it of no use to hope that we may bring the highest in our calling to see that in the ranks there are thousands in a small way of trade, as well educated, as honourable, and as deserving as themselves, who are deeply interested in those questions? They are men to whom matters of education and recognition by learned societies are of less moment than the question of a living and a future for them and theirs. Must they always live and fight alone for want of a society which, studying their interests, shall command their sympathies and enlist their support? I trust not. The success of such a re-organisation as I have roughly sketched does not depend upon whether men are "clubable" or not. It depends on a due recognition that the interests of one man engaged in pharmacy are the interests of all. A man may not care to "club" with you, but show him that, whether he does so or not, you want his help and are willing to give him yours, on matters of common interest, and the facts of life tell us that in most cases you "will get your man." I am not a "clubable" man I fear. I am a busy man and a comparatively poor man, but if I could do anything to bring about the more perfect organisation of pharmacists, I should be intensely proud of such a work.

BOTANIC GARDENS OF THE WORLD.

THE OXFORD BOTANIC GARDEN.

The universities of Italy, France, and Germany were already furnished with physic gardens, when in 1632, Henry, Earl of Danby, who had been a gentleman commoner of Christ Church, presented to the University for the general advancement of learning, and especially of physic, "a spacious illustrious physicke garden," situated "without the east gate of Oxford near the River Cherwell, which was then meadow ground, and had in ancient time been a cemetery for the Jews of Oxon." His gift of £250 enabled the University to purchase this spot. They bought out the lease of the person then in occupation, and obtained one from Magdalene College, to whom they agreed to pay the annual rent of forty shillings. The ground was protected from the river by the introduction of fresh soil, and on St. James' Day, 1632, the Vice-Chancellor went in procession to the Garden, where an oration was spoken by Dr. Clayton, the King's professor of medicine. Then the Vice-Chancellor laid the first stone of the rustic archway, the greater part of the ground having been walled in before under the direction of Inigo Jones. The stocking and other expenses of the laying out of the Garden are said to have exceeded £5000. John Tradescant, whose garden at Lambeth has already been referred to, was the first gardener of "this nursery of simples." He died in the year 1638. In 1640 we find Dr. Clayton, in his address at the beginning of Parkinson's 'Theatre of Plants,' saying that the Garden was then "compleately beautifully walled and gated," and was then "in levelling and planting with the charges and expenses of thousands by the many wayes," Honourable Earl of Danby. "The furnishing and enriching thereof with all usefull delightfull plants will," he adds, "the better be expedited by your painefull happy satisfying work." Jacob Bobart, the elder, a native of Brunswick, seems to have been Superintendent of the Garden from its foundation. Sharrock, in his 'Improvement to the Art of Gardening,' 1694, says, "The artificial bog is made by digging a hole in any stiff clay and filling it with earth taken from a bog. . . . Of this sort, in our garden here in Oxford, we have one artificially made by Bobart, for the preservation of boggy plants, where, being sometimes watered, they thrive for a year or two as well as in their natural places." He published in 1648 a list of the plants then grown in the Garden under the title of 'Catalogus Plantarum Horti medici Oxoniensis Latino-anglicus et Anglico-latinus; Alphabetico ordine.' This little duodecimo includes some exotics, the number of English species given amounting to about six hundred. This catalogue, when reprinted in 1658, was enlarged, the specific names used by Gerard and Parkinson being added to each plant. William Browne, Senior Fellow of Magdalene, took the chief part in the reissue, but was helped by Bobart's son and by Dr. Stephens, Principal of Magdalene Hall. Considered as a flora, it is of little value, containing no new indigenous plants. There is a small full-length portrait of the elder Bobart in the frontispiece to a poem on the Garden, "Vertumnus," published at Oxford in 1713. In 1643 the Earl of Danby died. He had intended, in founding the Garden, that a professor of botany should give lectures at the Garden and show the use and virtues of its simples to his auditors, but he deferred establishing the professorship till the Garden should be thoroughly furnished with simples and they should come to maturity. "Distempers breaking forth, and the Earl dying soon after, nothing was done as to that, save only by his will, dated December 14, 1640, which was three years before he died, he appointed certain persons to settle by legal conveyance to the University the Rectory of Kirkdale in Yorkshire for the use of the said Garden. Afterward, Sir John Danvers, his brother, in pursuance of the will, did settle it on the University to the end that, with the revenues thereof, the Garden be repaired and a stipend be paid to the professor and gardener. But so it was that, the times being unsettled, and the revenues falling shorter than was expected, nothing was done in order to this settling of a professor till 1669, and then, a motion being made by the King's botanic professor for the acceptance of the employment, the University thereupon allowed him an annual stipend of £40, and caused him to read at certain times of the year, not according to Statute, but at such times as he thinks most proper, that is in spring and autumn." During the elder Bobart's superintendentship Evelyn twice visited the Garden in 1654 and 1665, and he attended one of the professor's lectures in 1675. With regard to his first visit, he says that the sensitive plant was exhibited as a great curiosity, and that the fruit of which the ladies tasted was very good. On the occasion of his second visit he noticed specially two large locust trees and some rare exotics.

Dr. Robert Morison, a native of Aberdeen, studied botany at Paris. From 1650 to 1660 he held, on the recommendation of M. Robins, the French king's herbalist and friend of Gerard, the post of superintendent of the Duke of Orleans' fine garden at Blois. There he investigated the flora of France. On the death of the Duke he was invited by Charles II. to become King's professor of botany and physician, with an appointment of £800 a year and a house as Superintendent of the Royal Gardens. In 1669 he published the 'Hortus Blesensis,' containing the rudiments of the system of classification associated with his name. Founded on the work of Bruyner, physician to the Duke of Orleans, it contained notices of many new and rare plants. In a dialogue at the end of this work Morison taught that the genera of plants should depend on the characters of the fruit, and opposed the doctrine of spontaneous generation, which was very popular at the time. This book increased his fame and led to his being offered the Oxford professorship. He delivered his inaugural lecture in the School of Medicine on September 2, 1670, but on the fifth of that month removed to the Physic Garden, where he lectured three times a week to a considerable audience. Though he gave a course of lectures during the following spring and autumn, the prosecution of his great work, the 'Historia Plantarum Oxoniensis,' prevented his continuing them regularly. In 1672 he published at Oxford the first part of this work under the title of 'Plantarum Historiæ Umbelliferarum Distributio Nova,' the first monograph which was intended to carry out systematic principles strictly within the limits of a single large family. His complex arrangement into nine divisions is based on the form of the fruit which he terms the seed. It was the first book to contain careful representations of separate parts of plants executed in copper plate. Eight years later there appeared his "Plantarum Historiæ Universalis Oxoniensis Pars Secunda—seu Herbarum Distributio nova per tabulas cognationis et affinitatis, ex libro Naturæ observata et detecta." Morison deals with herbaceous plants before considering trees and shrubs, because he was unwilling to leave the more complex and difficult part of his work behind him unfinished. His fifteen classes, *Scandentes, Leguminosæ, Siliquosæ, Tricapsulares, Hexapetalæ, Tricapsulares aliæ. Corymbiferæ, Papaveræ lactescentes, Culmiferæ, Umbelliferæ, Tricoccæ purgatrices, Galeatæ et Verticillatæ, Multisiliquæ, et Multicapsulares, Bacciferæ, Capillares, Anomalæ*, are only in part founded on the fruit, and in several instances embrace natural orders not really allied enough to be ranged together. His generical characters are sometimes vague, but to most of the plants are added new specific characters, and an account of the virtues and uses of the plants. Through the encouragement given to Morison by the University, Morison was enabled to illustrate his history of plants with tables of more than three thousand plants. The six tables of mosses, etc., are with the exception of the few cuts in Gerard, the first of the kind engraved in England.

Morison left his history unfinished. It was completed by Jacob Bobart, the younger, who succeeded him as professor. It appeared in 1699 with the life of Morison.

In 1728 the Botanic Garden was set on an entirely new footing through the benefaction of Dr. Sherard, a Fellow of St. John's College, who had attended Tournefort's classes at Paris. As Consul at Smyrna, 1702-1718, he collected specimens of all the plants of all Greece, and commenced his famous herbarium, afterwards presented by him to the University. There, too, he began his "Pinax," a collection of all the botanical names which up to that time had been given by botanical writers to plants, and with the assistance of Dillenius (Dillen), whom he brought to England with him, continued its preparation in London. After his death, which took place in 1728, there "was read in Convocation an Extract of his will, whereby he leaves three thousand pounds to be laid out for the maintenance of a Botany Professor of the Physic Garden; all his Books of Botany and Natural History; also his Drawings, Paintings, and Dried Plants, particularly his Herbarium and Pinax, to be deposited in the Library of the Physic Garden, and appoints John James Dillenius the next Professor." He had during his lifetime given £500 towards the enlargement of the conservatory, and had presented to the Gardens a great number of rare plants and a library of botanical works. His herbarium contained twelve thousand specimens, and with the exception of that of Linnæus was considered to be the "most ample, authentic and botanical record" extant

at that time. There are in it original specimens from most of the writers of the time, named by themselves and accompanied by remarks or by instructive queries. The University accepted the benefaction as laid down in Sherard's will, agreed to supply £100 annually to the maintenance of the Garden, accept Dillenius as first professor, and vest the appointment of subsequent professors in the London College of Professors. Ingram's "Memorials of Oxford," 1837, gives a plan of the Garden by Logan, dated 1675. "The Garden, as it existed in Sherard's time, was divided into quarters by a double yew hedge which extended from the principal gateway to the opposite extremity, and by a similar one, which ran from east to west, intersecting the former at right angles. Between these hedges the public were allowed to walk, and there was at one time a thoroughfare into Christ Church meadow through the centre. But the square plots of ground enclosed within these hedges which contained the plants appear to have been less easy of access, and to have been kept under lock and key. One of these hedges was still standing as late as the year 1834. Two large yews in Bobart's time were clipped so as to represent two giants guarding the Garden on the meadow side. They are celebrated in three ballads preserved in Wood's collection in the Ashmolean Library, and were still standing in 1837. The original conservatory of the Physic Garden was converted after Dr. Sherard's benefaction into a residence for the professor, herbarium, and library, the great central greenhouse having been enlarged in 1715 in order to receive a large number of rarities presented in that year by Bishop Robinson, of Oriel. Soon after the central greenhouse was converted into a library and lecture room.

Dillenius, the first Sherardian professor, first gained fame by his 'Catalogue of Plants Growing in the Neighbourhood of Giessen,' 1719. "It is in this book that the generical terms Bryum, Hypnum, Mnium, Sphagnum, Lichenoides, and Lichenastrum appear for the first time. A hundred and forty new species of Musci and ninety new species of fungi are recorded. The plants are arranged in their order of flowering, and their habitat is given with critical observations on many of the species." It was Dillen's great knowledge of cryptogamic botany that led to Sherard's nomination of him at Oxford, and the great work of his professorship was his 'Historia Muscorum.' Published at the Sheldon press in 1741, it gives for each genus the etymology of the name used with reasons for adopting it, then a definition of the genus, followed by the subordinate distinctions for the arrangement of the species. Under each species is found a new specific character, the description of the species and its varieties, with references to the plates drawn and etched by the author, the habitat, synonyms used by other authors, and a number of critical remarks on the uses of particular kinds. During his professorship Linnæus visited the University and was especially delighted with Sherard's herbarium. An ardent disciple of Ray, Dillenius saw in the Swede "the young man who would confound all botany." This was in the summer of 1736. Later the two botanists corresponded, and Linnæus dedicated his 'Critica Botanica' to the professor, of whom he had said, "In Anglia nullus est qui genera curat vel intelligat praeterquam Dillenius." Dillen died in 1747 of apoplexy, leaving unfinished the 'History of the Fungi' he had planned.

He was succeeded in the professorship by Dr. Sibthorpe, of Magdalen College, who seems to have purchased the drawings, dried plants, and library of Dillenius. His successor in the professorship was his son, Dr. John Sibthorpe, who undertook the office in 1784.

Dr. John Sibthorpe went two journeys into Greece and the Archipelago, which resulted in the enrichment of the Garden. The first, undertaken in 1784, occupied three years. He had with him the celebrated draughtsman, Ferdinand Bauer, and in return for the botanical results thus obtained the Crown made an addition of a hundred pounds a year to his stipend as professor. In 1794 he revisited these districts in company with a botanical assistant. They visited Bithynia, Mount Olympus, the Troad, the Isles of Lemnos and Imbros, Mount Athos, Attica, and Zante. They spent two months of the year 1795 in the Morea, but a severe cold, caught during the return voyage to England, laid the foundation of a pulmonary attack, of which Dr. Sibthorpe died in 1796. He bequeathed to the Botanic Garden all his drawings, books of natural history, and collections. He also bequeathed a freehold estate to the University for the purpose of publishing with coloured plates his 'Flora Graeca' and then endowing a Professorship of Rural Economy at Oxford.

Dr. George Williams, of Corpus Christi College, who gave £500 consols towards the Garden, was Sherardian professor from 1796 to 1834. Then he was succeeded by Dr. Daubeny of Magdalene College, who in 1840 was appointed Professor of Rural Economy. Though a geologist and botanist, his line of work was chiefly chemical even in those studies. He contributed to the "Phil. Trans." papers "On the Action of Light upon Plants and of Plants upon the Atmosphere," a "Sketch of the Writing and Philosophical Character of A. P. De Candolle"; and a paper "On the Influence of the Lower Vegetable Organisms in the Production of Epidemic Diseases," in which he adopts and supports with great ability the fungus theory of epidemics. He was one of the first members of the British Association, and warmly supported Darwin's "Origin of Species" in a paper "On the Sexuality of Plants," read before the Association in 1860. In 1857 he published a volume of "Lectures on Roman Husbandry." He was also the author of "An Essay on the Trees and Shrubs of the Ancients," and two volumes of "Miscellanies on Scientific and Literary subjects" which appeared in 1867. He was a considerable benefactor to the Oxford Botanic Garden, in which he took great interest.

USEFUL INSECT PRODUCTS.

The commercial value of the insects from which cochineal, lac, and Japanese white wax are obtained were briefly referred to by Dr. L. O. Howard, in the course of a short paper on a useful American scale insect, read at the last meeting of the Association of Economic Entomologists. It was pointed out that for many years the cochineal or cactus scale insect, now called *Coccus cacti*, was used as the basis of an important red dye, until practically superseded by the introduction of aniline dyes. In the same way the European Porphyrophora was used in the production of a purple dye. Aside from the dye insects, we have the lac insects, of which a single species, *Tachardia lacca*, produces practically all of the shell-lac, stick lac, and button lac of commerce. This species is Asiatic in its distribution; but in the south-west States, upon the very abundant creosote bush, a lac insect occurs in an enormous quantity, the commercial possibilities of which have not been developed. This is the congeneric species, *Tachardia larreæ* (Comstock). This insect has been known to science only since 1881, but was long prior to that time known to the Indians, who for many years have been in the habit of collecting the scale insects and forming them into more or less elastic balls, which their runners were in the habit of kicking before them as they journeyed from one point to another.

There are other species of the same genus inhabiting North America. The third substance of commercial importance derived from scale insects is a pure white wax, which is secreted by the Chinese and Japanese *Ericerus péla* and by the Indian *Ceroplastes ceriferus*. On account of its expense, and on account of more or less available substitutes, this wax has not become of great commercial importance in Europe, but is much used in the Eastern countries, both in the making of wax candles and in medicine. The Chinese wax is said to have ten times the illuminating power of other waxes. It is a beautiful wax, resembling beeswax in its chemical composition more nearly than the vegetable waxes, and is clear white in colour. Dr. Howard calls attention to the fact that in the far south-west of the United States there is a wax insect (*Cerococcus quercus*) which apparently needs careful investigation from the commercial point of view. Three species of oak are recorded by Professor Comstock as offering food for this insect, viz., *Quercus oblongifolia*, *Q. undulata* variety *wrightii*, and *Q. agrifolia*. Dr. Howard recently received specimens of the insect from Mesa Grande, California. They were not sent in position on the twigs, but had been removed from the twigs, and compressed together by hand into a more or less pliable lump, somewhat resembling a lump of indiarubber, but not possessing the same elasticity. The substance, it is remarked, makes an admirable chewing gum, and it takes and retains flavours better than other gums. Part of it has been proved by chemical analysis to be a true wax, and part resembles rubber in its physical properties. The product is not only interesting from a chemical standpoint, but it may prove to be also of economic value, as the supply is well-nigh inexhaustible. By directing attention to these products of potential importance, Dr. Howard demonstrates the commercial uses of entomology.—*Nature*.

BRITISH ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE.

ARRANGEMENTS FOR THE BRISTOL MEETING.

Last week a meeting of the local Executive Committee which is carrying out the arrangements for the visit of the British Association to Bristol this year, was held under the presidency of the Mayor of Bristol (Sir Robert Symes), who was supported by the Mayor of Bath. It was stated that, in connection with the meeting in the autumn, there will be a biological exhibition, arrangements for which are proceeding. Scientific men have already shown a considerable amount of interest in the proposal, and Professor Lloyd Morgan, Mr. E. J. Lowe, F.R.S., and Dr. Harrison, have been actively engaged in the matter. It was decided to leave the further arrangements to a sub-committee consisting of Professor Lloyd Morgan, Dr. Harrison, Mr. G. H. Wollaston, and the officers. Visits of the British Association involve extensive arrangements in the way of meeting-rooms. It was reported to the meeting that the Museum Committee of the Corporation, the Governors of the University College, the Charity Trustees, the Merchant Venturers, and the R.C. Bishop of Clifton (Dr. Brownlow) have kindly placed rooms at the disposal of the local committee for the purpose of sectional gatherings. Arrangements have also been entered into to secure other rooms, and these the local committee confirmed. It has been decided to hold during the meetings of the Association an exhibition of pictures and works of art at the Drill Hall, combining with it performances by first-class military bands. Details were left to Mr. J. W. Arrowsmith, who has had much experience in such matters.

The Excursions.

As usual an excellent programme of excursions has been arranged for members and visitors. Bristol is a capital centre for such trips. Excursions have been arranged to Bath (where the Mayor and citizens will entertain the visitors), to the sources of Bristol's water supply, Chelvey, Barron, and Blagdon; to Anst, interesting particularly to geologists; to Tortworth, where Lord Ducie will entertain a small party; to the Severn Tunnel; to Stanton Drew, with its Druidical remains, and Cheddar, famous for its gorge and caves; to Wells and Glastonbury, where the Mayor of Wells, and the Dean and Chapter and residents, will entertain the visitors to lunch, tea being provided by the Mayor of Glastonbury in the venerable Abbot's kitchen, which forms part of the celebrated Abbey buildings. Other excursions will be directed to Cadbury Camp, Avonmouth Dock, Nailsworth and Stroud district, Salisbury and Stonehenge, Longleat and Raglan Castle, and the Great Western Railway Works at Swindon. Bristol has also manufactories in which members and visitors will be interested. Circulars will be sent out asking manufacturers what facilities they will offer in this direction, and the Hon. Secs. would be glad to receive information on the subject. It is usual to prepare specially for the visit of the British Association a local hand-book, and this book is in course of preparation. Many subjects will be referred to, and articles will be contributed to by Professor Lloyd Morgan, Colonel Brambley, Messrs. J. Latimer, A. T. Morgan, A. E. Hudd, White, H. C. Playne, James, Dunning, J. McCarrick, D. S. Davies, M.D., A. Prichard, J. Holman, George Pearson, and F. W. Newton. The Committee also had its attention drawn to the sum which it will be necessary to raise, and the Treasurer reported that between £3000 and £4000 will be required. When the Association visited Liverpool, £4000 was raised. The Mayor promised to send out an appeal to the citizens with a view to raising the necessary amount. It was mentioned that committees at Montreal and Toronto, the former having Dr. Bovey and the latter Dr. Macallum as honorary secretary, were acting for the purpose of inducing Canadian visitors to come over to the Bristol meeting. It is expected that a considerable number will come, and communications are being entered into with steamship companies to obtain a reduction of the passenger rates. The Bristol Executive was strengthened by the addition of the following names:—The Bishop of Bristol (the Right Rev. Dr. Forrest Browne), the Rev. W. R. Thomas, the Rev. J. S. Simon, Messrs. F. S. Cotterell, D. Rintoul, G. A. Wills, and Melville Wills.

DENTAL NOTES.

Enamel for Casts.

Powdered stannic oxide mixed with collodion to the consistency of thick molasses, and applied to the surface of a dried cast before packing with rubber, is said to make the inner surface of a plate as smooth and hard as if vulcanised upon metal.—*Pacific Dental Journal.*

Decolorised Aluminium.

The *American Druggist* states that grey or unsightly aluminium may be restored to its white colour by washing with a mixture of 30 Gm. of borax dissolved in 1000 Gm. of water, with a few drops of ammonia added.

Stable Solutions of Eucaine.

To make solutions of eucaine stable they must be boiled. About 1 to 19 is the best strength for general use, and a 9 per cent. solution is about as strong as will remain permanent; when stronger, the eucaine separates after a short time.—*Dental Review.*

Silver Salts as Dental Antiseptics.

Hille has used the lactate and citrate of silver, recommended by Crédé as antiseptics, for cleansing the root canal after removing disorganised pulp, with the best effect. The cavity is first washed out thoroughly with 1-2000 silver lactate solution, and then the citrate is blown in with an insufflator. For recently killed pulp a simple dusting with the citrate is sufficient, but where the pulp is putrid two or three applications of the disinfectant are necessary before stopping permanently. The author considers that the silver salts will prove most serviceable to dentists as antiseptics.—*Journ. Brit. Dent. Assoc.*, xviii., 658, after *Monats. für Zahnheil.*

Use of Elastic Bands in Extraction.

Mr. Storrer-Bennett referred, at a recent meeting of the Odontological Society, to a case of a man who was a hæmophiliac, and for whom it was absolutely necessary to extract a tooth which was causing much trouble to his tongue. Mr. Bennett resorted to the use of an elastic band with success, though it took a good many days to get the tooth out, and a great deal of pain was caused to the patient. In cases where very severe hæmorrhage is feared and expected to be very difficult to control, this method has often been found of great value.

Alloys and Their Melting Points.

The following alloys will melt in boiling water or at a lower temperature:—

	Tin.	Lead.	Bismuth.	Cadmium.	C.	F.
Newton's	3	2	5	0	100°	212°
Rose's	3	8	8	0	95°	203°
Erman's.....	1	1	2	0	93°	199°
Wood's	2	4	7	1	70°	158°
Mellott's	5	3	8	0	93°	200°
Harper's	4	4	7	1	80°	180°

Erman's alloy can be made of equal parts of plumber's half and half solder (equal parts tin and lead) and bismuth. Harper's alloy can be made of 8 parts of plumber's half and half solder, 7 parts bismuth, and one of cadmium, and can be poured into a modelling composition impression. It is hard enough to withstand the hammering required, and makes a smooth, sharp die.

Hydronaphthol as an Antiseptic Dressing.

Hydronaphthol is largely used in America as an antiseptic dressing in dentistry, and, according to Dr. Sidney S. Stowell (*Cosmos*), it is soluble in 2 parts of alcohol, 300 of hot water, 1100 of cold water, 20 of olive oil, 2 of æther, and 2 of chloroform. It is also freely soluble in benzol and the fixed oils. Alkaline solutions dissolve it readily, but greatly reduce its antiseptic properties. Hydronaphthol possesses one-fifth the antiseptic strength of mercury-bichlorid, double that of beta-naphthol and iodoform, three times the strength of salicylic acid, and about fourteen times that of carbolic acid. Unlike all these antiseptics, it is absolutely non-poisonous, and can be used with perfect impunity as a preservative in cases where no other antiseptic could be used.

LEGAL INTELLIGENCE.

PROCEEDINGS UNDER THE PHARMACY ACT.

Police Prosecution under Section 17.

At the Marylebone Police Court on Friday, January 14, before Mr. Curtis Bennett, Julius Cæsar, chemist and druggist, 14, Chippenham Road, W., was summoned for having failed to comply with the requirements of the law respecting the sale of poison. The case was brought before the court by the police, who prosecuted under the 17th Section of the Pharmacy Act, 1868. There were three separate charges, viz., (1) for selling to an unknown person a poisonous preparation of morphine and atropine, (2) for not registering the sale of the same, (3) for selling poison without giving the name and address of the seller on the label.

Mr. G. A. Scott, barrister, said he appeared for the defendant, a registered chemist, who was charged with a breach of the Pharmacy Acts. There were three summonses against his client, and he proposed to plead guilty to technical breaches of two. One offence was in selling a poison without giving his name and address as the seller, and the other was in that he did not enter the sale of the same in a book kept for the purpose. With regard to the first-mentioned offence, he had to say that his client about eighteen months ago bought the business of a Mr. Marsh, and since taking over the business he had used the labels of Mr. Marsh without putting his own name upon them. They, however, gave the name and address of Mr. Marsh, and although that gentleman had ceased to use the labels, he wished to point out that the address on them was the same as it would have been if the defendant had caused new labels to be printed with his own name. In answer to the charge of not registering the sale, he wished to say that his client did keep a poison-book, in which he usually entered the particulars of any sale of poison. In the case in question, however, the poison sold was put up in tubes, and was a preparation of morphine and atropine. Although not strictly a "patent" medicine, it was of a similar character, and was used for hypodermic injection. Moreover, as the person to whom it was sold had previously been supplied on a doctor's prescription, the defendant did not think it was necessary to register the sale. The charge that the defendant had sold poison to an unknown person he did not propose to go into, but as the three summonses were all based on one offence he asked that they might be dealt with altogether, and not separately.

His Worship ruled that the three charges were for separate offences against the regulations for the sale of poison as set out in the Pharmacy Act, and therefore each summons must be taken by itself.

Mr. Scott said if that was His Worship's ruling he would state his case with respect to the first charge. Continuing, he said that the lady to whom the tubes of poison were sold had not only been to the shop before, but there was an account in the books of Mr. Marsh which showed that she had been a customer at the shop for some considerable time. In admitting that there had been a technical breach of the law with regard to the poison-book and to the labels, he hoped that His Worship would take into consideration the fact that the defendant had not gained any pecuniary advantage in the matter, and that the whole case was purely a technical one.

His Worship asked if there was any evidence to be laid before the court, as it was necessary that he should know the facts of the case before giving judgement.

Mr. Gerald Kiely, 43, Essex Road, Church End, Willesden, N.W., was called by the police, and without being sworn, stated that some two or three years ago his wife commenced to take morphine on the prescription of a doctor, and since then she had become addicted to its use. With a view to preventing her obtaining the drug he had placed her under the care of another doctor, and he personally had visited numerous chemists to ask them not to supply his wife with morphine. On November 8, 1897, he called at Mr. Cæsar's shop, where he saw an assistant, whom he told that he believed his wife was taking a preparation of morphine which she obtained there, and as it had virtually ruined his home, he asked that she might not be supplied in future. The assistant said his master was out but that he would inform him on his return. On Christmas Eve his wife wished to return a hypodermic syringe that she said belonged to Mr. Cæsar, so he went with her, and she handed in the syringe. He said to Mr. Cæsar, who was in the shop, "You have been supplying my wife with morphine and atropine. Will you cease to supply her?" Mr. Cæsar replied that if she brought a medical prescription he saw no reason why she must not be supplied with what was ordered. He (witness) said "she has no proper medical prescription," and Mr. Cæsar then said that as he had no desire to cause any difference between he and his wife, she should not be supplied in future. On January 4, 1898, however, he discovered in his wife's possession four tubes of morphine and atropine without any labels attached to them to indicate where they had been obtained. He took possession of them, and she told him that they belonged to Mr. Cæsar. He reported the case to the Pharmaceutical Society and afterwards to the police. He had since found that not only was his wife supplied with the drug upon personal application, but that their children, aged ten and twelve, had on several occasions obtained it from Mr. Cæsar without any written order by simply stating that they came from Mrs. Kiely.

In answer to a question by Mr. Scott, the witness stated that he had not taken a medical prescription from his wife since the summonses had been taken out against Mr. Cæsar. He could not do so because he had never seen a prescription in her possession written either by a Dr. Fitzgerald or any other doctor.

His Worship said the summons for supplying an unknown person must fail, as it was perfectly clear that the defendant did know the person, and therefore that summons would be dismissed.

His worship then proceeded to deal with the charge of selling poison without entering the sale in the register.

Mr. Scott said the previous witness had stated that his wife had seen a doctor, who had given her a prescription, and although he did not put it forward as a defence, he might point out that there is a provision to the Pharmacy Act which states that after the chemist or dispenser of a prescription has once registered the sale of the poison contained therein, it is not necessary for him to enter each repeat order, and the particular case in question would be considered a repeat order.

His Worship said it was quite clear that the defendant should register the sale of the preparation, and in the case before him the fact of the sale should have been entered in the poison-book. The husband had cautioned the defendant not to supply his wife, therefore it was to the interest of everybody concerned, the chemist, the woman, and the husband, that an entry should have been made for each sale; but so far as he could gather there was no entry made at all. He should like, however, before going further, to hear the police evidence.

Inspector Burridge, X Division, said that after receiving the information respecting the case from Mr. Kiely, he saw Mr. Cæsar, and asked to be shown the entry in the poison-book of the sale of certain tubes of poison to Mrs. Kiely. Mr. Cæsar said it was not a poison that needed to be entered in the book at all, and that it had not been entered in his book. He (witness) then showed him the tubes of morphine and atropine alleged to have been supplied by him, and he admitted having sold them.

The tubes were then produced by the Inspector and handed to His Worship, and Mr. Scott pointed out that the labels bore the name of a well-known firm of manufacturing chemists, Messrs. Burroughs, Wellcome and Co.

In answer to a question by Mr. Scott, as to whether Mr. Cæsar did not say something to him about a doctor's prescription, Inspector Burridge stated that the defendant told him that if they wished to stop the woman from procuring the drug they must get possession of the prescription, and he (witness) replied that Mr. Kiely said that his wife had not got a prescription.

His Worship said that in respect to the summons for selling poison without registering the sale in the poison-book he would be fined £3 and 4*s.* costs, for selling poison without the name and address of the seller, the defendant would be fined £5 and 2*s.* costs.

Mr. Scott called His Worship's attention to the fact that the tubes were wrapped in paper bearing the name and address of Mr. Marsh, the defendant's predecessor in the business, and that the address was the same as the defendant's.

His Worship, in reply, said that although it was wrapped in a wrapper giving a name and address, there was nothing on it to show that the defendant was the seller, Mr. Marsh had been away from the shop for some time past, therefore, it was highly important that the name and address of the actual seller should be on the labels and wrappers.

PHARMACEUTICAL SOCIETY.

DONATIONS TO THE LIBRARY AND MUSEUM.

At a meeting of the Library, Museum, School and House Committee, on Wednesday, January 19, the Librarian and Curator presented the following reports of donations :—

To the Library (London).

Prof. Arthur Meyer, Marburg :—'Astasia asterospora,' 1897.

Herr Karl Dieterich, Helfenberg :—'Ueber Perubalsam'; 'Beiträge zur Charakteristik seltenerer Harze,' 1897.

Mr. Horace Woodward, F.R.S., London :—'A Memoir of Thomas Beesley,' 1897.

Mr. F. M. Bailey, F.L.S., Queensland :—'Contributions to the Flora of Queensland.'

H.M. Secretary of State for India :—'The Bower Manuscript,' parts 3–7, 1897.

Prof. Dr. Jos. Moeller, Graz :—'Lignum Aloës und Linaloëholz,' 1896.

Koloniaal Museum, Haarlem :—'Nuttige Indische Planten,' door M. Greshoff, Afl. 4. 1897.

Dr. H. Paschkis, Vienna :—Agenda Therapeutica, 1898.

Journals, etc., received during 1897 :—'Archiv for Pharmaci og Chemi'; 'Bulletin de l'association belge des chimistes'; 'Agricultural Ledger,' Calcutta; 'Agricultural Gazette of N.S. Wales'; 'Zeitschrift des allgemeinen Oesterreichischen Apotheker-Vereines'; 'Alumni Report,' Philadelphia; 'American Druggist'; 'American Journal of Pharmacy'; 'The Analyst'; 'Australasian Journal of Pharmacy'; 'British Medical Journal'; 'Canadian Pharmaceutical Journal'; 'Chemical News'; 'Journal' and 'Proceedings of the Chemical Society'; 'Chemist and Druggist' and 'Diary'; 'Chemist and Druggist of Australasia'; 'Journal' and 'Proceedings' of the Linnean Society; 'Memoirs and Proceedings of the Manchester Literary and Philosophical Society'; 'Pharmaceutical Journal of Australasia'; 'Quarterly Record of the Royal Botanic Society'; 'Kew Bulletin'; 'Proceedings' and 'Year-Book' of the Royal Society; 'Sei-I-Kwai Medical Journal'; 'Journal of the Society of Chemical Industry'; 'Timehri'; 'Western Druggist'; 'Anzeiger' and 'Sitzungsberichte,' Kaiserliche Akademie der Wissenschaften in Wien; 'Ephemeris,' by Messrs. Squibb; 'Proceedings and Transactions of the Nova Scotia Institute of Science'; 'Proceedings' and 'Transactions' of the Royal Dublin Society; 'Mededeelingen' and 'Verslag' of the 'sLands Plantentuin; 'Regulations and Register' and 'Proceedings' of the Institute of Chemistry; 'Anti-Cutting Record.'

To the Museum (London).

Captain Burrows, London :—Specimen of the Root of *Strychnos M'Boundou* from W. Africa.

The Director, Herbarium, Museum d'Histoire Naturelle, Paris :—Specimen of the Fruit of *Strophanthus Paroissei.*

Messrs. W. J. Bush and Co., London :—Specimen of Geranyl Acetate.

Messrs. Clayton and Jowett, Liverpool :—Specimens of Essence of Lemon and of the Terpene, Citraptene, and Concentrated Essence obtained from it.

Mr. J. Bosisto, Melbourne, Australia :—Specimens of *Daviesia latifolia* and of a Glucoside obtained from it.

Dr. F. Bach, La Plata :—Specimens of several varieties of Mica from South America.

Mr. T. Whiffen, Battersea :—Specimens of Emetine Hydrobromide and Cephaeline Hydrochloride representing the amounts yielded by 1 lb. of the roots of Rio and Carthagena Ipecacuanha respectively.

To the Herbarium.

Dr. A. Franchet, Paris :—Small specimens of *Strophanthus Courmontii* and *S. ecaudatus.*

EVENING MEETING IN EDINBURGH.

The third evening meeting of the session in Edinburgh, was held in the Society's House, 36, York Place, on Wednesday night, Mr. J. LAIDLAW EWING, in the chair.

Mr. DAVID STORRAR, Kirkcaldy, read a paper on

Pharmaceutical Ethics.

In this he stated that at the last meeting of the British Pharmaceutical Conference it was strongly recommended that discussions should be held by all the local associations throughout the country during this winter upon the subject of pharmaceutical ethics, so that it might be thoroughly thrashed out. It was for the purpose of assisting in carrying out that recommendation that he proposed to read his paper. He defined what he understood by pharmaceutical ethics so far as pharmaceutical could be differentiated from other ethics, and did so under the following headings, namely, the pharmacist's duty to himself, to his neighbours in the trade, to the medical profession and the public, and to his local and national associations. The paper concluded with a strong appeal for support to the pharmaceutical Benevolent Fund, as a clear ethical obligation resting upon the trade.

Mr. DAVID MACLAREN moved a vote of thanks to Mr. Storrar for his paper, and

Mr. J. ANDERSON RUSSELL, Glasgow, in seconding, said it had been very interesting. Mr. Storrar had dealt with the subject in all its branches. He thought much might be done by local associations to improve the moral tone of the trade in their districts by laying down rules, not too strict at first, and so form an ethical code.

Mr. J. RUTHERFORD HILL said this subject required close attention. At the present juncture many of the difficulties of chemists existed in connection with the co-operative movement, which contained elements of which they strongly disapproved. But they must recognise that movement as part of a world-wide social revolution. Any attempt to get over pharmaceutical difficulties by stereotyping existing conditions most inevitably fail. True security lay along the lines of educational sufficiency and profound efficiency. In any conceivable society there would always be a place and remuneration for the educated and trained pharmacist.

The CHAIRMAN agreed with Mr. Storrar on the question of prices. Chemists did not charge enough for their skill in dispensing, but it was impossible to have a uniform rate of charges in a community. He cordially concurred in the references to the Benevolent Fund, and said he was gratified with the result of the Jubilee effort in Edinburgh. He hoped the impetus would be maintained.

Mr. J. RUTHERFORD HILL then exhibited tubes of argon and helium. The tubes, which had been lent by Professor Norman Collie, F.R.S., London, were subjected to the electrical discharge, and viewed under the spectroscope, showing the distinctive spectrum of each. There were also exhibited specimens of the alkaloids emetine and cephaeline and their salts, prepared from Carthagena and Rio ipecacuanha by Mr. Whiffen, London.

A special meeting was afterwards held, Mr. J. LAIDLAW EWING in the chair, to consider

The Draft Pharmacy Bill.

Mr. C. F. HENRY moved the following resolution :—

> That this meeting of registered chemists and pharmaceutical students, having considered the Pharmacy Acts Amendment Bill drafted by the Council, cordially approves of the same, and especially recognises the prudence and wisdom at the present time of limiting the scope of the Bill to urgent and non-contentious matters relating to the internal organisation and consolidation of the Pharmaceutical Society. The meeting further pledges itself to use every legitimate means to aid the Council in securing its speedy enactment.

He said the Bill was really an attempt to realise the ideal embodied in the Society's Charter. Such a Bill had become a practical necessity. He particularly deprecated the introduction of any contentious matter, otherwise they would jeopardise the passing of the Bill.

Mr. THOMAS DUNLOP, Glasgow, in seconding, said that as a pharmaceutical chemist he cordially supported the proposed resolution and entirely approved of this Bill.

Mr. GEORGE COULL, while not agreeing with the Bill, said he would not propose an amendment.

Messrs. NESBIT, CURRIE, and COATS, agreed with the Bill, the two latter making an exception with reference to the term "student-associates."

Mr. HILL said the intention of this Bill was to consolidate the Society by removing the elements of distinction between the different grades, of which there were at present four. The proposal was that all distinctions should disappear, and that registered chemists should meet in the Society on the common platform of membership. It remained to be seen whether or not this would increase the membership, but altogether apart from that, it was for those already within the Society a pressing and urgent practical necessity.

Mr. D. B. DOTT agreed with the proposals of the Bill, but preferred the term "apprentices" to "student-associates."

Mr. MCLAREN and Mr. BOA also approved of the Bill, and the proposition, on being put to the meeting, was declared carried, Mr. Coull alone dissenting.

Mr. J. ANDERSON RUSSELL suggested the appointment of a special committee to secure the carrying into effect of the resolution, but after discussion it was agreed not to appoint a special committee, it being understood that local associations and local secretaries would see that the matter was fully laid before their respective representatives in Parliament.

Mr. STORRAR said the thing to be aimed at was not so much petitions in favour of the Bill, which would pass if let alone, but rather to prevent petitions against the Bill being presented to Parliament.

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PHARMACEUTICAL ORGANISATION.

THE excellent paper read by Mr. JOHN TAYLOR at Manchester this week (see p. 70) may fittingly be regarded as a corollary to that read by Mr. NEWSHOLME at Nottingham three months ago, and the later expressions of opinion have doubtless been in great measure called forth by the VICE-PRESIDENT'S utterances. Moreover, what may at first glance be considered incompatible in the two addresses becomes less obviously so on careful reconsideration, if due allowance be made for the fact that a speaker occupying an important official position frequently feels the necessity of referring in more guarded terms to many matters than a free-lance may regard it as incumbent upon himself to do. For, private members of any organisation may openly criticise the details of that organisation without any regard to mere expediency, whereas the official heads of the same body, however liberal their tendencies as individuals, have a certain conservatism thrust upon them, which almost unavoidably associates itself with the positions they occupy. If Mr. TAYLOR'S comments, therefore, be regarded as amplifying Mr. NEWSHOLME'S necessarily guarded remarks, and as it were, crossing the t's and dotting the i's of the latter, readers of the two papers will probably not be far wrong if they arrive at the conclusion that similar ideals influence both official and non-official members of the Society, and that these varying symptoms indicate a widely-prevalent desire to arrive at a more satisfactory state of affairs than at present exists in British pharmacy.

It is eminently satisfactory to find this Lancastrian critic admitting—freely and fully—that the Pharmaceutical Society has neglected nothing that might tend to the advancement of pharmacy on the professional side. And the arguments he adduces in support of his contention that the Society both can and ought to do more to advance the trade interests of the craft are far from unfair, if it be borne in mind that he has not made sufficient allowance for the lack of opportunity. The statement of the VICE-PRESIDENT to the effect that the Society and its Council cannot take action with a view to the solution of problems of purely commercial importance affecting the craft, and the passage quoted from the Journal of August 28 last, in which it was stated that the Society is practically powerless to deal with such problems, must be taken in a relative, not in an absolute sense, and as referring especially to the existing condition of affairs. What might be done if the Society included the majority of registered chemists is quite another question, and in that case no doubt most, if not all, of the difficulties dwelt upon by Mr. TAYLOR could be effectively dealt with. It will be observed that he admits it to be outside the power of the Society to regulate prices, but he contests the argument that no other problem of purely commercial importance can be solved by the representative body. Almost immediately, however, he speaks of the Society as a trade union which should safeguard the interests, commercial and otherwise, of the trade it represents. And this is where Mr. TAYLOR fails to make sufficient allowance for the lack of opportunity.

A trade union, we take it, is not of much account as a power to be reckoned with, unless it embodies at least a majority of the skilled workers of the trade it professes to represent. How far is this the case in the present instance? There are more than fifteen thousand registered chemists, of whom perhaps eight thousand are in business on their own account. But less than one-third of the total number, and probably only about half of those in business on their own account, are connected with the Pharmaceutical Society. How then can the Society pose as the recognised exponent of the desires of the whole craft, and why should the minority vex their souls about the commercial interests of those who decline to take their share of the burden? If the responsibility were equally shared by all, many important problems might be solved, for the "reality of power" is already possessed by registered chemists; what is required is that they should all combine and exercise that power. Were every chemist agreed on that point, company pharmacy could be suppressed within a few weeks, for it is only because registered men sell themselves to joint-stock concerns that the latter are enabled to continue to poach upon the chemist's preserves. In like manner, if all or nearly all whose names appear on the Register of Chemists and Druggists would combine they could remedy almost any grievance under which the craft now labours. And this brings us back to the necessity that renders it incumbent upon all registered chemists to help in strengthening the Pharmaceutical Society. That body can indeed exist and fulfil all its statutory duties whether it secures the adherence of the trade or not, but if the professional and commercial interests of the trade are to be sympathetically dealt with, the Society must be a living organisation capable of acting as an incorporation of the entire body for protective purposes, and not merely as an under administrative department of State.

As it happens, Mr. TAYLOR recognises the weakness of the present position in this respect, and whilst urging the Council of the Society to take up every question—whether commercial or otherwise—of importance to chemists, he virtually admits that a necessary preliminary to such a condition of affairs is a large accession of strength to the Society. The latter could have no better motto than that suggested in the paper commented on—"Nothing that is of interest to pharmacists is foreign to us"—but the question of ways and means must first be considered, and those at present constituting the Society cannot with any show of reason be blamed if they object to pay the piper whilst others call the tune. By all means let the Society become a union of the trade on the lines of the Incorporated Law Society, with numerous branches and active representatives all over the country.

Nothing better could be desired, and when the time is ripe the branches that it was formerly sought to organise may be established in full vigour. But the means of securing that end are lacking as yet, and ways of accomplishing the desired object remain to be devised. The first step must be to secure the passing of the Pharmacy Bill now before the trade, which is intended simply to render equal justice to all who possess the legal qualification in pharmacy. Mr. TAYLOR rightly insists upon the expediency of so doing, and makes this the chief of his suggestions for improvement. It may perhaps be regarded as a happy omen that, whilst in the paper he read three years ago, he urged the necessity of a more stringent First examination as the first pressing want of the craft, he now places equality in membership of the Society in that position. The one want has since been met, and we sincerely hope that the present most important desideratum may be supplied within an even shorter space of time than has elapsed in the former case.

THE PHARMACY BILL.

NOTWITHSTANDING the intimation that further letters discussing the Pharmacy Bill should have the names of the writers added for publication, several communications have been received which do not comply with that condition. Their publication in full is not, therefore, desirable, but in order that the arguments put forward by the writers may receive consideration we give a brief statement of them. An old pharmaceutical chemist is disposed to welcome a large number of Minor men as co-members, but in regard to the proposed extension of membership, he is of opinion that logic is on the side of malcontent Major men while expediency may be on the other side. He bases that view on consideration of the question whether the general co-operation of Minor men in advancing the interests of our calling could safely be relied upon. In regard to that question, he points to the fact that those whose sympathy with professional advancement has hitherto been no more evident than their support of the Society, probably constitute the majority of legally qualified persons on the Register, and on that ground he concludes that there should be a preponderance of Major men on the Council. The assumption, underlying this conclusion, that Minor men are less interested in the advancement of the calling or less likely to aid in its promotion than Major men, is not generous, nor is it consistent with the fact that the majority of those connected with the Society are Minor men. Another correspondent, who is a Minor man, not connected with the Society but interested in the Bill, expresses doubt whether it would provide a remedy for the grievances of chemists. In regard to "the one cry of registered chemists for some form of reward for services given to the State in having answered the requirements of the Pharmacy Act," he believes that Parliament never intended to inflict upon chemists the hardships of "expensive education, examination, and registration, with after-imposed duties, without justly granting a *quid pro quo*," and he suggests that a provision giving "power to erase from the Register the name of anyone proved guilty of unprofessional conduct" would be the only means of uniting chemists. No further comment on the views here expressed is necessary beyond reference to the excellent paper by Mr. BEAL on the relation of the pharmacist to pharmacy law (see *ante*, vol. lix., 420).

ANNOTATIONS.

THE DANGER OF PRESCRIBING READY-MADE PHYSIC is well exemplified in the case reported on page 75. According to the evidence, a medical man prescribed morphine and atropine in such a form that the patient—a woman—became fully aware of the nature of the preparation, and was placed in a position to obtain further supplies of it without difficulty. Her husband, finding what mischief was being caused, endeavoured to stop it by visiting numerous chemists and asking them not to supply his wife with the preparation, but in spite of that she managed to procure more, not only on personal application, but also when she sent children of ten or twelve years for it, and that without producing any prescription or other written order. Ultimately the attention of the police authorities was directed to the matter, and as a result a prosecution was instituted under Section 17 of the Pharmacy Act, 1868. The penalties imposed are severe, but under the circumstances none too severe, for if ever there was a case in which a chemist should have exercised more discretion, this particular case appears to be the one. No attempt appears to have been made to prevent the abuse or misuse of the poisonous preparation. The husband's request that his wife should not be supplied in future was wilfully disregarded, and no record of the sales was kept. It should be obvious that such a record ought always to be kept in order to meet the technical requirements of the Pharmacy Act, the repetition of medicine containing poison being indicated in the prescription-book in every instance, whether the medical man order the medicine verbally or by prescription.

THIS QUESTION OF REGISTRATION was raised by the barrister who appeared for the defendant in the case referred to above, but he seems to have got a wrong impression of the legal requirements in the matter, for he stated that according to the Pharmacy Act, after a chemist has once registered the sale of a poison ordered in a prescription, it is not necessary for him to enter each repeat order. The police inspector also stated that defendant had informed him that there was no necessity to record the sale of the preparation supplied, although containing poison. It is distinctly specified, however, in Section 17, that the only case in which the provisions of the Section do not apply to any article, when forming part of the ingredients of any medicine dispensed by a person registered under the Act, is when such medicine is labelled with the name and address of the seller, and the ingredients entered, with the name of the person to whom the medicine is sold or delivered, "in a book to be kept by the seller for that purpose." Otherwise all the usual formalities must be fulfilled as in an ordinary retail sale.

AS MR. CARTEIGHE POINTED OUT some years ago (*P. J.* [3], xxiii., 381), when dealing with the obligations of chemists in the sale of poisons to medical men and to each other, it is essential that a precise record of the sale of all strong poisons should be preserved by the chemist and druggist who supplies them, so that the source of supply can readily be traced in case of need. So far as regards sales to medical men and to other chemists, it may be considered by some that the transactions are not of the nature of ordinary retail sales, but that would be difficult to prove and in any case, the chemist ought to be prepared always to do more than the strict letter of the law requires, if it be to the public interest. Much worry will be avoided if, instead of stopping to consider from time to time what are the exact legal requirements in the case of any particular substance, the most extreme precautions are

adopted in every instance. And this plan may with advantage be adopted in dealing with all dangerous substances, whether they be "statutory" poisons or not. Let all poisonous substances be fully labelled, and their sale recorded if necessary, and no occasion can then arise for accusing chemists of neglecting the public interest in that respect, whilst they will thus help to establish a strong claim for favourable consideration of their own interests by the Legislature when occasion may arise.

ABOUT SALES OF SCHEDULED POISONS TO THE PUBLIC there is no doubt whatever, as those must always be recorded as directed in Section 17 of the Pharmacy Act, in the case of poisons included in Part 1 of the Schedule; poisons ordered in prescriptions are not exempt in that respect unless the full particulars be entered in the prescription book, on the second and every subsequent occasion that the medicine is dispensed no less than on the first. The idea that prescriptions ordering scheduled poisons are unconditionally exempt from the provisions of Section 17, which provide for proper labelling and registration, is not justified by the wording of the Section. In fact, the provisions are even more stringent with regard to prescriptions than to poisons sold by retail, for only a limited number of the latter need be registered, whereas all prescriptions ordering scheduled poisons must be copied in the prescription book, whether the poisons are included in Part 1 or Part 2 of the list of poisons within the meaning of the Act. And, as already stated, the prescriptions should be re-copied on every subsequent occasion that the medicines are dispensed.

THE THIRTY-SECOND CHEMISTS' BALL was held at the Portman Rooms on Wednesday last, and the attendance proved that there is little if any falling off in the attractions of this popular gathering, more than two hundred guests being recorded as present. Dancing commenced at 9 p.m., and after the early part of the evening's programme had been successfully concluded, the chair was taken at supper by Mr. Walter Hills, President of the Pharmaceutical Society, who was well supported by the leading pharmacists of the Metropolitan district and their lady friends. Needless to say, congratulations were showered upon the Honorary Secretary, Mr. William Warren, who made his first appearance in that capacity and fully deserved all the encomiums he received, despite his modest disclaimer and suggestion that much of the credit was due to other persons. Supper ended, dancing was resumed and continued until about four o'clock in the morning, with much satisfaction to all concerned. Mr. T. C. W. Martin occupied the post of M.C. with his accustomed ability, and Godfrey's Quadrille Band did all that was possible to render the Ball the success it undoubtedly was. The general arrangements could not possibly have been better.

"PHARMACEUTICAL ETHICS" was the title of the paper read by Mr. David Storrar at an Edinburgh meeting of the Pharmaceutical Society on Wednesday, and an attempt was made therein to develop the subject on the lines laid down by Mr. Joseph Ince at the British Pharmaceutical Conference in 1866. In Mr. Storrar's opinion that paper, read over thirty years ago, embodies all, or nearly all, that can be said upon the subject, and his only object in reverting to the matter was to initiate discussion upon a subject of importance and interest to all pharmacists, in the hope that such discussion may help to ease the friction which modern business methods tend so much to increase. The best definition of pharmaceutical ethics Mr. Storrar has seen is that contained in a leading article in the *Pharmaceutical Journal* (vol. xii., 369), in which it is stated that "there are in all professions certain rules of conduct, understood if not actually agreed upon, among the members, a deviation from which is held to be unprofessional. These rules have no relation to the law of the land; they constitute a voluntary or self-imposed restraint, having for its object the elevation of the tone and character of those who are under their influence, and the maintenance of harmony and good order in the profession." In his subsequent remarks, Mr. Storrar confined himself to the duty of pharmacists to themselves, to the public, and to their trade organisations. The first ethical duty of pharmacists, he considers, is to see that no individual action of theirs will give away that position which has been secured to them. And they must not rest content with that, but each one should try to add something, however little he may be able to add, to the efficiency and sum total of the knowledge of that profession which he has chosen as his life-work.

ONE-MAN COMPANIES were the subject of some scathing remarks by Sir Michael Hicks-Beach a few days ago. He pointed out that some years ago the House of Commons passed a code dealing with the formation and proceedings of companies under the Limited Liability Acts, but that Parliament had not been entirely successful in the matter, and he expressed the opinion that the law had been abused to defraud the public at large. When he was President of the Board of Trade he did his best to secure that when there was roguery in connection with companies it should at least be brought to the light of day, so that by public examination in the courts the people should know what had been done to their detriment. But, what happened now? A man who was practically a bankrupt formed himself and some of his children into a limited liability company, issued debentures to a confiding public, discharged his personal obligations with its money, taking care to have a nice little plum in reserve, in order to start somewhere else in a different line of business, and then left the public lamenting with assets that were wholly or nearly worthless. Or a man started a company in the same way but took up the debentures himself, got confiding tradesmen to trust him, and then proceeded to liquidation, putting in his debentures as a prior claim on all the assets and leaving the confiding tradesmen lamenting. The present state of the law in this matter, observed the Chancellor of the Exchequer, deliberately encourages fraud upon the public. Unfortunately, he continued, the great lawyers who added lustre to the House of Lords were not very eager reformers in this branch of the law, and they were so timid and so careful that nothing should be done that would prevent responsible men from becoming directors of companies, that he was afraid incubation of remedial measures, which had already been going on during two years, might last a good many years more, unless gentlemen who were engaged in commerce, who knew the truth and who were interested that the commercial morality of this country should be maintained, brought the pressure of public opinion to bear on the matter.

AN EVENING MEETING of the Pharmaceutical Society will be held at 17, Bloomsbury Square, London, on Tuesday, February 8, at 8 p.m., when a paper will be read by Mr. Leo Atkinson on "Bacteriology for Pharmacists." The paper will be illustrated by photo-micrographs and demonstrations of methods of cultivation and staining.

THE SOCIETY OF PUBLIC ANALYSTS continues to be of good cheer, notwithstanding the delay in amending the adulteration laws, and practical proof of the fact was demonstrated on Tuesday evening, when the twenty-third anniversary dinner of the Society was held at the Criterion, London. The president, Dr. Bernard Dyer, occupied the chair, and among those present were Mr. Walter Hills, president of the Pharmaceutical Society; Dr. Stevenson, president of the Institute of Chemistry; Dr. Frank Clowes, president

of the Society of Chemical Industry; and Dr. Seaton, president of the Society of Medical Officers of Health. Regret was expressed by Dr. Dyer that Parliament had not seen fit during the past year to pass an Act giving effect to the recommendations of the Select Committee on Food Products and Adulteration, and reference was also made to the alleged inadequacy of Mr. Chaplin's Bill. Mr. Kearley, M.P., undertook to act as the Society's champion during the coming Session of Parliament, and Mr. Walter Hills, in proposing the toast of the evening, referred to the progressive nature of the Society of Public Analysts, and to the valuable service it has rendered to the community during the twenty-three years of its existence, in carrying out its primary object—the protection of the public. In responding, Dr. Dyer gave utterance to some self-gratulation, as president, which will be endorsed by those who have any knowledge of the Society's affairs, but it is to be feared that he is much too sanguine in hoping that the much discussed food and drugs question will have been "finally settled" by the date of the next annual dinner.

The Idea of a Teaching University for London is a step nearer realisation than it was, a general meeting of convocation having resolved to accept the scheme embodied in the London University Commission Bill of last year. The Bill was a modification of that of Lord Cowper's Commission, and it is thought that it may not improbably become law during the coming session of Parliament. The scheme has already received more support than any other that has been proposed, and brings within view the end of the controversy that has lasted so long. It is thought to be a satisfactory compromise, inflicting no loss or discredit upon any party, whilst safe-guarding three important principles: first, that there shall be one university for London and not two; second, that the standard of the degrees shall not be substantially altered; and third, that the internal students shall not be prejudicially affected. In a letter to the *Daily News*, signed "Sydney H. Waterloo," it is suggested that Christ's Hospital buildings, which will be vacated in a year or two, should be acquired for the purpose of the University of London. The sum necessary for the purchase of the premises and site is estimated at £350,000, but a large proportion of this can be covered by disposing of part of the site to the Governors of St. Bartholomew's Hospital, whilst if the Gresham College authorities could be induced to unite with the proposed teaching university, a further important reduction in the cost might be effected. The existing university buildings are quite inadequate for their purpose, and as the difficulty must be met sooner or later, this suggestion to utilise instead of removing the famous old hall seems quite worthy of serious consideration.

The Royal Photographic Society is organising an exhibition, which will be open at the Crystal Palace from April 27 to May 14. In addition to the exhibits of photographs and apparatus, of which such exhibitions usually consist, a considerable area will be devoted to collections illustrating as fully as possible the many scientific applications of photography; amongst these X-ray photographs play a large part. The committee is very anxious that the exhibition shall be thoroughly representative and illustrate the very large part which photography plays, both as a recording agent and otherwise in so many scientific and manufacturing processes, and asks that any of our readers who may be able to help by the loan of examples of the application of photography to medicine or surgery will kindly communicate with the Assistant Secretary of the Society, Mr. R. Child Bayley, at 12, Hanover Square. Mr. Bayley will be happy to forward to anyone interested a copy of the preliminary prospectus, and adds that the Committee is prepared to pay carriage upon all invited exhibits.

THE WORLD OF PHARMACY.

NORTH STAFFORDSHIRE CHEMISTS' ASSOCIATION.

A meeting of this Association was held at the Copeland Arms Hotel, Stoke-on-Trent, on Thursday the 13th inst. Alderman J. Averill, J.P. (Stafford), presided over a fairly large attendance. After the passing of the minutes the Hon. Secretary Mr. Edmund Jones (Hanley) read a letter from Mr. Walter Hills, President of the Pharmaceutical Society, thanking the Association for the congratulatory epistle forwarded to him on the occasion of his presentation with a Jubilee medal. Mr. Hills said he was glad to hear that the Association was a decided success, and he trusted that it had a useful and prosperous future.

The Draft Pharmacy Bill.

The Chairman, after having read *in extenso* a copy of the draft Bill, moved the following resolution :—

> That this Association agrees with the Pharmacy Acts Amentment Bill, with the exception of Clause 3, which, in our opinion, should read as follows: Every person who at the passing of this Act shall have been registered as a chemist and druggist, or who shall hereafter become registered as a chemist and druggist, shall be eligible as a member of the Society, according to the Bye-laws thereof, and that every person who at the time of the passing of this Act shall have been registered as a pharmaceutical chemist or shall hereafter pass the Major or higher examination of the Society shall have the title of "Fellow of the Society."

The Chairman said he moved the resolution as much in the interests of the Society as of the pharmaceutical chemists. They must remember that members of the Pharmaceutical Society up to the present consisted mainly of pharmaceutical chemists who had qualified for that position by examination, and what he was anxious to see was a Bill which would give satisfaction to the majority of the chemists and druggists. That would consolidate and strengthen the Society, and so make it truly representative of pharmacy throughout the kingdom. Clause 3 seemed to be the bone of contention in the Bill. It would admit all men registered as chemists and druggists to the honour of membership. He believed that Association was in perfect accord as to that step being taken, but the Major man, who had passed a higher scientific examination to qualify himself for the same honour of membership, felt that some distinctive honour should be conferred upon him. He knew it was said that the Major man alone was entitled to style himself a pharmaceutical chemist, but a member of the Pharmaceutical Society and a pharmaceutical chemist so closely resembled each other that they were scarcely distinguishable. He thought the Major man had a good case in asking that upon the admission of associates to membership he should have the title of Fellow given to him. He feared that without some inducement of that kind fewer men would go in for the higher examination. There was a precedent for his proposal in the College of Surgeons and the College of Veterinary Surgeons, in both of which, by passing the higher examination, a member became a Fellow. He thought his proposal, if carried out, would have the effect of appeasing everybody, and would win the support of all parties to the Bill.—Mr. T. C. Cornwell (Hanley), who was called upon to second the resolution, said he would rather someone else had done so. He was a Major men, and his action might be put down as selfish. He believed the Bill would be a very beneficial one, and seconded the resolution with pleasure.—Mr. Ed. Jones, in supporting, said the resolution carried out the ideas he expressed at the previous meeting. He referred to the objection taken to the Bill by Mr. W. Gibbons, and said he thought it would be a great pity to discourage the Society from bringing forward the Bill by stirring up muddy water. He believed that Bill would benefit the Society, and create a great interest in pharmacy throughout the country. He did not think the objectors were so much opposed to the admission to membership as to the conferring of the title of pharmaceutical chemist. Their Association did not ask for that. He did not like the word student-associate. He did not like "associate" connected with "student." He was greatly in favour of the annual retirement of the members of the Council in rotation. He hoped all the associations would express their opinions upon the draft Bill and encourage the Society in taking it before Parliament. If the Society was discouraged now it would be a long time before they ever brought another Bill.—Mr. Marson (Stafford) said he thought the Bill an

excellent one. If passed it would make a strong combination of the whole trade. Limited liability companies might then be dealt with.—Mr. J. W. MOORE (Hanley), Mr. CROYDON, and Mr. ALLISON also supported the resolution, which was carried unanimously and with applause.—A vote of thanks was passed to the Chairman on the proposition of Mr. JENKINS (Stone).—After supper the evening was spent in convivial fashion.

EDINBURGH CHEMISTS', ASSISTANTS', AND APPRENTICES' ASSOCIATION.

At a meeting held on Friday, January 14, Mr. GEORGE SINCLAIR, President, in the chair, a communication by Mr. Peter Boa was read on

The Dispensing of Substances Liable to Explosion.

Mr. BOA stated that about sixteen years ago he had the privilege of reading to the members of that Association a paper on the influence exercised by different methods of mixing compound powders on their miscibility with water. On the present occasion he desired to refer shortly to a few substances which either by themselves or when compounded with other materials require special manipulation in preparing them for administration as remedial agents in the treatment of disease. The efficiency of a remedy, as well as the convenience of the patient and the reputation of the dispenser (even his personal safety in some cases), are dependent on the judicious selection of the proper method by which to manipulate it. Quite recently, through the explosion of a quantity of erythrol tetranitrate in course of preparation for medicinal use, a chemist lost his life. As this substance is in fashion in some places, and may possibly come into more general use, he might take it as a convenient basis for the few brief observations which he had to make. Erythrol tetranitrate is admittedly explosive, explosion being occasioned by friction or concussion. So far it had been mostly administered in the form of tablets. It might as well be prescribed in powders. Being crystalline it has to be reduced to powder previous to being made into tablets. Sugar of milk, or some other innocent diluent, is employed in making it into tablets, which are prepared by compression. In preparing tablets with a chocolate basis the crystalline substance may be dissolved in warm cacao butter, but as it would recrystallise on cooling the mass would require to be worked up to ensure uniformity, and, this being so, it seemed preferable to mix in the powdered material from the first. To reduce the erythrol tetranitrate to powder it is necessary to rub it in a mortar, and herein lies danger to the manipulator. When proceeding to reduce a crystalline substance to powder one naturally takes a composition mortar in order to get a "grip" of the material. The "grip" obtained by the use of such a mortar is just what may occasion disaster with explosives. For such substances a mortar and pestle of glass or porcelain with uniformly glazed surface should be selected, and the pressure employed should be uniform and not too heavy, knocking or pounding being carefully avoided. If operations be restricted to the small quantities likely to be prescribed, and the precautions he had indicated observed, there need be no fear of any worse mischief, even in the event of an explosion occurring, than the loss of the mortar. When powdering has been accomplished, further use of a mortar (should mixing with other things be required) is unnecessary and undesirable. Its further use would merely prolong the risk of explosion without satisfactorily influencing the mixing. A mortar is a most inefficient means of mixing compound powders. Suppose, for example, one part of powdered rhubarb is taken, with three or four parts of sodium bicarbonate, and they are rubbed together for ten minutes in a mortar, then transferred to a sheet of white paper, and spread out thinly with a broad spatula. Numerous streaks of the two ingredients will be visible, caused by the breaking down by the spatula of little particles which had escaped the action of the pestle. Had mixing been carried out from the first by the spatula on the paper, half the time and half the labour would have accomplished an infinitely better result. So, when dealing with an explosive substance, the use of a spatula —not necessarily steel, if any other material be considered preferable — and a suitably-sized piece of glazed paper will enable the operator to obtain perfect admixture with other ingredients with confidence in the safety of the procedure. Potassium chlorate, silver oxide, potassium permanganate, hypophosphites, and such other substances liable to explosion, should be powdered or mixed with care on the same principles. When explosion occurs it usually exerts its force upward. It is well, therefore, that the operator should keep his face away from the material. If the contents of a mortar require examination that had better be done while the pestle is at rest. —Mr. DUNCAN said he had doubts about the method of mixing with a spatula. Even in such a case there might be danger if a metal spatula were used. It was known that in places where explosives were manufactured the employés were forbidden to have any articles containing metal in their clothing, or in their pockets or boots. He thought either a bone or wooden spatula should be used.—Mr. HENRY said he thought a sieve might be used safely. He thought the method of mixing by a spatula would not apply well when dealing with large quantities.—The CHAIRMAN also expressed surprise at the suggestion to mix with a spatula. He had frequent experience of a mixture of potassium perchlorate and magnesium chloride, and he found this mixture could be safely manipulated by using the reverse or wooden end of the pestle.—The next communication was by Mr. C. F. HENRY, on

Unguentum Acidi Carbolici, B.P.

The author remarked that it is not correct to say that carbolic acid is soluble in soft paraffin to the extent of 1 in 20, as if a mixture of the two be heated together, then well stirred and allowed to cool, a good proportion of the acid will be found crystallised out at the bottom. That occurs when liquid as well as crystalline acid is used. The practice of stirring when cooling does not facilitate solution, but only tends to form a mechanical mixture of the two substances. These remarks also apply to unguent. acid. carbolic., B.P., where a mixture of hard and soft paraffins is directed to be used as a basis. The presence of hard paraffin and the increase of the strength to 1 in 19 aggravates the difficulty. In a quantity of this ointment in which ʒi. crystal acid was used, 30 grains of an oily liquid separated out in three hours, the ointment having been prepared by heating, stirring in the acid, and then allowing to cool without further stirring. Had the acid been soluble this would not have occurred. For several years it was noticed that in a mixture of soft paraffin and carbolic acid, the latter on keeping for a few days in cold weather, and for a week or two in warmer weather, also crystallised out in fine acicular crystals. It will do this whether liquid or crystal acid is used. Until recently this had never been observed to occur in the B.P. ointment. Possibly it had not been kept long enough for crystals to form. That it should crystallise out is not to be wondered at, the acid not being soluble in a paraffin basis in the proportions of the B.P. ointment. How it crystallises out might form the subject of some interesting theorising. The author's own view is that the acid, being volatile, volatilises at ordinary temperatures; it then becomes hydrated by absorption of water from the atmosphere. Whenever the temperature gets below 40° during the night in summer, or at any time in winter, crystallisation takes place, and from the surface of the ointment minute needle-shaped crystals shoot out in various directions. That these are carbolic acid crystals the application of one of them to the lips or tongue will give convincing proof. It is difficult to understand how, with such a caustic as carbolic acid, the B.P. formula should contain a strength of 1 in 19 when the acid is only soluble in the paraffins to the extent of about 1 in 32 and nothing is put in to retain the acids in solution. Making an ointment of a volatile substance like carbolic acid by means of heat is neither proper nor pharmaceutically correct. To supply these defects was the object of a few experiments with various bases. Those in which the carbolic is most soluble naturally suggested themselves, and of these olive oil, in which it is soluble 1 in 2, and glycerin, $3\frac{1}{3}$ in 1, are the most soluble. The following were found to be the best:—(1) Glycerin, water, and wool-fat; (2) olive oil and simple ointment; (3) glycerin, water, and simple ointment; (4) olive oil and wool-fat. Unfortunately the weather had been too mild to thoroughly test the retentive properties of the ointments, but it is evident that as each is made with a sufficiency of solvent to more than retain the acid in solution, even at a low temperature there is more likelihood of their remaining stable than by using the B.P. formula. Of these four, No. 1 was thought to be the best. No. 2 is also good, but Nos. 3 and 4 are rather soft. The formula suggested is—

℞ Carbolic Acid ...	25 grains or 1 gramme or part.
Glycerin	50 minims or 2 grammes or parts.
Water	50 minims or 2 grammes or parts.
Wool-fat	350 grains or 14 grammes or parts.

Dissolve the acid in the glycerin, add the water, then mix them with the wool-fat. The water is added to hydrate the glycerin. The other formulæ were—

℞ Carbolic Acid....	25 grains	or	1 gramme or part.
Olive Oil	125 grains	or	5 grammes or parts.
Simple Ointment	325 grains	or	13 grammes or parts. M.

℞ Carbolic Acid.....	25 grains	or	1 gramme or part.
Glycerin	50 minims	or	2 grammes or parts.
Water	50 minims	or	2 grammes or parts.
Simple Ointment	350 minims	or	14 grammes or parts.

℞ Carbolic Acid....	25 grains	or	1 gramme or part.
Olive Oil	125 grains	or	5 grammes or parts.
Wool-fat	325 grains	or	13 grammes or parts.

The next communication was also by Mr. C. F. Henry, on—

An Unusual Mixture.

The author was recently handed an order for a Winchester quart of a mixture which must contain certain proportions, equally distributed, of white wax, borax, and water, with the stipulation that no oil must be used in making it up. After trying several methods the following was found to yield the most satisfactory result. Ascertaining that mucilage of acacia and turpentine would not be objectionable, he dissolved the white wax in the latter, then emulsified this mixture with mucilage of acacia, dissolved the borax in the water, and then gradually added it to the emulsion, the result being a white mixture, in which the desired conditions were attained, viz., a white non-oily compound with the wax equally distributed throughout. The formula is—

℞ Cera Alb.	3iv.
Ol. Terebinth.	2 oz.
Mucil. Acaciæ	1 oz.
Aq.	4 oz.
Borax	80 grains.

Soft soap was tried, but it does not give such a good result as the above, nor does it absorb the water so perfectly. The object in bringing this before the meeting was to ascertain if anyone could suggest a better method.—Mr. Duncan and Mr. Boa, mentioned that this matter of crystallisation of the carbolic acid in the ointment had been dealt with before, and the former said he had found the solubility of the acid in soft paraffin to be about 1 in 34. A solution of the acid in water and glycerin before mixing with the basis overcame the difficulty.—Mr. Hill said the crystallisation in this instance seemed to be due to volatilisation of acid which subsequently condensed in crystals in the vacant space in the half empty pot. This could be obviated by sending the ointment out in collapsible tubes.—Mr. Sinclair said he found lanoline and cold cream an excellent basis for this ointment.—The next communication was by Mr. William Duncan, on

Resinous Emulsions or Mixtures.

The author said there was nothing new or original in what he had to say. He merely brought the subject forward because there seemed to be many who were not acquainted with the method. It had been found that in the case of mixtures consisting entirely or nearly so of a resinous tincture and a watery menstruum, a satisfactory and permanent emulsion could be made by filling the bottle three-fourths full of the menstruum and adding the tincture by pouring it through a small funnel into the centre of the liquid and so as not to touch the sides of the bottle, and then shaking thoroughly but not violently or long. He exhibited perfect emulsion made by this method and kept for two years. The emulsions contained half an ounce of tincture of Indian hemp, one ounce of ammoniated tincture of guaiacum, and one ounce of tincture of myrrh, respectively, in six ounces of water. The guaiacum emulsion showed most tendency to deposit, but it could be easily diffused by shaking. The presence of a salt such as potassium bromide tended to interfere with the permanence of the emulsion, and, indeed, care was required in all cases where the menstruum was not mainly of an aqueous character.—The last communication was by Mr. J. Rutherford Hill on

The Pharmacy Act and the Sale of Poisons.

The author gave a historical sketch of the subject of poison regulations in Britain, including the Arsenic Act of 1851 and the Pharmacy Act of 1868, and explained the construction that had been put upon the words and clauses of the Acts by the Supreme Courts in the course of their practical application. He also replied to a series of queries that had been put dealing with details that arise in practice in the sale of poisons.—On the motion of the Chairman votes of thanks were awarded to the authors and to Mr. Duncan, and the meeting then closed.

LIVERPOOL PHARMACEUTICAL STUDENTS' SOCIETY.

The annual dinner of this Society was held at the Bee Hotel, Queen's Square, on Thursday evening, the 13th instant, the President, Mr. Pierson, being in the chair. There was a good attendance of members and their friends, belonging to both the retail and wholesale trade, to whose physical and intellectual enjoyment the Honorary Secretary, Mr. J. Harris Burns, very successfully ministered by his arrangements, which went without a hitch. As usual, the musical programme was carefully compiled and, together with the speech-making, in reply to a not too long series of toasts, served to complete in a satisfactory fashion a successful and altogether enjoyable evening.

PLYMOUTH, DEVONPORT, STONEHOUSE AND DISTRICT CHEMISTS' ASSOCIATION.

The annual ball of this Association was held at the Town Hall, East Stonehouse, on Friday, the 7th inst., and was a complete success. The staircases and approaches to the ball-room were attractively decorated with tropical plants, and the front of the orchestra had been treated in an especially effective manner, while in the centre thereof was proudly displayed the professional badge of the hosts of the evening—a pestle and mortar. Music was rendered by Brock's String Band, and dancing was kept up from 8 till 2. Refreshments were supplied by Matthews and Co. The Committee limited the number of invitations and about 200 were present. The arrangements were admirably carried out by the efforts of the indefatigable Hon. Secretary, F. Maitland, assisted by the following Committee: Messrs. Jas. Cocks, J. H. Bailey, J. D. Turney, C. J. Park, H. C. Cantle, W. H. Woods, E. W. H. Green, C. T. Weary, J. W. Swainson.

SUNDERLAND CHEMISTS' ASSOCIATION.

The quarterly meeting of this Association was held at the Grand Hotel, Bridge Street, on Thursday, January 13, when Mr. G. P. Fairman took the chair in the absence of the President, Mr. C. Ranken. Alderman Harrison also wrote regretting inability to attend. The principal business before the meeting was several suggestions from the Federation of Local Pharmaceutical Associations. These were well discussed and the following riders sent to the Federation for consideration :—

1. That only registered students should be taken as apprentices.
2. That a further distinctive title be given to Major men.

The following resolution was also sent for consideration :—

That the Council of the Pharmaceutical Society be approached with a view to forming a third part of the Schedule, so as to include recent and other dangerous remedies now so indiscriminately sold by unqualified persons.

GLASGOW AND WEST OF SCOTLAND PHARMACEUTICAL ASSOCIATION.

A meeting of this Association was held on the evening of Tuesday, January 11, in the rooms, 94, West Regent Street. Mr. Alexander Laing read a paper on

The Ubiquitous Microbe.

He said that in one of the "fragments" of Professor Tyndall which had been presented to their library by the Pharmaceutical Conference was a dissertation on the origin, propagation, and prevention of phthisis. The subject matter had been reduced from a memoir by Dr. Georg Cornet, of Berlin, one of Dr. Koch's colleagues. Tyndall simply accepted Dr. Cornet's inferences and passed them on, the tubercle bacillus bristling on every page. Mr. Laing criticised the "fragment," which he said was worthy to rank with the penny dreadfuls or shilling shockers of the literary world. Mr. Laing received a hearty vote of thanks for his paper. Owing to the smallness of the attendance, it was agreed to postpone the discussion of the new Pharmacy Bill.—Mr. W. L. Currie, President of the Association, who occupied the chair, intimated that the annual dinner had been fixed to take place in the Grand Hotel on Tuesday, Febuary 8.

MANCHESTER PHARMACEUTICAL ASSOCIATION.

At a meeting of this Association, held at the Victoria Hotel on Wednesday last, Mr. G. S. WOOLLEY, President, in the chair, Mr. JOHN TAYLOR, of Bolton, read a paper on

Pharmaceutical Organisation,

which is printed in full at page 70, and gave rise to the following discussion :—

Mr. WOOLLEY, in proposing a vote of thanks to Mr. Taylor for his excellent and useful paper, said re-organisation was what the Pharmaceutical Society was now aiming at, and it seemed to him that the Draft Bill was a step taken in the right direction, and one which would do a great deal to bring the pharmacists of the kingdom into one united body. Until all chemists, pharmaceutical and otherwise, were united in one solid body there was no hope of re-organisation.—The vote of thanks having been accorded, Mr. TAYLOR, in responding, said he took a view entirely opposite to the Chairman. If they wanted to get more chemists and druggists into the Society, whilst keeping that body intact for discharging State functions, it would be necessary to show that it had at heart the commercial interests of its members. If the Society did not deal with that question it would not get the men.

The Draft Pharmacy Bill.

—Mr. KIRKBY then said he had pleasure in moving that the meeting should cordially approve of the Draft Pharmacy Bill, and pledge itself to do its utmost to pass it into law. The attention of pharmaceutical chemists had been attracted to this Bill, and some were inclined to oppose it, largely as a matter of sentiment rather than of reason, but they must put that feeling on one side and take a more reasonable view. It was simply justice that men who had passed the Minor examination should have some recognition from the Society of the fact that they possessed the full legal qualification, and then it might be hoped to get better recognition from Parliament than chemists had hitherto received, by getting an extended Pharmacy Act.—Mr. HARRY KEMP seconded the proposition, and re-echoed the sentiments of the Chairman and Mr. Kirkby. He then criticised the remarks made at a recent Manchester meeting as to examiners and examinees. He also said that, if it was competent for men in business before 1868, who never passed an examination, to become members, he failed to see how the Society would be weakened by men being brought in who had passed the present qualifying examination. The men who were opposing the consolidation of the Society would be as sorry for their action in the near future, as the men did who opposed it five and twenty years ago.—Mr. HARRISON moved as an amendment that the meeting was not interested in the Pharmacy Bill of a Society which was not competent to deal with trade matters.—This met with no seconder.—Mr. W. GIBBONS said he would have supported the amendment, but it did not go far enough. He wished to record his vote against one of the most obnoxious and destructive measures which had been brought forward by the governing body of any learned Society. Mr. Gibbons repeated views previously expressed by him, and said he had a body at his back which would prevent the Bill becoming law.—The CHAIRMAN said he had received a number of objections to the Bill, which he had acknowledged and promised to lay before the meeting. He also said that, judging from his knowledge of the members of Council of the Pharmaceutical Society, their motives were something far higher and nobler than a mere consideration of pounds, shillings, and pence.—Mr. TAYLOR contended that Mr. Gibbons had vitiated his speech by imputing motives on the part of those supporting the Bill.—Mr. PILKINGTON SERGEANT denied that any imputation was cast on chemists and druggists by implying that it would be an anomalous position for them to nominate their own examiners, supposing they were proceeding to the Major examination. He objected to Minor men having equality in the Society with Major men, and contended that the Bill would have the effect of lessening the status of the body as compared with other societies.—Mr. J. RYMER YOUNG said Mr. Sergeant seemed determined to perpetuate the misconception which seemed to have inspired Mr. Gibbons at the commencement of the opposition—the persistent refusal to see the difference between "Pharmaceutical Chemist" and "Member of the Pharmaceutical Society." If Mr. Sergeant and Mr. Gibbons had educated the public into thinking that the title "Member of the Pharmaceutical Society" was preferable to that of "Pharmaceutical Chemist," and so degraded the latter title, which could only be got by examination, then the evil would fall on their own heads. He thought Mr. Gibbons had shown a lack of charity, and introduced animus which had not been necessary. Mr. Young also defended the Society and the *Pharmaceutical Journal*, and suggested that Mr. Gibbons should try to displace the present members of Council at the May elections by those of his own nomination. He ventured to say he would be defeated.—Mr. HANDFORTH argued that the Council was endeavouring to remove one injustice by perpetrating another. He thought it would have been possible to bring forward a measure which would not have raised such serious opposition.—The CHAIRMAN said the question was whether they were to go on wandering in the wilderness for another forty years or more. Chemists were a disunited body. The Government knew the Pharmaceutical Society consisted of a small moiety of the whole body, and the consequence was, they could get nothing done. He therefore strongly advocated the support of the Bill.—Mr. KIRKBY having replied, the votes were taken and the CHAIRMAN declared the motion carried.

ABERDEEN AND NORTH OF SCOTLAND SOCIETY OF CHEMISTS AND DRUGGISTS.

This Association held an "At Home" in the Douglas Hotel, Market Street, on Wednesday evening, January 19, at 8 o'clock. Upwards of fifty ladies and gentlemen were present, including Surgeon-Major Cheyne, Dr. Innes, Dr. Robertson, Messrs. Black, Clark, G. P. Cruickshank, sen., G. P. Cruickshank, jun., Wm. Cruickshank, Hay, Marr, Urquhart, and Weir, Mr. and Mrs. Craig, Mr. and Mrs. John Cruickshank, Mr. and Mrs. Paterson, Mr. and Miss Reid, Mr. and Misses Ritchie, Mr. and Miss Sim, Mr. and Mrs. Simpson, etc., etc. At 10 o'clock the party sat down to supper, purveyed in Mrs. Stott's usual excellent way. Mr. JOHN CRUICKSHANK occupied the chair. The toast-list was considerably curtailed in order that justice might be done to the long dance and musical programme, which seemed more to the taste of the audience than the speeches. The musical programme was contributed to by Miss Cran, Miss Aggie Ritchie, and Mrs. Jaffray, and Messrs. P. M. Cran, N. B. Cran, and M. F. Ritchie. The party separated at 1.30 a.m., thoroughly satisfied with the evening's entertainment.

BRADFORD AND DISTRICT CHEMISTS' ASSOCIATION.

At a meeting of this Association, held at the Great Northern Hotel, on Tuesday last the 18th, Mr. W. FITZWATER WRAY gave a lecture, entitled

Awheel in Brittany: A Summer Tour of Two Bradfordians.

There was a large audience, presided over by Mr. A. H. WADDINGTON (Vice-President). The lecture consisted of an account of a tour beginning at Cherbourg and touching Mont St. Michel, Rennes, Redon, Ploërmel, Vannes, and the district of megalithic remains on the outward journey, and Le Faoûet, Carhaix, Guingamp, Lamballe, Dinan, on the return journey to St. Malo. A large number of photographs were taken during the tour, and these furnished the lecturer with a hundred very interesting lantern slides of scenery, architecture, and people. Mr. Wray spoke in a bright and entertaining style, and besides touching upon the manners and customs of this old-world corner of France, dealt with the subject of the megalithic remains, gave a brief historical account of Mont St. Michel, and related one or two typical Breton legends. At the close of the lecture Mr. Wray was heartily applauded. A vote of thanks was accorded the lecturer, proposed by Mr. DUNN and seconded by Mr. GIBSON, to which Mr. Wray suitably replied.

THE POISON OF BEES.—It is generally assumed that the poison of the sting of the bee is formic acid. Langer, however, finds that this is only partly true; the bee poison which he examined was a bitter tasting liquid with an agreeable odour, which, although it contained formic acid, when diluted to a 1 per cent. solution, so that it no longer gave an acid reaction to litmus, still possessed appreciable physiological action. Moreover, when kept at a temperature of 100° for over six weeks, so that all the formic acid was entirely volatilised, the liquid still produced hyperæmia of the conjunctivæ when introduced into the sac. Langer has isolated the active principle, which he finds gives alkaloidal reactions, is unaffected by heat or cold, or by acids. Injected into the veins of animals it produces effects similar to the venom of serpents.—*Répertoire* [3], ix., 155.

NEW REMEDIES.

SILVER PREPARATIONS AS ANTISEPTICS.—Itrol, or silver citrate, and actol (silver lactate) are both now recognised as valuable antiseptics. For convenience they may be prepared in tablets, similar to sublimate tablets, containing 10 centigrammes of itrol or 20 centigrammes of actol. These salts are as powerful germicides as sublimate and are practically non-toxic. In addition to these a gauze strongly impregnated with metallic silver is now recommended for dressing wounds. Bougies of itrol containing 2 per cent. of that substance with cacao butter are employed as disinfectants of the urethra and bladder. Silver silk, catgut, and drains are also recommended, and are thus prepared. The material is plunged in a wide mouth brown glass bottle, containing a 1 per-cent. solution of actol. Silk should be immersed thus for fourteen days; catgut and drains for eight days. They are then withdrawn and washed with water until this remains clear, then exposed to sunlight until they assume a brownish-black colour. They are kept wrapped in several folds of gauze, and are dipped in boiling water for a few minutes immediately before use, or they may be kept in alcohol. Silver wool is found very effective in dentistry as a packing to remove the fetid odour of decayed teeth. Silver adhesive plaster is particularly serviceable for strapping up small cuts, etc. The silver dressing is composed of gauze of large meshes covered with silver leaf. The only drawback to the use of these silver antiseptics is that they may give rise to stains on the linen. These may readily be moved by soaking the spots for a few minutes in a solution of mercuric chloride, 10; salt, 25; water, 2000; and then rubbing well in pure water.—*Nouveaux Remèdes*, xiii., 562, after *Pharm. Centralh.*

PHENYLPILOCARPINE AND ASEPTOLINE IN PHTHISIS.—Edson recommends the use of phenylpilocarpine, $C_{11}H_{16}N_2O_2 \cdot OH \cdot C_6H_5$, in the treatment of phthisis and of intermittent fever. It is a colourless oily liquid, soluble in water or in alcohol. It is stated that not only does the phenol, liberated from its decomposition in the system, neutralise the toxines produced by the pathogenic bacteria, but that the pilocarpine molecule provokes leucocytosis and stimulates the activity of the glands. Under the name of "aseptoline" Edson employs a solution of 2 centigrammes of phenylpilocarpine and 2·75 grammes of phenol in 100 C.c. of water. In phthisis from 3 to 5 C.c. of this aseptoline are injected daily into the gluteal region, the dose being gradually increased until a maximum amount of 6 to 7 C.c. is reached. At the same time the patient inhales a 10 per cent. solution of iodoform in ether or in olive oil, or else a 3 per cent. aqueous solution of phenol containing 10 per cent. of glycerin. In recurrent fever the patient on the first day is treated with two injections, each of 6 C.c., of aseptoline on the right and left side of the abdomen. For the following six days only 6 C.c. per diem are employed, after which the same dose is injected but once in three days. It is stated to possess greater efficacy than quinine in the treatment of paludal fevers.—*Nouv. Rem.*, xiii., 524, after *Therap. Woch.*

EFFECT OF VASELINE, PARAFFINUM LIQUIDUM AND MINERAL OIL INTERNALLY.—Shubewrath has made numerous experiments with these substances with various animals and on himself and family. In nearly every case no ill effects whatever were apparent, and the animals (cats and dogs) bore quantities of 120 to 250 grammes of vaseline, cycle oil, and machine oil during a period of from twenty to forty days, very well. The author himself consumed in seven days about 23·5 grammes of yellow vaseline, and his children (three to eight years) from 1·75 to 4·3 grammes in four days without experiencing any change of health. The author points out that these results are in direct opposition to equally numerous and careful experiments carried out some time ago by Dunbar, when the animals under treatment suffered most acutely from diarrhœa, etc., and in many instances died. But the success of his own experiments does not prevent the author from advocating a thorough supervision of the use of these products, especially for confectionery, etc., as he believes that there are many oils which contain poisonous mineral ingredients.—*Münch. Med. Woch.*, xliv., 639.

AMMONOL, AN ANTI-NEURALGIC REMEDY.—According to Beringer, ammonol recommended as an antipyretic and anti-neuralgic remedy is composed of acetanilide, 2; sodium bicarbonate, 1; ammonium bicarbonate, 1; metaniline yellow, 0·001. —*Amer. Journ. Pharm.*

LETTERS TO THE EDITOR.

THE NEW PHARMACY BILL.

Sir,—Since a certain amount of trouble has been taken to frame the "proposed" Pharmacy Bill, permit me to suggest that those responsible for it should go to further trouble (and thus save endless bickering between the Society and pharmaceutical chemists), by obtaining if necessary an alteration of the Charter to enable pharmaceutical chemists to be elected fellows, and further, that a certain number of seats on the Council be reserved for them. I appeal to all supporters of the Society, and pharmaceutical chemists in particular, to unite in opposing the Bill as at present drafted. I believe, if it passed, it would not ultimately be to the Society's benefit. Mr. Hocking, of London, and Mr. Gibbons, of Manchester, have both invited communications, and I trust that all wishing for a true consolidation of the Society will respond, as I am of the opinion that the Bill, as it at present stands, is most unjust. Thanking you for allowing both sides a hearing,

Hitchin, January 14, 1898. RICHARD R. LEWIS, Ph.C.

*** It has been repeatedly pointed out, both at Council meetings and in the Journal, that the provisions of the new Bill as to membership of the Society would not in any degree affect the qualification of "pharmaceutical chemist." We must ask our correspondent to state specifically in what respects he considers the Bill to be unjust. [ED., *P. J.*]

Sir,—As a not uninterested reader of your important record of events and opinions, I take leave to suggest that much of the correspondence that appears from week to week is based upon fallacy. While one writer is hankering after distinction and degrees, others are tenacious of their position and the title of "M.P.S.," and would exclude all others from a share in the privilege. As a fact, I must acknowledge that there are men who are competent to fill any position in the profession, craft, or calling (whichever term is preferred) with credit and efficiency, whilst some others who rely upon their qualification as a claim upon public confidence are lamentably deficient. Assuming that the writers alluded to are all well-meaning and sincere in their convictions, I would beg to ask each one of them what would be the result could he be represented in the proposed Bill—what but an abortive result, and its rejection secured! The structure of the Pharmaceutical Society is based on commercial as well as on scientific interests, and it aims to consolidate both. Everybody remembers the fable of the old man, his sons, and the faggot—let us apply the moral. If "union is strength," disunion means weakness, disintegration, dissolution. The Council has declared that the proposed Bill, like its predecessors, is not intended to be a final measure, and it appears to me, all things considered, to comprise as much as Government is likely to concede during the session of 1898.

Kew, January 14, 1898. R. GOODWIN MUMBRAY.

Sir,—I have read with great interest the letters published in the Journal on the new Pharmacy Bill, and I certainly agree with most of the writers. I feel sure that it is the desire of most of the pharmaceutical chemists that the Minor men should have the right to sit on the Council and have a voice in the management of the affairs of the Society, and also to be free from jury service. I believe that these two objects are all that the Minor men can desire, and all that can be done for the consolidation of the Society, which is, I know, badly needed. In the above alterations the Council have provided abundantly for the chemist and druggist, but they have ignored the just claim of the Major men to a further distinctive title in lieu of the M.P.S., which will become common property when the new Act passes (if ever it does). I cannot understand why the Council should endeavour to raise the status of the Minor men to M.P.S. and leave the Major men in the same grade after they have had the worry, trouble, and expense of taking a higher degree. Some say they still have the title of pharmaceutical chemist. Yes, that is all very well, but still not good enough, because the two, Ph.C. and M.P.S., have always gone together, and I doubt that many will not distinguish the difference, and the Minor man may gain by the change, the Major man cannot. The Minor man has nothing to lose by the change, the Major man has, and I do not think it good enough that we should be swept aside by the remarks of the promoters of the Bill, who say that we have no reasonable claim to a better position over our fellows who have not had the energy to take the Major qualification. I may add that this is not due to petty jealousy on my part (as

Mr. B. S. Proctor would say), but simply because I think that honour should be given where it is due, and I would tell Mr. Proctor that we cannot get further into the mud than we are at present. I regret to think that the past hard workers of the Society have left us so deep in the mire, and I hope the present Council will not be above listening to the voice of the trade in the country.

Sunderland, January 17, 1898. R. H. BELL, Ph.C., M.P.S.

*** The Major man as M.P.S. is now indistinguishable from some 600 registered persons, who are also M.P.S., though not Major men, nor would he be distinguishable from over 3000 possible holders of M.P.S. who are not pharmaceutical chemists. [ED., *P.J.*]

Sir,—Perhaps the "comparatively low" acquirements of a Minor man may account for his inability to grasp the abstruse effusions emanating from the seat of Mr. F. Pilkington Sargeant's cerebral powers; but subject to that limitation I agree with the editorial note which interrupted his communication in the columns of the *Pharmaceutical Journal* on January 1, in thinking that Mr. Sargeant "completely fails to comprehend the subject on which he writes." In reference to the side issues which he raises as to whether the Pharmaceutical Society is a scientific body, or a trade union, whatever are its chief aims, its primary object is certainly not science. The care of the scientific subjects of the Minor and Major examinations is in the hands of the Chemical, Linnean, and Physical Societies; the Pharmaceutical Society not being recognised by scientific men as one of the learned societies. Regarding the "comparatively low" standard of the Minor examination, is the comparison made with the Major examination or with examinations for the science degrees of our universities? If the former, then I challenge Mr. F. Pilkington Sargeant's description of the relation. The papers which were set at the recent Major examination could have been answered by the majority of Minor men who have qualified during the last five years. Mr. F. Pilkington Sargeant labours under the delusion that anyone passing the Major examination is considered to be an individual of considerable scientific attainments, but this is far from being acknowledged by those who are competent to express an opinion. For instance, the physics required under the Major Schedule are of the most elementary kind, and mathematics, without which an intelligent knowledge of physics cannot possibly be acquired, find no place in the Major examination. As to the final statement of successful opposition to the new Pharmacy Bill, perhaps Mr. F. Pilkington Sargeant, Ph.C., will inform those who may be in the dark as to where such "indication" is visible.

Higher Broughton, Manchester, N. HOWARD SCHOLLAR, A.P.S.
January 17, 1898.

CHEMICAL RESEARCH AS MADE IN GERMANY.

Sir,—I observe in the recent issue of the *Journal of the Society of Chemical Industry* a note on the discovery of the active principle of capsicum. J. Morbitz—whose paper seems to have been published in the *Pharm. Zeits. für Russ.*, 1897, and to have been translated, or rather abstracted, from *Pharm. Wochenschrift*, 1897—is alleged to be the discoverer. The discovery is identical with that made by Dr. Thresh several years ago, and fully described by him in the *Pharmaceutical Journal* [3], vi., 941, and subsequent papers. It would be interesting for someone to make a compilation of all the discoveries made on the Continent (particularly in Germany) which had been previously made in England. It is not long since benzoyl-morphine went the rounds as a new thing from Germany, although, as matter of fact, it was first prepared, years ago, by Alder Wright in London, and its physiological action was fully investigated by Stockman in Edinburgh.

Edinburgh, January 13, 1898. D. B. DOTT.

THE CHEMISTS' ASSISTANTS' ASSOCIATION.

Sir,—We have pleasure in submitting to you the programme for the second half of the session, and we invite your support and co-operation in obtaining that of your friends at each of the scientific and social gatherings. The value of the papers to be read this half session is enhanced by the fact that they are contributed for the most part by members of the Association. Opportunity will be given on two occasions for members who hesitate to write on scientific subjects to join in the discussion of matters of pharmaceutical importance. The discussion of the new Pharmacopœia on April 28 will afford members an opportunity of recording their experience in the manufacture of new galenicals, and will, it is hoped, prove an incentive to them to diligently study this new work, produced at an unprecedented cost of energy and toil. The attention of intending competitors for the Association prizes is directed to the regulation that essays and accounts of practical work must be received by the Honorary Secretaries on or before March 31. An evening will be devoted to "Short Papers." It should be understood that "short papers" include dispensing notes and queries, observations of impurities, notes on new drugs, their chemistry and pharmacy, and all kindred matters. Members should notify the Literary Secretary as soon as possible of their intention to contribute a "short paper." The annual dinner will take place in the King's Hall, Holborn Restaurant, on March 3. Full particulars will be shortly announced. The second and third Cinderellas will be held on February 3 and March 24 respectively. Musical and social evenings are arranged for January 20 and April 21 at the Association's rooms, 73, Newman Street, W. Members who have not yet paid their annual subscriptions are requested to forward them to the Financial Secretary at an early date. We have to cordially thank those who have given us their assistance in providing the programme, and to express the hope that you will take a personal interest in the welfare of the Association and in the furtherance of its aims and objects.

73, Newman Street, W. F. W. GAMBLE,
January 11, 1898. GEO. E. PEARSON, } Hon. Secs.

(TEXT OF PROGRAMME.)

January 20.—Musical and Social Evening.
,, 27.—Paper: "How an Evening Paper is Produced," E. W. Richardson.
February 3.—Cinderella Dance, Portman Rooms.
,, 10.—Short Papers by Members.
,, 17.—Paper: "Formaldehyde in Dispensing," G. Roe.
,, 24.—Discussion: "Trades Unionism in Pharmacy." Opened by the President.
March 3.—Annual Dinner, Holborn Restaurant.
,, 10.—Paper: "*Résumé* of Mercury," J. Fothergill.
,, 17.—Demonstration: "Water Analysis," E. W. Hill.
,, 24.—Cinderella Dance, Portman Rooms.
,, 31.—Paper: "The Alternation of Generations," Harold Matthews.
April 21.—Musical and Social Evening.
,, 28.—Discussion: "The New British Pharmacopœia."

THE PREPARATION OF SYRUPS.

Sir,—Some eighteen months since I was rather surprised, in looking through the pages of the French 'Codex,' to find that although simple syrup, 17 of sugar to 10 of water, is ordered to be prepared by boiling, a thicker syrup, 18 to 10, is directed to be prepared cold. Without knowledge of the American method, I tried several ways of dissolving sugar in the cold. One of these was identical with that of Mr. Williams, described in last week's Journal. I found, in trying to make a thick syrup, that the sugar soon coalesced in a thick stratum at the bottom of the vessel. This set me thinking how to avoid that and make the syrup quicker. I cut off the bottom of a Corbyn quart bottle, put a cork in the neck, and passed through it a feeding-bottle tube bent twice at right angles, with one limb longer than the other. Another piece of the same tubing bent at an obtuse angle was connected with the first by a piece of indiarubber tube of similar diameter. Then a bag of fine muslin was made to go inside. The second tube had a turn or two of brown paper about the middle of its length, and was tied rather tightly to the bottle, yet so as to slide up or down. The bottle, neck down, was placed on a retort stand. Then the bag, filled with sugar, and the requisite quantity of fluid added was left to do its work. By a contrivance like this last winter I made two gallons of syrupus scillæ, and afterwards used it as a general percolator where possible, the bottom of the bottle restored to its original site acting as a very good stopper.

January 16, 1898. NEMO (123/6).

OBITUARY.

WHITE.—On January 1, George White, Chemist and Druggist, Havant, Hants. Aged 74.

STRAIN.—On January 5, Thomas Alfred Strain, Chemist and Druggist, Sheffield. Aged 58.

PRIDE.—On January 7, Arthur Edwin Pride, Chemist and Druggist, Old Basford, Notts. Aged 47.

BROOMHEAD.—On January 10, George Emmet Broomhead, Chemist and Druggist, Aberdeen. Aged 45. Mr. Broomhead was an Associate of the Pharmaceutical Society.

LEA.—On January 13, Charles Wheeley Lea, Pharmaceutical Chemist, Parkfield, Hallow, Worcester. Mr. Lea was a member of the firm of Messrs. Lea and Perrins, and had been connected with the Pharmaceutical Society since 1859. He was a life member of the Society, and in 1889 gave a donation of £50 to the Benevolent Fund.

ANSWERS TO QUERIES.

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

REGISTRATION OF A FANCY WORD.—Apply to the Comptroller, Office for the Registration of Trade-Marks, Staple Inn, Holborn, E.C., for the information you require. [*Reply to* A. G.—3/12.]

STUDY DURING APPRENTICESHIP.—Refer to the "Students' Number" of the Journal, published September 11 last, page 231 *et seq.*, where detailed information is given regarding a suitable course of study. [*Reply to* STUDIOSUM.—3/18.]

HORSE AND CATTLE CONDIMENT.—Sulphur flowers, 2; potassium nitrate, 1; gentian root, 2; aniseed, 2; fennel, 2; long pepper, 2; fenugreek, 2—all in coarse powder; powdered resin, 1; salt, 4; locust bean meal, 8. Mix. [*Reply to* E. B. F.—3/5.]

PHOTOGRAPHY IN NATURAL COLOURS.—You probably refer to Villedieu-Chassagne's process, *vide P. J.* [4], iv., pp. 172, 473. [*Reply to* PHOTO.—3/3.]

BLUE ANILINE DYE.—It is difficult to tell the exact tint you require from a verbal description. Probably a strong solution of methylene blue will answer your purpose. Another tint is rosaniline blue, technically known as Paris blue or spirit blue; the grade "spirit blue 6 B" is the best. [*Reply to* GLYCYRRHIZA.—3/8.]

OINTMENT FOR VETERINARY USE.—The ointment you send is composed of lard, resin, oil of turpentine, and perhaps a little wax. There is a good deal of turpentine in it. You can experiment with these ingredients to match it. A basis similar to unguentum resinæ, with turpentine instead of the almond oil, and lard instead of simple ointment, will give you something very like your sample. [*Reply to* MAJOR.—3/4.]

DEPILATORY.—We are not able to trace any such preparation identified with the name of the late Erasmus Wilson. One of the best and safest depilatories is that of Boudet, prepared as follows:—Crystallised sodium sulphide, 3; quicklime in fine powder, 10; starch, 10. Mix. To be mixed with water to a paste and applied to the skin, then scraped off in 2 or 3 minutes with a blunt knife. The hair will grow again, however, after a time. [*Reply to* J. B. H.—2/32.]

TO DETECT ACETIC ACID IN HAIR WASH.—Distil a small portion of the article until the distillate is barely acid to litmus. If much perfume comes over as well, shake the distillate with petroleum ether and separate the watery layer. Test this in the usual way with neutral ferric chloride. It is well to remove perfumes as much as possible, as some of these give colours with ferric chloride which may obscure the acetic acid reaction. If no perfume comes over, test the distillate direct. [*Reply to* BEETLE.—3/17.]

LIME JUICE AND GLYCERIN.—Yolk of one egg, glycerin, 1 fluid ounce; oil of sweet almonds, 2 ounces; tincture of quillaia, 2 drachms; lime juice, 2 ounces; oil of lemon, 20 ♏; oil of bergamot, 5 ♏; orange flower water to produce 8 fluid ounces. Mix the egg yolk thoroughly with the glycerin, add the quillaia then slowly rub in the oil, add the lime juice in small portions, rubbing well until thoroughly emulsified between each addition, then add the water and the perfumes. It is well to prepare an article containing plenty of glycerin or possibly the public analyst in your district may not be able to find it, and you may have to defend yourself. As the formula given above contains 12½ per cent. by volume of glycerin it ought to be sufficient to render you safe. As you doubtless remember, an over-zealous analyst obtained, last year, the conviction of a pharmacist for retailing the formula lime cream and glycerin, on account of alleged deficiency of the last-named ingredient. *Vide P. J.* [4], iv. [*Reply to* J. R P.]

GLYCERIN JELLY.—Your query is not quite clear. Please repeat, and address to Editor, 17, Bloomsbury Square, not to 5, Serle Street. [*Reply to* J. R. P.—3/24.]

REDWOOD'S 'SUPPLEMENT.'—It is probably not worth more than ten to fifteen shillings, but you could ascertain more definitely by asking for offers in an advertisement. [*Reply to* R. S. D.—3/27.]

DISPENSING BOTTLES.—For large quantities you will probably best get what you require from Messrs. Kilner and Co., King's Cross, London, N. For smaller quantities apply to any of the wholesale firms who advertise in our columns for their lists, and make your own selections. [*Reply to* J. R. P.—3/23.]

STUDY OF THE DIATOMACEÆ.—You will find much information on the subject in any book on the microscope, but the best book is undoubtedly Van Heurck's 'Treatise on the Diatomaceæ,' translated by W. E. Baxter (London: William Wesley and Son, 28, Essex Street, Strand, W.C.). The cost of it is about 30*s.* net. [*Reply to* F. A. W.—3/19.]

BOOK ON THE ART OF PRESCRIBING.—You cannot "learn" the art of prescribing from any book. Besides it is not the province of the pharmacist to prescribe; that should be left to the medical practitioner. It takes him a period exceeding five or six years to learn to diagnose and prescribe. You cannot pretend to make a proper diagnosis, and therefore are not in a position to prescribe. [*Reply to* J. R. P.—3/25.]

PRELIMINARY EXAMINATION.—New regulations come into force after August, 1900 (see the Journal for November 27 last, page 471), and "Minor" candidates will then be required to deliver to the Registrar a certificate of having passed an examination in English Grammar and Composition, Latin, one modern foreign language, and also in Arithmetic, Algebra, and Euclid. But, until the date mentioned the requirements will remain as in the existing syllabus. [*Reply to* COUPE.—3/26.]

COLORATION OF SOLUTION OF AMMONIUM ACETATE.—The probable cause of the yellow coloration is a trace of some organic impurity in the ammonium carbonate. Repeat the neutralisation, using the same acid but another supply of ammonium carbonate. Foreign acetic acid sometimes contains a trace of an organic body which gives a coloration with alkalies. Of course, if there is a heavy trace of iron in either of the ingredients, you will get a distinct coloration, which will be more evident as the liquid becomes nearly neutral. Such impurity is not uncommon in acetic acid. [*Reply to* T. D.—3/16.]

DETECTION OF CANTHARIDIN IN A HAIR WASH.—It will probably not be at all easy to isolate cantharidin from a hair wash, unless you have a large quantity of material to work upon. Evaporate to a low bulk, and shake out the residue two or three times with chloroform. Separate the chloroform solution, evaporate off the solvent, and apply a little of the residue to the tender skin of the forearm, covering the spot with a piece of gummed paper. If there is not enough cantharidin to cause redness and irritation in twenty-four hours, it is hopeless to try to isolate it in sufficient purity to identify it. If you obtain positive results by this means, wash the rest of the chloroform residue, first with a few drops of petroleum ether, then with rectified spirit, and again dissolve the washed residue in chloroform and slowly evaporate. Characteristic crystals of cantharidin may then form; if so, collect, and take the melting point in a capillary tube after thorough drying at 100° C. It should melt at 200° C. The first chloroform residue will often have the peculiar odour of the "flies" if tincture of cantharides has been used in any quantity. [*Reply to* BEETLE.—3/17.]

INFORMATION WANTED.

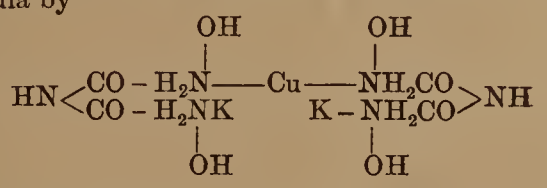
ALLINGHAM'S OINTMENT FOR PILES.—"W. S. B." (3/2) asks what should be supplied for Allingham's ointment, ordered by a London physician to be "introduced" for internal hæmorrhoids?

COMMUNICATIONS, LETTERS, etc., have been received from

Messrs. Athey, Baiss, Bayley, Bell, Blackburn, Burt, Cracknell, Dott, Ferrall, Fletcher, Franklin, Gamble, Green, Hardman, Haworth, Hickling, Hill, Hudson, Jackson, Johnson, Kirkby, Lewis, Lothian, Macdonald, Mercer, Mumbray, Offord, Parry, Pirie, Rankin, Robertson, Robins, Sargeant, Sawer, Schollar, Scott, Spurge, Stewart, Thursfield, Watson, Wilcock, Williams, Wyatt.

"THE MONTH."

Biuret. In his investigation of biuret and the biuret reaction, H. Schiff found that the preparation of pure biuret from urea was best accomplished by the action of dry hydrochloric acid gas at about 135°. In this way about 45 per cent. of the urea was converted into biuret. The separation of the accompanying cyanuric acid was effected by treatment with alcoholic potash, forming potassium biuret, which is insoluble in alcohol, and the biuret is then obtained from the alkaline compound by neutralising it with hydrochloric acid. Pure biuret melts at 192·5 to 193°, and contains in the air-dried substance 12·2 to 12·3 per cent. of water, corresponding to $0{\cdot}8H_2O$. In determining the amount of nitrogen in biuret by Dumas' method, it was found to be impossible to obtain the theoretical quantity of nitrogen, the result always being 2 per cent. too low. Potassium biuret was obtained in the form of large rosette needles, which quickly take up water and carbon dioxide from the air, and is completely decomposed by water. It has the composition $K{\cdot}N{<}^{CONH_2}_{CONH_2},H_2O$. Compounds with sodium, mercuric oxide and with copper salts were also prepared. Although it is fifty years since the biuret reaction was discovered, we are still uncertain as to the composition of the purple-coloured solution which it produces with copper sulphate and potash, owing to the difficulty of obtaining a pure crystalline body. After numerous and ingenious experiments, Schiff produced the red-coloured compound in the form of carmine red needles by mixing pure biuret, potassic hydrate, and moist cupric hydroxide or pure neutral copper acetate. The dry compound takes up CO_2 from the air and becomes blue through separation of copper hydroxide; it is also quickly altered when heated. In alcohol it is insoluble, and it is decomposed by acids, whilst its solution in water is strongly alkaline. Its composition is best expressed by $CuH_2O_2{\cdot}2KOH{,}2C_2H_5N_3O_2$, and its constitutional formula by



—*Annalen*, 299, 236.

Scotch Shale Tar Oil. The views of Berthelot on the polymerisation of acetylene to benzol under the influence of high temperatures have occasioned the supposition that in the destructive distillation of coal, acetylene is first formed, and is then polymerised to the aromatic hydrocarbons. This view is not accepted in its entirety by Heusler, who, in conjunction with Nefgen, has been investigating the composition of Scotch shale tar oil. If this supposition were correct, then the production of the aromatic substances would be a function of the temperature employed, that is to say, a low temperature should produce hydrocarbons of the fatty series and an increased temperature should yield aromatic hydrocarbons. Heusler maintains that in the distillation of bituminous substances the aromatic hydrocarbons are formed not by synthesis only from pyrogenic bye-products as acetylene, etc., but are also in part primary distillation products from the aromatic series of material naturally existing. If the acetylene theory were correct, we must suppose that the very small amount of aromatic substance in shale tar must be due to the low temperature at which the tar has been produced. This has not been found to be the case in practice when dealing with bituminous shale or with coal, but the results obtained are to be ascribed to the difference in the chemical composition of the raw material, the small amount of aromatic hydrocarbons produced from shale being due to its animal origin. From shale tar was obtained paraffin, 40 to 44 per cent., of sp. gr. ·729 to ·765, naptene (polymethylene), a small quantity of benzol, toluol, metaxylol, and cumol, ethylene, and nitriles of fatty acids.—*Berichte*, 30, 2743.

Formation of Carbon Oxides. Engler and Grimm have continued the investigation, suggested by the work of C, Phillips, as to the direct splitting off of CO from organic compounds by heat and its conversion into CO_2 in presence of water, and the temperature at which carbonic oxide is produced in pyrogenic processes. Formic acid heated at 150 to 160° for eight hours evolved about thirty times its volume of gas, of which 98·8 per cent. was CO. Ethyl ester of formic acid at 300° gave forty times its volume of gas, of which 18·2 per cent. was CO; 29·5, CO_2; 45·1, H; and 7·2, C_2H_4. Amyl ester of formic acid at 300° gave a volume of gas containing 23·2 per cent. of CO. Ethyl ester of oxalic acid at 250° C. gave a gas containing 48·4 per cent. CO, and 43·8 per cent. CO_2, according to the equation—

$$(COOC_2H_5)_2 = CO + CO_2 + H_2O + 2C_2H_4.$$

Benzoin heated at 280° for 10 hours in a sealed tube gave a considerable quantity of gas consisting of 92 per cent. CO_2 and 8 per cent. CO. There are several factors that may influence the presence of CO in a natural gas, such as lapse of time and slow oxidation in the presence of water, so that a small amount existing may not be due to the want of a high temperature for its production; in fact, Thomas has found that a gas containing CO is given off from lignite at 50°. The fact that, in the decomposition by heat of ketone bodies, also of compounds which contain the oxygen only in the CO group, a considerable quantity of carbon dioxide is produced, led up to the question whether the change was brought about by the action of atmospheric oxygen on the carbon oxide; but inasmuch as 92 per cent. of carbon dioxide obtained from benzoin could not be due to this cause, suggested the hypothesis, which was eventually found to be correct, that the CO_2 was formed by the joint action of CO and water. When moist carbon oxide perfectly free from oxygen was passed with due precautions through a porcelain tube at 250° to 300° C., there was a distinct production of CO_2, and the result therefore explains the formation of carbon dioxide by the action of heat on ketone bodies, which primarily produces carbon oxide and water.—*Berichte*, 30, 2921.

Colour of Mercurous Iodide. François has found that pure amorphous mercurous iodide, precipitated and washed in the dark, is of a bright yellow colour, resembling the tint of lead chromate. The yellowish-green preparations of commerce were all found to obtain an excess of free mercury, and the varying tints of these samples could be reproduced by mixing pure, bright yellow mercurous iodide by trituration with the indicated excess of metallic mercury.—*Journ. de Pharm.* [6], vi., 529.

Further Notes on Vasicine. The alkaloid vasicine isolated by Hooper has been found by Boorsma to be readily removed from alkaline solutions by chloroform, and it can be obtained colourless by precipitating an alcoholic solution of the crystalline hydrochloride with ether. The precipitate is mixed with dilute potash solution and then shaken out with ether. Vasicine is soluble in water (1 in 270), sparingly so in petroleum ether, benzene, and carbon bisulphide, readily in ether and chloroform. It is markedly alkaline in reaction; its salts crystallise in the same manner

as the alkaloid. The acidulated aqueous vasicine solution (1:1000) is precipitated by most alkaloid reagents, but not by tannin nor by picric acid. In a 1 per cent. solution mercuric chloride and platinic chloride give crystalline precipitates, also picric acid, in a solution as strong as 1 in 50. Concentrated sulphuric acid and Fröhde's reagent give no colour reaction, sulphuric acid and potassium bichromate produce a light blue, sulphuric acid and ammonium vanadate cause a green coloration. Vasicine, in doses of 20 Mgm., produces cramp and paralysis in frogs, and 50 Mgm. produces the same result in guinea-pigs but without lethal effect.—*Pharm. Zeit.*, xlii., 679.

New Antipyrine Compounds.

Schuyten has prepared the following new compounds of antipyrine with metallic salicylates. *Ferri-salipyrine* (iron salicylate antipyrine) of the formula $3(C_{11}H_{12}N_2O),2[(C_6H_4{\cdot}OH{\cdot}CO_2)Fe]$. A yellowish-brown powder, separating from water in ill-defined crystals with a greenish fluoresence, blackening at 67° C., and melting at 70° to 73° C. *Nickel-salipyrine* (nickel-salicylate antipyrine), $3(C_{11}H_{12}N_2O),[(C_6H_4{\cdot}OH{\cdot}CO_2),Ni2H_2O)]$. A pale green powder crystallising from alcohol in almost white needles, which melt at 120°, turning dark green on losing water of crystallisation. The latter is partly taken up again in the air. *Cobalt-salipyrine* (cobalt salicylate antipyrine). A pale red powder having the composition $2(C_{11}H_{12}N_2O),[(C_6H_4{\cdot}OH{\cdot}CO_2),Co]$ crystallising from water in dark red crystals which melt at 106°, turning a fine blue colour.—*Pharm. Post*, xxx., 587.

Alkalies and Diastasic Action.

Terrat finds that the minute traces of alkaline salts often present in drinking water exert a marked influence in modifying the action of diastase on starch. It does not appear to influence the hydrolysis of the starch, but retards the conversion of the dextrin so produced into maltose and secondary dextrin. The 'Codex' directs that ten centigrammes of diastase, mixed with 100 grammes of starch paste—containing 6 per cent. of starch and maintained at 50° C. for 6 hours—should yield a solution, one volume of which should decolorise 5 volumes of Fehling's solution, but the official test says nothing of the water to be employed. The author finds that a sample of diastase which more than met the official requirements when distilled water was used in the experiments, failed to answer the test when drinking water containing the usual trace of bicarbonates of the alkaline earths was employed.—*Journ. de. Pharm.* [6], vi., 494.

Photo-Electric Properties of Salts.

Professors Elster and Geitel find that potassium bromide, sodium chloride, and similar salts, which undergo changes of colour under the action of kathodic rays, are at the same time rendered photo-electrically sensitive, inasmuch as they lose any negative electric charges imparted to them more rapidly in daylight than in the dark. Moreover, the same photo-electric properties appear to be conferred on the salts by heating them in the presence of potassium vapour, whilst they exist more or less in the natural violet and blue varieties of rock-salt, fluor-spar, and similar minerals. Electrometer readings are given for various salts coloured by different methods.—*Wiedemann's Annalen*, through *Nature*, lvii., 255.

Anagyrine.

In the course of his researches on the constitution of the alkaloids, Professor E. Schmidt has examined anagyrine. That alkaloid occurs with cytisine in the seed of *Anagyris fœtida*. The reactions and general properties of anagyrine are very similar to those of cytisine. The beautifully crystalline hydrobromide, hydrochloride, platinum, gold, and mercury double salts furnished on analysis values corresponding to the formula $C_{15}H_{22}N_2O$. The behaviour of anagyrine towards alkaline iodides and nitrous acids is that of a tertiary base. Considering that cytisine is a secondary base, and that the difference between the formulæ of both is only C_4H_8, the hypothesis that anagyrine is related to the butyl cytisines seems well founded. This point is still being determined by comparing with anagyrine the various butyl cytisines obtained by butylising cytisine.—*Pharm. Zeit.*, xlii., 653.

New Synthesis of Glycerin.

O. Piloty has succeeded in effecting a new synthesis of glycerin in a manner that is of especial interest in plant physiology. Starting from formaldehyde, Henry had already prepared nitroisobutyl glycerin, which Piloty and Ruff converted into the corresponding hydroxylamine compound, thence by oxidation into the oxime of dioxyacetone. It is this body which Piloty first converts into dioxyacetone by the action of bromine, thus :—

$$\left.\begin{array}{l}2(CH_2{\cdot}OH)_2C{:}N{\cdot}OH\\2Br_2\\H_2O\end{array}\right\} = \left\{\begin{array}{l}2(CH_2OH)_2CO\\N_2O\\4HBr\end{array}\right.$$

and then reduces the dioxyacetone with sodium amalgam to form glycerin, according to the equation—

$$(CH_2OH)_2CO + H_2 = (CH_2OH)_2CHOH.$$

As it is the view of many chemists that formaldehyde is the first assimilation product of carbon dioxide in the plant from which, through condensation, the sugars are formed, this synthesis of glycerin from dioxyacetone, which has many of the properties of a sugar, is likely to lead to important results in extending our knowledge of the process of assimilation in plants.—*Berichte*, xxx., 3161.

Determination of Fibre.

The determination of fibre in fodders and foods has been investigated by Dr. J. König, who finds that the method of Henneberg, the one frequently employed for the purpose, gives results which are, in some instances, 20 per cent. too high, owing to the imperfect removal of pentosane. König's new process consists in the treatment of the material with boiling acidulated glycerin, either under pressure or in a flask connected with a reflux condenser. When operating in a flask 3 grammes of the air-dried substance are boiled with 200 C.c. of glycerin of 1·23 sp. gr., containing 2 per cent. strong sulphuric acid for one hour at 131° to 133°. The liquid is then cooled to 80 to 90°, diluted with 200 to 250° C.c. boiling water, filtered through an asbestos filter, washed with boiling water, and finally with alcohol and ether-alcohol until the filtrate is colourless. The insoluble residue, after deducting the ash, represents the crude fibre. The results obtained by König's method gave 43·4 per cent. of fibre in rye straw, 30 per cent. in pea straw, 26·2 per cent. in hay, 7·5 per cent. in linseed, etc., against 52·3, 40·5, and 8·9 per cent. respectively as determined by Henneberg's process.—*Zeitschrift für Untersuchung der Nahrungs und Genuss Mittel.*, i., 3.

Notes on Essential Oils.

Gildemeister and Stephan contribute further information respecting essential oils. MANDARIN OIL was first investigated by De Luca in 1857, who obtained it by pressure from *Citrus Madurensis Loureiro*. It gave a dextro-rotating distillate at 178°, consisting of a terpene, $C_{10}H_{16}$, which yielded a crystalline dihydrochloride, $C_{10}H_{16},2HCl$. The boiling point and the rotatory power, together with the formation of a crystalline dihydrochloride, led Gildemeister and Stephan to conjecture that the terpene of mandarin oil was dextro-limonene, which view was confirmed by further investigation. The oil had a specific gravity of 0·855 at 15°, and the rotatory power $[\alpha]_D = +69°{\cdot}54$ at 16°. It began to boil at 175° and distilled at 179°, leaving a small residue.

The fraction between 175° and 177° ($[\alpha]_D = +76°{\cdot}45$) gave limonene tetrabromide (m.p. 104° to 105°). A portion of the same fraction, when treated with hydrochloric acid gas, gave De Luca's product, namely, dipentendihydrochloride. From these results it is concluded that dextro-limonene is the chief constituent of mandarin oil. Evidence was also obtained which pointed to the presence of citral and citronellal in the undistilled residue, but a larger quantity of the oil must be worked up to determine this point satisfactorily. CULILAWAN OIL was obtained from the bark of the *Cinnamomum Culilawan* to the extent of 4 per cent. by distillation with steam. It had a specific gravity of 1·051, and dissolved to a clear solution in about three parts of 70 per cent. alcohol. It was found to contain 61·5 per cent. of eugenol, when determined by Thoms' method, a little methyl eugenol and a small quantity of indefinable bodies. As turpentine is the chief adulterant of ROSMARY OIL, it is important to ascertain definitely whether pinene is a natural constituent of rosmary oil, as its presence might be otherwise ascribed to sophistication. For this purpose a genuine oil was obtained by distillation from the leaves, and the results of the investigation proved that pinene—probably a mixture of dextro- and lævo-pinene—is its normal constituent, so the presence of this terpene, unless in considerable quantity, is no evidence of adulteration with turpentine oil. A pure oil should have a specific gravity above ·900 at 15°; the oil itself, as well as the first 10 per cent. of its distillate, should be dextro-rotatory, and one part of the oil should give a clear solution with 0·5 part of 90 per cent. and with 10 parts of 80 per cent. alcohol. The essential oil from the fruit of *Schinus molle* was investigated in 1884 by Spica, but Gildemeister and Stephan have obtained results which are somewhat different. The fruit yielded by distillation 5·2 per cent. of a thin oil of specific gravity 0·8505, with rotatory power + 46°·4 at 17°. It dissolved in about 3·3 parts of 90 per cent. alcohol, and gave an intense phellandrene reaction. Further examination showed that the greater part of the oil consists of phellandrene—much dextro- and little lævo-phellandrene—a small quantity of carvacrol, and possibly traces of pinene. —*Archiv der Pharm.*, 235, 582.

Chemistry of Spigelia Anthelmintica.

Boorsma has succeeded in isolating an alkaloid from *Spigelia anthelmintica* entirely different in its action from strychnine or gelsemine. It is obtained by rendering the alcoholic extract alkaline with ammonia and shaking out with chloroform, not in a crystalline state, but as light yellowish, soft and hygroscopic varnish. On frogs it produces not tetanic, but spinal paralysis. A dose of 0·5 Mgm. was found to be lethal on guinea-pigs. The author calls the alkaloid spigeline.

Chemistry of Dioscorea Hirsuta.

The statement of Boorsma that two alkaloids exist in the roots of *Dioscorea* is denied by Plugge and Schütte, who can only find one alkaloid (dioscorine), melting at 43·5 C., having the formula $C_{13}H_{19}NO_2$. It is crystalline. The hydrochloride melts at 204° C., and is anhydrous. The action of the alkaloid is similar to picrotoxin, but much weaker (on guinea pigs 16 times less toxic). It produces strong tetanic convulsions, ending in central paralysis.—*Pharm. Zeit.*, xlii., 678.

Cutting "Seed" Potatoes.

As many pharmacists are either themselves interested in horticulture, or may be the advisers in some points of those who are so interested, the following facts with reference to the practice of cutting "seed" potatoes before planting may be of interest. Experiments prove that undivided large seed tubers give far larger crops than the same tubers cut up before planting, and the crop is from 5 to 18 per cent. less if small whole tubers are used instead of those of average size. It is false economy to cut up seed potatoes, the crop from tubers so treated being not more than two-thirds that obtained from the same stock planted whole.—*Cape Agricultural Journal*, xi., 349, after *Mildura Cultivator*.

Artificial Variegated Leaves.

Lindemuth suggests that it is may be possible to produce variegated specimens of almost any species of plant by grafting upon it a form with coloured leaves, not necessarily of the same species, but of a nearly allied form. It is found that if a variegated form of one species be grafted upon a normally coloured plant of another, the green plants produce variegated shoots. Thus a green plant of *Malvastrum capense* on which a variegated *Abutilon* had been grafted produced variegated shoots below the graft; *vice versâ* a green plant of *Kitaibelia* grafted on a variegated *Abutilon* became variegated and gave vigorous cuttings, which, when grown in the open, remained variegated. *Althea officinalis* when grafted on the same *Abutilon* also became variegated. *Petunia hybrida* grows vigorously if grafted upon *Nicotiana glauca*.—*Gard. Chron.*, xii., 434.

The Copper Plant.

According to Sketchley ('Geological Survey of Queensland'), the presence of the Caryophyllaceous "copper plant," *Polycarpœa spirostylis*, is a sure sign of the presence of copper lodes. It occurs all over the copper region of Queensland, but always on, or close to, the deposits of that metal, or along water courses charged with copper in solution. The Government analyst, Mr. Brownlie Henderson, finds distinct traces of copper in the ash of the plant, more than can be accounted for by mere accidental absorption.—*Gard. Chron.*, xxii., 417.

Freezing of Plants.

From a series of observations made on tropical plants, H. Molisch states that the freezing of plants at a temperature above 0° C., independently of their transpiration, is the result of chemical rather than of physical changes in the living substance; some chemical processes, such as the formation of chlorophyll and of etiolin, respiration, and the assimilation of carbon dioxide, being largely dependent on temperature, while others are not.—*Sitzber. k. Akad. Wiss. Wien*, cv., 82.

How Flowers Attract Insects.

In the concluding part of his very interesting paper on this subject (*Bull. Acad. R. Sci. de Belgique*, 1897, p. 847) M. F. Plateau thus sums up his general results. Insects, when seeking pollen or nectar, are guided only to a very secondary extent by their sight. They continue to visit flowers (Compositæ and Umbelliferæ) after the coloured parts have been almost entirely removed. In flowers of the same species which vary in colour they exhibit no preference or antipathy to one colour over another. Green, or otherwise inconspicuous flowers hidden among the foliage are, notwithstanding, freely visited by insects. They pay no attention to artificial flowers brightly coloured and closely resembling real flowers if made of paper or muslin or some similar material; while, if made of green leaves, they are constantly visited. The guiding sense to insects in visiting flowers can be primarily no other than that of smell. When flowers which are habitually neglected in consequence of containing little or no nectar are smeared with honey, insects visit them in abundance; while if the nectary is removed from flowers habitually visited, their visits cease at once. Green or brown, and therefore inconspicuous anemophilous flowers, if scented with honey, at once become entomophilous. At the meeting of the Linnean Society on November 18 Sir John Lubbock read a paper

in reply to M. Plateau's observations, in which he controverted some of his statements and placed a different interpretation on others.

Composition of Plant Sap. M. A. Hébert has investigated the composition of the sap in a species of *Ampelocissus* and in *Musa paradisiaca*. In that of the former plant he finds a comparatively large amount of iron; the sap becomes blue on long exposure, probably in consequence of the formation of iron salts of gallic acid. In the sap of *Musa* potassium oleate was found; hence its use for saponification. In the sap of the wood of vines bearing black grapes he found œnotannins, hitherto known only in the berry.—*Bull. Soc. Chim. de Paris*, from *Beih. z. Bot. Centralbl.*, 1897, p. 280.

Latent Life of Seeds. In a paper on *Science Progress* (1897, p. 585) Mr. F. Escombe sums up the present state of our knowledge respecting the power of seeds to resist unfavourable conditions for germination. When in the latent condition he regards seeds as being, strictly speaking, neither dead nor alive, but as "hypnotes" in a state of "hypnosis." To cell-protoplasm in this condition he applies the term "hypnoplasm." It is at present entirely unknown for what length of time seeds may remain in this condition and still be capable of awakened life. The degree of cold to which they may be subjected without being killed is also uncertain, but it is certainly in some cases as low as – 65° C.

Formation of Proteids by Leaves. According to observations made on a number of different plants by U. Suzuri (*Bull. Coll. Agric. Imp. Tokyo*, 1897, p. 241), the decrease during the night of the amount of sugar and other carbohydrates in the leaves is associated with a decrease also in the amount of proteids. Leaves appear to possess the power of facilitating the formation of proteids in all parts of the plant by assimilating nitrates with production of amido-compounds. Mr. E. Godlewski (*Ann. Agron.*, 1897, p. 310, from *Journ. Chem. Soc.*, 1897, Abstracts, p. 583) states that proteids are formed out of nitrates only in the light. The process is not, however, a direct one; there is first a production of non-proteid substances; exposure to light then bringing about their conversion into proteids.

Assimilating Energy of Blue Light. According to experiments made by F. G. Kohl, the blue rays of the spectrum have a very powerful effect in promoting assimilation in plants, in accordance with Engelmann's general law of the coincidence of the maxima and minima of absorption and of assimilation. The absorption of the blue rays is brought about by the carotin constituent of the chlorophyll; the function of this pigment being the assimilation of these rays.—*Ber. Deutsche Bot. Gesell.*, 1897, p. 361.

Atmospheric Precipitation and Plant Growth. Herr E. Wollny confirms the current belief that plants have no power of absorbing water through their leaves when these are already charged with moisture, and that even when they are withered their power of absorption is very small. The moistening of the leaves has, however, the beneficial effect of checking transpiration. He asserts that when plants are gathered moist, the leaves wither more quickly than when gathered dry; and accounts for this by the explanation that cell-walls swell when in contact with water, and are placed in a state of tension by the pressure of the cell-contents; hence the micellæ of the cell-wall are forced apart, and the movement of water facilitated. Hail has, of course, a very destructive effect on plants, especially on young leaves and buds, though this is often compensated, when the plant is young and vigorous, by the luxuriant growth of lateral shoots induced by the destruction of the primary buds.—*Forsch. aus d. Geb. d. Agricultur-Physik*, xx., from *Beih. z. Bot. Centralbl.*, 1897, p. 306.

Röntgen Rays and Vegetation. In a paper read before the Toronto meeting of the British Association, Professor G. F. Atkinson stated that the effect on the higher plants of exposure to the Röntgen rays varies according to the length of the exposure. In periods varying from one to two hours no perceptible injury appears to result, while an exposure of forty-five hours produces the same effect as total darkness. The rays appeared to be without effect on the growth of filaments of *Mucor* and *Oscillatoria* and on bacteria.

Drugs and Condiments. Hare calls attention to the fact that the absorption of many drugs may be facilitated and a more marked physiological reaction obtained by prescribing with them a stomachic stimulant such as powdered capsicum. Experiments with potassium iodide showed that the characteristic reaction for iodine was much more quickly obtained from the saliva of patients to whom the salt was administered along with the stimulant, than when it was given alone to the same individuals. —*Therap. Gaz.* [3], xiii., 731.

Potassium Iodide Pills. Bultot prepares pills of potassium iodide from the following formula:—Potassium iodide, 0·20; wheat starch, 0·05; dextrin, 0·02 gramme; and simple syrup, *q.s.* The author prefers to use dextrin rather than gum arabic, as it has not an acid reaction. Dry the pills rapidly, coat with tallow and preserve in the dark. Thus stored the pills remain white, and although hard they dissolve in less than two hours in distilled water. —*Chemik. Zeit.*, xxi., 281.

Making Incandescent Mantles. According to Wenghoeffer (*Chem. Centralblat*), the best results with incandescent mantles are obtained with a mixture of 89 parts of thorium nitrate and 1 part of cerium nitrate. The addition of other rare earths does not improve the result. The mantles should be immersed in a bath of the nitrates in the proportion given, in 30 per cent. aqueous solution.—*Bull. Gen. de Therapeut.*, cxxxiii., Appendix ii.

Pure Calcium Glycerophosphate. Continuing their experiments on the glycerophosphates, Adrian and Trillat propose the following method for preparing the pure calcium salt:—Equal parts of glycerin and phosphoric acid are gradually heated on a sand-bath in an enamelled vessel to between 130° and 150° C., and maintained at that temperature for 24 hours, when the dark-coloured viscid mass begins to evolve acrid fumes. Instead of calcium carbonate, the authors use tribasic calcium phosphate to combine the free phosphoric acid, since effervescence is thus avoided. The free phosphoric acid forms with this dibasic calcium phosphate; milk of lime is then added in excess, which combines with the glycerophosphoric acid and again precipitates the phosphoric acid as tribasic calcium phosphate, which is filtered out and again used in subsequent operations. The filtrate is concentrated to a pasty consistence, then poured into 10 parts of alcohol, and boiled for an hour. After draining it is again treated with alcohol and precipitated by heating, collected, and dried on the water-bath. The authors have obtained the salt in the form of a microcrystalline powder by precipitating the aqueous solution by boiling, when it forms minute, well-formed needles. These, however, at once lose their crystalline form on exposure to the air, and disintegrate even on the microscope slide while under observation.

Analysis of the salt gave figures corresponding to the anhydrous salt of Pelouse, and did not support the statement of Portes and Prunier that it contains two molecules of water. The solubility of the glycerophosphate in water at 25° C. was found to be 4·53 in 100.—*Journ. de Pharm.* [6], vi., 481.

Preservation of Ether.

The loss caused by the evaporation of ether from unsealed bottles during hot weather, and in shops that are kept very warm in winter, can be prevented by the following ingenious plan :—Fill the bottle nearly full with ether, pour in sufficient glycerin to bring the surface of the ether nearly to the bottom of the stopper ; then insert the latter carefully, and with a piece of twine of sufficient length suspend the bottle neck downward from a nail or other support, letting the cord pass over the stopper and take a turn around the body of the bottle from each side, so that it will hang perpendicularly and safely. The glycerin descends and fills the neck of the bottle, sealing the latter hermetically, and when any of the contents are required for use it is only necessary to re-invert the bottle, remove the stopper, and carefully wipe the neck before pouring. The glycerin, of course, drops to the bottom, and allows the ether to be poured out almost to the last drop if care be taken. A similar plan is useful for bottles containing benzol.—*National Druggist*, xxvii., 210.

Electro-Chemical Industries.

In an address recently delivered before the Institution of Electrical Engineers, J. W. Swan stated that one-third of all the refined copper required is now produced electrolytically. Gold, aluminium, sodium, and zinc are also extracted from their ores electrolytically ; the electrolytic treatment of brine for the production of soda and chlorine now threatens to displace all the older chemical processes ; and potassium chlorate is largely manufactured by electrolysis in Switzerland and Sweden. Amongst the electro-chemical processes depending on dissociation and combination at extremely high temperatures are the manufacture of phosphorus, carborundum, calcium carbide, and analogous products. The production of ozone and its secondary derivatives, vanillin and heliotropine, is dependent on the employment of intermittent or alternating currents of high tension. The ozone, in turn, is used to oxidise oils, season linoleum, and purify brewers' casks.

Antipyrine and Sp Aeth. Nit.

C. Caspari, jun., suggests that if physicians desire to prescribe antipyrine and spirit of nitrous ether together, they should also order the addition of excess of potassium or sodium bicarbonate, in order to avoid the formation of the undesirable green colour due to the formation of isonitroso-antipyrine. In the presence of water, the ethyl nitrite is then gradually decomposed, with formation of alkali nitrite and ethyl alcohol. If objection be taken to the suggested procedure on this ground, attention should be directed to the fact that decomposition of the ethyl nitrite will occur by the action of water alone, acid being simultaneously liberated. Normal nitrites, of course, do not react with antipyrine. The results of experiments performed by Caspari appear to show that antipyrine is not decomposed by alkaline bicarbonates.—*Pharm. Review*, xvi., 12.

Some Laboratory Notes.

F. A. Sieker discusses the U.S.P. statement that on gently warming a mixture of equal volumes of glycerin and concentrated sulphuric acid the liquid should not acquire a dark colour (absence of readily carbonisable impurities). He finds that on mixing 1 C.c. or less of each liquid the temperature is not appreciably raised, and the test tube should then be immersed in warm water to secure the required degree of heat. When, however, 5 C.c. or more of glycerin and sulphuric acid are mixed the temperature rises to 75° C. or higher, and the application of more heat is therefore undesirable. A sample of resin (colophony) has also been examined by Sieker, with a view to obtaining data that might help in the detection of resin as an impurity in other substances. The acid number was found to be 171·2 (titration of cold alcoholic solution with alcoholic semi-normal potassium hydroxide, and phenolphthalein as indicator), and the iodine number was 165·9 and 166·7 (sixteen hours' contact with iodine and mercuric chloride solution). It is suggested that as resin absorbs iodine very rapidly one hour's exposure may suffice. The same worker states that linseed oil and potash soap which is soft, may contain less water than one of firmer consistency, and he suggests that the use of pure potassium hydroxide for preparing the soap, as directed in the U.S.P., is unnecessary. It is specified by Sieker that a good linseed oil soft soap should be perfectly soluble in water and not contain more than 3 per cent. of matter insoluble in alcohol ; it should be free from unsaponified fat, but should contain about 0·25 per cent. of free alkali ; it should also be transparent and not stringy, contain about 40 per cent. of fatty acids insoluble in water, and be free from alkaline silicates, starch, and other impurities.

Useful Laboratory Superheater.

J. A. Wilson has not obtained entirely satisfactory results from the use of a copper coil heated by a Bunsen burner for laboratory distillation with superheated steam, as the temperature of the steam under such conditions is subject to considerable fluctuation. He prefers, therefore, to place the coil in a cylindrical copper vessel containing hard paraffin or other similar material ; on heating this vessel by a powerful burner the temperature is readily equalised by using a copper stirrer.—*Chem. News*, lxxvii., 25.

Asbestos Furnace Covers.

H. Jervis describes how an extremely light furnace cover may be constructed from asbestos millboard. A piece of the millboard—10 in. × 4 in. × $\frac{3}{8}$ in.—is perforated in about a dozen or more places with glycerined cork-borers, then nicked about an inch from each short end and immersed in water until saturated ; next bend the board from the nicks at right angles and shape the perforated portion by bending it over a bottle with as little force as possible. The result should be a perforated arched tunnel, resting on narrow horizontal ledges at each side. Dry this cover in the furnace, after setting it in position and pressing it well to the supports. Three such covers, weighing one pound, replaced twenty-four fire-clay tiles, weighing thirteen pounds, and a higher temperature was obtained than with the latter. A simple method of constructing a combustion furnace for use with asbestos covers, from a single sheet of mild steel, 5 feet long and about $\frac{1}{32}$ in. thick, is described in the same illustrated article, whilst some further uses of asbestos in the laboratory are also referred to.—*Chem. News*, lxxvii., 5.

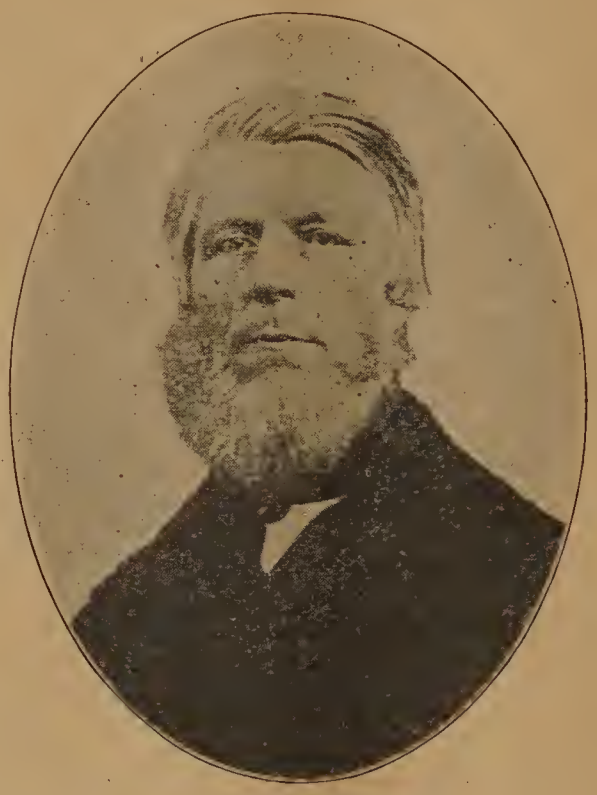
Phosphorescence of Decaying Wood.

Kutscher has succeeded in cultivating the mycelium of a fungus from decaying wood, which is strongly phosphorescent, thus proving that the luminosity of that substance is due to an organised body and not to purely chemical causes, as Hartey and De Bary have assumed. The mycelium obtained from pine trees exhibiting the phosphorescent phenomenon was cultivated in decoctions of beech bark and agar-agar, forming a white brilliantly luminous growth. The fructification of the fungus has not yet been obtained ; consequently its botanical characters cannot be decided.—*Journ. de Pharm.* [6], vi., 504, after *Zeitsch. für phys. Chem.*

The Pharmaceutical Society and its Presidents.

HENRY DEANE.—1853-55.

THE ninth president of the Society was elected to that position in troublous times, on June 1, 1853. The outward presentment of Mr. Deane, always styled "of Clapham," hardly reflected his true character. Not seldom, and especially at the Council, his face wore an appearance of anxiety, approaching even to distress, which was commented on by his friends. But this, as he himself assured them, was purely physical, as no one was more disposed to look on the bright side of life; certainly no one was better pleased to be surrounded by the young. In his public and business relations it is not possible to mention a name more respected by pharmacists universally. He was one of the earliest examiners, and took the subject of botany under his care. He was Member of Council for many years, and President during two years. He was also the first President of the British Pharmaceutical Conference—the choice being fortunate for the association and grateful to himself, for he never failed to express his satisfaction with the reception he met at Newcastle and the friendships which his connection with the Conference created.



HENRY DEANE.

Mr. Deane was born August 11, 1807. At school he became intimate with Henry and Edwin Doubleday, the entomologists, and he regarded this as an inestimable advantage. "Nothing," he declared, "was better than to have a hobby—one calculated to improve the mind and keep the devil at a respectful distance." Apprenticed when eighteen years old at Reading, he had quite enough to do. He opened the shop at 6 o'clock in the morning, ground Prussian blue and powdered roots and seeds—not seldom he had to carry a dozen or two of soda water to a distance of one or two miles on a hot summer's day; all of which he considered most improving, as he could do a little botanising on the way. Where he contracted the habit of carrying his inseparable black bag remains a mystery; it was omitted in the Council portrait, which to that extent is not true to Nature. The business at Clapham was opened in the autumn of 1837, much indebted at its commencement to the pecuniary aid of Richard Hotham Pigeon. Some of Mr. Deane's well-informed friends predicted failure, but that was an event unlikely to happen to a former assistant of Mr. Jacob Bell. In 1844, he was placed on the Board of Examiners, and he was elected to the Council in 1851. He was an original member of the Microscopical Society, and contributed many papers to the *Pharmaceutical Journal*, one of the best known being "Experiments on Senna," noticed by Dr. Pereira and Dr. Royle. He died Saturday, April 4, 1874, deeply regretted and universally beloved.

At the time Henry Deane became president of the Society, trouble was pending in connection with the new Bye-laws, and during the whole of his two years of office that trouble persisted, to the exclusion of any profitable labours in connection with the advancement of pharmacy, except as regards recognition of pharmacists by the medical authorities as fitting persons to take part in pharmacopœia revision, the first Pharmacopœia Committee of the Pharmaceutical Society being appointed whilst Deane was president. But that matter will be referred to later. Reverting now to the question of chief interest for the moment, we find that Lord Palmerston's confirmation and approval of the Bye-laws was intimated in June, 1853, and the process of electing members in accordance with the new regulations then proceeded rapidly. But the legality of those elections was soon challenged by William Dickinson, a member of Council who had actually seconded the motion for confirming the new Bye-laws at the special general meeting held on December 8. The object this unhappy individual had in view is not clear, but he amply confirmed the views of those who hold that one enemy within the fold may cause infinitely more mischief to the body he is connected with than any number of opponents outside. The case was carried from court to court and only decided in the Society's favour a few days after Deane had retired from the presidential chair.

In his first address at an annual meeting, he emphasised the fact that unity and concord are essential elements of success, and that their absence is a serious evil. He also asked the members to bear in mind that, in carrying out reforms, they were working more for the rising generation and for posterity than for themselves. Improvement of the craft, not individual self-advantage, was to be aimed at, and in proportion to the high and honourable sentiments and conduct of the existing members, so would be the prosperity and development of the trade-profession of pharmacy in the hands of their sons, apprentices, and assistants in future years. Another important point to which attention was directed was that it not only ill becomes pharmacists to be at war with each other, but it will not insure obtaining peaceful, intelligent, and upright men to guide the affairs of the Society, "for such men shrink in dismay from the contact of discord, and will not accept an office in which they would be likely to be pointed at with the finger of scorn, derision, or contempt." Continuing, Mr. Deane remarked that the time of such men is too valuable to be frittered away in bickerings, or in vain and discordant attempts at working out legal technicalities and obscure points of law, which neither the interests of the Society nor the requirements of the public demand, whilst they do not in any way conduce to the general good.

Twelve months later, when the legal struggle had reached an acute stage, Deane reminded the members that they were "but

men, tradesmen, semi-professional, in a laborious and in the main an ill-requited occupation, considering the responsibility that attached to it"; and if, in carrying out their great object of education and improvement in their social position, they should occasionally be at fault as to the best mode of overcoming difficulties as they arose, or if differences of opinion should occur in such cases, they must endeavour to preserve harmony and goodwill in judging of each other. "Those amongst us," he continued, "who accept the office of administering the laws of the Society, must do so purely from a desire to promote the general good, and whether they obtain full credit for their intentions or not, they must rest satisfied with the conviction that they have endeavoured to act for the best." Deane's argument that "the imperative duty of submitting to the majority is essential to prosperity as a general rule, although it does not follow that the majority is in every case on the right side," is particularly applicable at the present time, when some members of the Society seem inclined to repudiate the action of their elected representatives on the Council, though an overwhelming majority is in complete accord with that action. Nor does it appear inappropriate at this juncture to quote his opinion on the value of the title held by pharmacists: "It should be a guarantee of honour, talent, and integrity; and if as a body we do not benefit by it, the fault will rest solely with ourselves."

The title of "pharmaceutical chemist," which had been established by the Society, was then the only recognised qualification for the practice of pharmacy; but it was entirely an optional qualification, and, short of assuming the title, anyone could carry on the business. The members of the Society were all pharmaceutical chemists, and constituted only a small section of the drug trade, though, by the honourable exercise of their calling, they were doing much to convince the public that the pharmacist was not a mere shopkeeper, but, to quote from Deane's address at the Newcastle Conference in 1863, "a veritable and important though humble member of the medical profession."

J. T. DAVENPORT.

JOHN T. DAVENPORT.—1855-56.

The next past-president of the Society to be referred to still survives, and though it is some time since Mr. Davenport retired from public work, he re-appears amongst his London friends on occasions of special pharmaceutical interest. Some yet remember him as an able and impartial examiner. In the days when the Preliminary was in its infancy he would listen with patience whilst a candidate endeavoured to construe a small Latin book, based upon Scripture history and recording the patriarchal age. When this examination was re-modelled Mr. Davenport undertook the reading of autograph prescriptions with a fairness worthy of imitation. Happily he is still amongst us, enjoying a well-earned retirement. A stranger passing the unpretentious establishment in Great Russell Street would never have suspected that for years it had been a centre of high-class pharmacy. The development of the chlorodyne industry has left its mark upon commercial enterprise, and bears witness to energetic business tact.

Shortly after Mr. Davenport's election the harassing litigation about the new Bye-laws terminated, and the Council was once more at liberty to attend to the objects for which the Society was established—the promotion of facilities for acquiring knowledge, protection of the rights of members, and cultivation of harmony and a disposition to co-operate for the general good. In his annual address it was pointed out that the advanced position, increased public recognition, and improved educational status of the pharmaceutical body at that time had been the result of the well-directed labours of the Society, and afforded encouragement to persevere. Brief reference was also made in this presidential address to the Pharmacopœia Committee appointed by the Council of the Society during Mr. Deane's presidency. Prior to 1854 pharmacists as such had never ostensibly taken part in the preparation of a pharmacopœia in this country, for Richard Phillips, who had acted as editor of two editions of the London Pharmacopœia, had long ceased to be engaged in the practice of pharmacy when he undertook the work of revision.

In the fourteenth annual report of the Society (1854) it had been referred to as a source of complaint on the part of pharmaceutical chemists that the Pharmacopœia, by which they were expected to compound their preparations, was compiled without any appeal to their practical experience. It was also pointed out that "they frequently suffered inconvenience, and sometimes incurred discredit, in consequence of changes in the nomenclature and ambiguous terms introduced into that work; their daily manipulations at the counter and in the laboratory enabled them to point out such defects and occasionally to suggest improvements, and yet they were never officially communicated with on the subject." But, by the establishment of the Pharmaceutical Society, a remedy was provided for that anomalous position, and it was rendered possible for the services of pharmaceutical chemists to be called into requisition by the medical authorities entrusted with the compilation of pharmacopœias. Thus, in view of the publication of a new edition of the London Pharmacopœia, the College of Physicians made application to the Pharmaceutical Society for assistance, and on August 2, 1854, the Council of the Society constituted itself a Pharmacopœia Committee, with a working or sub-committee of seven members, afterwards increased to twelve, including the Secretary, Professor Redwood. Henry Deane was the first chairman of this sub-committee, and the work of revision was entered upon without delay. The first report was presented to the College of Physicians on April 2, 1856, towards the close of Mr. Davenport's year of office. Altogether, the proceedings of the committee—which included several active workers—extended over a period of six years, for though the Medical Act of 1858 delegated to the General Medical Council the duty of preparing a British Pharmacopœia, which should supersede the London Pharmacopœia, the Pharmaceutical Society was requested by that body to allow the work of its pharmacopœia committee to continue. The desire of the General Medical Council that this should be done was also formally indicated in a resolution passed at its first meeting, as will be related subsequently.

PHARMACEUTICAL ETHICS.*

BY DAVID STORRAR.

At the Pharmaceutical Conference meeting held in Glasgow last year a paper was read by Mr. Leo Atkinson upon "Pharmaceutical Ethics," and in summing up the discussion which followed, the President, Dr. Symes, said "it was a matter which was worth consideration whether a whole day at some future time should not be set aside for the purpose of such discussions. They were just approaching the opening sessions of all the provincial associations, and he did not see why a paper on the subject should not be read before every association, as well as at Bloomsbury Square, during the coming winter, when the whole matter might be thoroughly sifted."

I thought this suggestion of Dr. Symes so wise that, in a weak moment, I volunteered to read a short paper on the subject here to-night. I say advisedly that I did this "in a weak moment," because, although before I made the promise I had read and re-read the excellent paper by Mr. Atkinson, I had neglected to re-read the paper upon "Pharmaceutical Ethics" which was contributed by Mr. Joseph Ince to the Conference meeting in 1866.

I have re-read that paper since, and Mr. Atkinson is right in calling it a classic. In it, once and for all, Mr. Ince has in perfect language written all, or nearly all, which can be said upon the subject, and the wisest thing I could do would simply be to re-read the paper to you, as I have done to myself.

I cannot well do this, however, but at the same time I cannot say much that is original upon the subject of to-night's paper. No doubt most of you have heard the story of the popular preacher who neither thought his own thoughts nor spoke his own words on the Sabbath day, but built up a wonderful reputation for himself by delivering as his own mosaics composed of bits of other people's sermons. One old lady of his congregation found him out, however, and determined to teach him a lesson, so one day she planted herself in a prominent position in church, and as one eloquent passage after another was declaimed in the preacher's best manner, she remarked, audibly, That's Tillotson, that's Blair, that's Spurgeon, and so on.

At last the preacher got so annoyed that he turned to his tormentor and said, "If you don't hold your tongue I shall have you expelled by the church officer." "That's his own!" was the triumphant response.

In the same way, as I proceed to-night I shall fancy that I hear someone say, "That's Ince"; another, "That's Atkinson"; and a third, "That's Carteighe"; and only when something very commonplace and self-evident is said shall I hear, "That's his own."

From what I have said you will understand that I claim no special knowledge of this subject, and have no panacea for diseased pharmaceutical morals to bring under your notice. My sole object is to initiate discussion upon a subject important and interesting to us all, in the hope that such a discussion may help to ease the friction which modern business methods tend so much to increase.

Since Mr. Ince read his paper, the trade of pharmacy has changed much in character—changed in one way to the better, in another to the worse. In 1866 anyone could start in business as a chemist and druggist; it was a free trade, with no special legal restrictions. Two years later it was considered "expedient for the safety of the public" to render it unlawful for any person to keep open shop for the retailing or dispensing of certain scheduled poisons, or to use the title of chemist and druggist in any part of Great Britain, unless such person was registered as an examined and qualified man. This Act of 1868 was welcomed by pharmacists as not only required for the safety of the public, but as a distinct boon to the trade, carrying with it a certain amount of protection in return for the qualifications which the Act demanded. By-and-by, however, it was discovered that the proverbial coach and four could be driven through this Act as well as others, and that the principal protection it gives is to illegitimate, if strictly legal, trading, so that our strongest opposition now is from co-operative stores and limited companies, which do not even pretend to be composed of qualified men.

It is this state of things which makes the consideration of pharmaceutical ethics more important than ever it was. The question is simply this—How can we best do our duty to ourselves, to each other, and to the public, and at the same time uphold our position as members of a qualified profession against what we consider to be an illegitimate and unfair competition?

The primary question is, of course, what should be our ethical relation to each other, because not until we agree as to that can we hope to agree as to our conduct to those whom we rightly look upon as outsiders.

And first, I think that we ought to define what is meant by ethics. In its simplest form it can best be expressed in the words of the old proverb, "Do to others as you would that they should do to you."

As to pharmaceutical ethics—so far as pharmaceutical can be differentiated from other ethics—the best definition I have seen is that contained in a leading article in the Journal of 1853. It says: "There are in all professions certain rules of conduct, understood, if not actually agreed upon, among the members, a deviation from which is held to be unprofessional. These rules have no relation to the law of the land; they constitute a voluntary or self-imposed restraint, having for its object the elevation of the tone and character of those who are under their influence, and the maintenance of harmony and good order in the profession. It is to such laws which the term ethics is applied." In opening the discussion upon this subject, therefore, I shall largely confine myself to our duty to ourselves, to the public, and to our trade organisations.

1. *Our Duty to Ourselves.*—To the man who has entered into business with the sole object of making money I have nothing whatever to say. To discuss ethics with such a man is useless, as he does not understand the true meaning of the term. He may be "indifferently honest," and, in a sense, honourable and even charitable; but selfishness being the mainspring of his actions, he cannot consider his neighbour's interest as well as his own, which is the foundation of ethics.

It is, I am aware, almost farcical to suppose that, in these days, any sane man would take to pharmacy as a money-making profession, unless, of course, he has invented a pale powder for pink people or a catch-gull syrup, in which case a knowledge of pharmacy would be rather a drawback than otherwise. But even while one may not be able to sell his syrup—or the public—for a cool million, or, retaining the kernel in his own hands, transfer the shells to a confiding public for a consideration on the promise of 10 per cent. dividends, he may have all the will to do so. It is the motive not the result which is objectionable, and it is to the full as deteriorating to sell oneself for coppers as for sovereigns—and does not pay so well.

But while money-making should not be our sole aim in business, it is, and must always be, an important object. We do not "live laborious days" behind the counter simply for the fun of the thing. "The labourer is worthy of his hire," and we must "live to eat as well as eat to live." To make his business pay is every business man's primary object, and to do so honestly and with due regard to his neighbour and the public interest is the aim of every right-thinking man.

Our trade is a poor one financially, and can easily be made a petty one, but rightly pursued it is an honourable and useful calling. Pharmacy may only be the handmaid of medicine, but it can do much to help suffering humanity, and the man who follows it conscientiously and makes it his pride to send out and dispense good, honest, pure drugs is doing the world good service, and will continue to be recompensed for that service.

To secure that recompense, however, a man must be true to himself; he must assert his right to be looked upon as something more than a tradesman. He must lay claim to be something more than simply a seller of patent medicines and perfumery, or even of scheduled poisons. In dispensing he must insist upon payment for something more than the value of what he weighs out and measures, namely, the skill and experience required in so doing, and he must do so not only for his own sake, but for the sake of the profession to which he belongs. I cannot help thinking that for much of the depressed trade and diminishing profits from which we are suffering at the present time we have to blame our own faint-heartedness and want of trust in each other which has led the public to take us at our own valuation. We must uphold the position taken up by those who founded our Society upon the sure grounds of professional education and fitness, and to whom any corporate life or real union we possess is due.

Their action welded together a disunited trade into an organised and influential body, whose position is so recognised that the Government had no hesitation in entrusting to it large

* Read at an Evening Meeting of the Pharmaceutical Society in Edinburgh, on Wednesday, January 19.

administrative powers. Our first ethical duty, then, is to see that no individual action of ours will give away that position which has been secured to us. And we must not rest content with this, but let such of us try to add something, however little we may have the ability to add, to the efficiency and sum total of knowledge of that trade which we have chosen as our life-work.

(2) *Our Duty to Our Fellow Tradesmen.*—I am not Quixotic enough to argue that the interests of our neighbours should be our first consideration. That would be "magnificent but not war," and that we are more or less at war with each other to secure public favour is undoubted.

But while we are, in this sense, at war, we have a bond of union which should be stronger than the force which keeps us apart; a mutual interest which should at least induce us to fight fair. We have to serve the public, in some cases an exacting public, and when "One member suffers the whole body suffers with it." It is only a truism, therefore, that both upon the higher ground of fair and honourable dealing, as well as upon the lower ground of business policy, we should consider our neighbours' interest as well as our own.

This branch of our subject is a large one, and to treat it fully would require much longer time than I have at my disposal to-night.

One or two points only can be touched upon, and (1) there is the question of prices, or perhaps I should rather say of uniform prices, which has been a question of debate and, in some districts, of aspiration ever since I remember. Well, gentlemen, this is a difficult question, and one upon which I confess that I for one have changed my mind. I thought, and still think, that in certain limited districts and in the smaller towns it is possible and even desirable that an understanding as to prices should be come to, but any general agreement would be unworkable. As Mr. Ince pointed out in his paper—which is as true now as it was then—environment, which means the greatest possible difference in rents, rates, and general expenses; the nature of the trade, whether cash or credit, and the class of customers, whether rich or poor, make it impossible to fix a hard and fast scale.

That the same courtesy, attention, and care for their interests should be given to the poor as to the rich goes without saying, but those tradesmen who are forced to carry on their businesses in expensive districts for the convenience of their customers are entitled to be recompensed for the additional expenditure entailed upon them for so doing.

But while any general scale of dispensing charges is, I am afraid, impossible, more especially with our present surroundings, there are certain general ethical principles in relation to the question of prices which we ought to practise. There is, for instance, the principle which I have already referred to—that while the selling of drugs is a trade, the dispensing of medicines is an art or profession for which special education and training is required, and for which the dispenser ought to be paid over and above the selling price of the drugs used. Then again, while a man cannot be blamed for adhering to his own price-list, if founded upon the above principle, he is hitting below the belt when he knowingly and for selfish reasons deliberately cuts in price below his neighbour. It is surely possible to fix at least a point below which a man should not go without being held as not only unjust to his neighbours, but to himself and his profession.

Mutual Accommodation.—This is a question which affects those of us living in small towns more than you who live in a city such as this, where you have so many wholesale houses to draw upon. I am happy to have the opportunity of saying publicly that my experience has been most gratifying. Although I have been over thirty-five years in business I have never once been refused, or had a suspicion of being refused, by a neighbour the supply of anything of which I had run short, and which he had in stock. I am told, however, that this is not a universal experience, and would ask, Why should it not be? Opposition, like the poor, we shall always have with us, and we need not add to the unavoidable worries of life those which are avoidable. And it appears to me that not only are mutual obligation and help required by ethical considerations, but by good business policy. In these days of limited companies with large turn over and large capital enabling them to buy on the best terms, much could be done by legitimate traders to assist each other in holding their own if their policy was combination instead of isolation.

And lastly, under this heading there is the question of assistants and apprentices. It is unfair, as well as illegal, to work a business entirely with unregistered men, and it is also unfair to flood the trade with an unnecessary number of apprentices, and more especially with lads whose education is so insufficient as to handicap them in their attempts to pass the examinations.

I do not mean to assert that there is a great deal of this sort of thing going on, but it does exist, and in these days of keen competition the temptation to it is great, for the purpose of keeping down expenses. A very little consideration, however, will show that it simply aggravates the evil of competition. It is the imperfectly educated apprentices who swell the ranks of failures for the Preliminary and qualifying examinations; it is from these failures that the promoters of bogus companies are recruited, and it is from these companies, conducted upon purely trade and money-making lines, that our keenest opposition comes. Might I add that a good preliminary education is only the foundation upon which the future training must be built up, and that, therefore, another very evident duty of those who have the true interests of the trade at heart is to see that their apprentices receive that training which is necessary to turn them out as efficient assistants.

(3) *Our Duty to the Medical Profession and to the Public.*—Our duty is to dispense medicines, not to prescribe them, and in return we claim from our medical friends a recognition of the converse—that their special duty is to prescribe, and not to dispense.

Of course, this is a general rule which cannot be too rigidly enforced, and must be interpreted in a common-sense way. It would be absurd to refuse to the pharmacist who has some knowledge of remedies what is claimed by every old wife in the country who has none—the right to recommend simple remedies for simple complaints, the right to sell to a customer a liver pill or a bottle of cough mixture; but he goes out of his province when he attempts to diagnose disease, for which he has had no training. For the pharmacist to do this is simply quackery. Then again, it would be against public interest and convenience to prevent medical practitioners in country districts dispensing their own prescriptions.

It is very evident, however, that where both are available the interests of the public lie in separating the duties. If, on the one hand, the pharmacist is untrained in the recognition and treatment of disease, on the other his knowledge of pharmacy is greatly in excess of that of the average medical man.

Living as we do in the east of Scotland, where, happily for us, prescribing and dispensing are, in the main, recognised as separate professions, we have a difficulty in realising how burning a question this is in certain parts of the country, where some of our best men are forced to prescribe in order to make a living. It is satisfactory to know, however, that the recognition of pharmacy as a distinct profession is slowly but surely making its way, and that its rights as such are more and more being recognised by the medical profession.

I think that our duty to the medical profession and the public may be summed up under three headings: (1) that no drug or remedy be taken into stock or sold which is not absolutely genuine, and no preparation made or kept which is not prepared strictly according to the recognised standard; (2) that in dispensing the most rigid adherence be given to the directions of the prescriber; and (3) that no deviation be made from the prescriber's instructions without previous consultation with him—if that is at all possible—and without noting such alteration upon the prescription.

Is it necessary to say a single word in support of these propositions? I think not. They are only those which are acted upon by every self-respecting pharmacist.

To act strictly up to these rules is becoming more difficult every day on account of the ever-increasing number of special preparations which are being pressed upon the notice of medical men. These are largely—much too largely, many of us think—taking the place of the authorised preparations of the Pharmacopœia, and they are becoming the bane of every dispenser. He is called upon to dispense D's capsules or E's liquor, which he does not stock; but he does stock A's, B's, or C's, which he knows to be equally good and is sorely tempted to send out. His duty, however, appears to me to be perfectly clear. In this instance D added to the name of the preparation carries with it as much weight as the magic letters B.P.

(4) *Our Duty to Our Trade Associations—Both Local and National.*—This is the last point upon which I shall speak, and it is one of the most important. A due fulfilment of our ethical obligations is by no means easy. It is our duty, for instance, to love our neighbour, but it is difficult to do so when we only see him

occasionally, and that through the plate-glass window of an opposition shop. The case becomes very different when we meet as fellow members of a local association.

We may realise, and I believe that most of us do realise, that we owe a duty to the trade to which we belong, and we strive to perform that duty, but it is more or less of a task. But when we band ourselves together into local associations that duty becomes in most cases a pleasure. Even when we throw physic to the dogs, and join together into pharmaceutical golf, cricket, cycling or fishing clubs, the benefit is an unmixed one. We find that our neighbour is something more than an opposition tradesman; he is a man, and as often as not a jolly good fellow as well. Let us cultivate the social element, therefore, as much as we can, as it breaks down that petty jealousy of each other, and that want of unity which has hitherto blocked the way to all pharmaceutical progress as a trade or profession.

It is, however, the support of local pharmaceutical associations pure and simple which I would urge upon the trade. We all know the old proverb about the bundle of sticks. Individually they can be broken easily; bound together they are unbreakable. I have a healthy disgust at the abuses of trades unionism and of the policy of some trades unions, but have a thorough belief in the wisdom and necessity of the principle underlying these. By united action we not only acquire the power to help customers and each other, but by comparing notes and by encouraging study, experiment, and research, we can do much to raise the status and efficiency of the trade to which we belong, which is the only true progress. And what I have said of local associations applies, it appears to me, with still more force and truth to the Pharmaceutical Society. The Society can never be, in the strict sense of the term, a trade society. Its constitution and the duties assigned to it by the State prevent it being so. as it must hold the balance even between public and trade interests. It is, however, the only national trade society which can live, and to it our present position as a qualified and trusted profession is due. Surely, therefore, it is the evident duty of every member of the trade to give to this Society his support, and all the more is this the case if he has disapproved of its policy hitherto, as it is only by becoming a member that he can in any way control that policy. Let us hope, therefore, that the proposed widening of the doors of entrance to membership will be fully taken advantage of.

And let me say a single word in the way of appeal for support to the Benevolent Fund of our Society. Surely if any ethical obligation rests upon us to give fair-play to those who are straining shoulder to shoulder with us in the race of professional life, the obligation to help those who have fallen by the way is tenfold stronger.

The help given by the Benevolent Fund is not confined to those who are or have been connected with the Society, or to those who have been subscribers to the Fund. It is given freely and impartially to all who require it whose names are on the Register or to their widows or children. No part of the work of the Council has interested me more than this, and I can testify that no part of the work is done more conscientiously or has done more good. But how much more could be done were the ethical obligation to support this Fund more universally realised and acted upon by the trade!

This finishes my paper, in which I have tried to put before you my view of pharmaceutical ethics. I know that my statement of these views contains little that is new, but it may serve to introduce the discussion which is to follow. How can one expect to say anything new upon ethics, the principles of which are as old as the world itself, and the foundations of which are laid in our own consciences? Let us build upon that foundation and there will be little to find fault with in the superstructure.

SALOL IN TYPHOID.—Dr. Herbert Bramwell has obtained the most gratifying results with salol in the treatment of typhoid during the past ten years. In several slight cases the attack was completely aborted and convalescence established in the course of a fortnight, while severe attacks have been so far modified as to pass through a mild and uncomplicated course of three or four weeks' duration. Salol should be given in the powdered form and not compressed, as in that state it frequently passes through the bowels unchanged. Doses of 5 to 10 grains every four hours are given until the urine is tinged; the dose is then diminished, the drug being continued in just sufficient quantity to maintain a faint tint in the urine.—*Brit. Med. Journ.*, 2, 97.

MEETINGS OF SCIENTIFIC SOCIETIES

CHEMICAL SOCIETY.

At a meeting held on Thursday, January 20, Professor DEWAR, President, in the chair; after the minutes had been confirmed and certificates of candidates for membership read, the PRESIDENT announced that a meeting of the Committee had been held in the afternoon to consider a memorial presented by Messrs. Arthur Harden and Philip Hartog. This memorial, which had been signed by 500 members of the Chemical Society, requested that by the

Alteration of Bye-law V.

members residing at a distance from London might have the power of giving their votes at a meeting without attending it. Legal advice had been taken by the Council, and Mr. Cozens-Hardy, Q.C., had given the opinion that they had no authority under their Charter to alter this bye-law.—The first paper read was by BEVAN LEAN, D.Sc., B.A., and W. H. WHATNOUGH on

The Preparation of Pure Iodine.

Stas had described two methods of making pure iodine, but the authors had found no account of how he had assured himself of the freedom of his product from chlorine and bromine. It was difficult to free it from water, calcium nitrate being the only substance which did not give an impurity to the iodine. Having noticed that while cuprous iodide gives off no iodine when heated either *in vacuo* or in carbonic anhydride, but does so readily when heated in a stream of nitric oxide, the authors proposed to utilise this method for obtaining pure iodine. Although cuprous iodide could be obtained pure in several ways, the importance of having it free from chloride and bromide had induced the authors to prepare it by throwing iodoform upon copper turnings heated in a crucible. The cuprous iodide is heated at as low a temperature as possible in order not to volatilise the compound, but as iodine is given off freely at 220°, while cuprous iodide volatilises only at about 600° to 700°, there is no difficulty in keeping the temperature well within limits. The decomposition of the cuprous iodide is almost quantitative, but it was found that after heating to 400° for eighteen hours there still remained ·15 per cent. of unaltered cuprous iodide. The reaction, it appeared, was independent of the presence of moisture, and could be carried out in a stream of air dried with calcium chloride and sulphuric acid. The iodine thus obtained volatilised without leaving any residue at 70°, and when mixed with coal gas and burnt it gave no indication of the presence of copper in the spectrum. The authors believed this to be perfectly pure, and suggested its use for a redetermination of the atomic weight. Some discussion took place, in the course of which it was stated by one member that besides calcium nitrate, Stas had used baryta to purify his iodine in order to free it from an important impurity, namely, hydrogen iodide. There could be no doubt as to the purity of Stas's material, the numbers he obtained with iodine made by two methods agreeing to seven places.—The PRESIDENT asked why palladium iodide should not be used for the purpose. Commenting upon the accuracy of Stas's work, he remarked that quite recently another striking instance of it was brought to his notice, namely, the fact that iodine when pure is black and opaque.—A paper, by J. T. HEWITT, M.A., D.Sc., and F. G. POPE, was next read on

Derivatives of 1, 3, 6 Bromtolylhydrazine.

This work was a continuation of what was begun five years ago. The object sought was to eliminate the bromine atom with a hydrogen atom in the side-chain, and so produce a closed ring compound. Victor Meyer's method of preparing the hydrazine was preferred to that of Bamberger. Several derivatives were made, the description of which was given in the paper, but not read. Among them were acetyl compounds, semicarbazides, and hydrazones. Isomers of phenyl-bromtolyl thiosemicarbazide probably exist. It appears also that there are two forms of the hydrazones of benzaldehyde and furfuraldehyde. There was no discussion upon this paper, and a vote of thanks to the authors was carried unanimously. The result of the ballot for the election of foreign members was then declared. All were elected, the names of whom are:—S. Arrhenius, T. Curtius, A. P. N. Franchimont, W. Körner, W. Markownikoff, N. A. Menschutkin, H. Moissan, W. Ostwald, F. M. Raoult, T. Remsen, W. Spring, L. J. Troost, P. Waage, and

J. D. Van Der Waals. The next paper was by J. ADDYMAN GARDNER, M.A., and G. B. COCKBURN, B.A. It was entitled

Researches on Terpenes II., The Oxidation of Fenchene.

The reader briefly summarised the work done, alluding only to one or two results. They found that fenchene had a rotatory power of $-6°{\cdot}46$, whereas Wallach had stated it to be inactive; it had also a lower boiling point than that assigned by Wallach. The production of camphopyric acid brought out a strong relationship with camphene, and would perhaps throw some light upon the relative values of Bredt's and Tiemann's formulæ, but the authors did not enter upon the theory.—A vote of thanks to the authors was unanimously passed. Many of the members were now leaving to attend a meeting of the Royal Society, and the meeting was therefore brought to an early close. The following papers were taken as read:—"The Action of Caustic Alkalies on Amides," by Julius B. Cohen, Ph.D., and E. Brittain, B.Sc.; "The Formation of Monomethylamine from Dimethylamine," by J. B. Cohen, Ph.D., and H. T. Calvert, B.Sc.; "Note on the Aluminium Mercury Couple," by the last-named authors; "Action of Chloroform and Alkaline Hydroxides on the Nitro-benzoic Acids," by W. J. Elliott, M.A.,

ROYAL INSTITUTION.

At the first of the series of Friday evening meetings, held on Friday, January 21, a lecture was delivered by the Right Hon. Sir JOHN LUBBOCK on—

Buds and Stipules.

The lecturer said he had hoped that the opening lecture would be given by Lord Rayleigh, but he was still away in the East. He was at a disadvantage in not having the specimens for illustration, which could have been obtained in April or May, but through the mildness of the winter he had still been able to procure several. Some years ago his attention had been drawn to the great variation in the stipules of plants very nearly allied, and with the help of his assistant, Mr. Frazer, he had since studied the subject extensively. The lecture was profusely illustrated with diagrams, the first of which showed the origin of the leaf in the growing point. Buds were protected in very different ways. They are variously covered by older leaves, scales, felted hairs, or gum. In countries where the climate varies greatly with the season the protection is very complete, while in the tropics where the climate changes little the buds are protected merely by the older leaves of the plant. *Uvaria purpurea* shelters its buds from the scorching heat of the sun in this way, as also does the begonia, a fact that probably accounts for the peculiar shape of the leaf of the latter. In other cases protection is afforded by the petiole as in the walnut. In *Actinidia* there is in addition to the petiole a special outgrowth that helps to protect the bud. In the plane the bud lies ensconced in the stalk of the leaf, which covers it like an extinguisher, but when the leaf falls in autumn, the bud is exposed, but other plants like the syringa show a cleverer arrangement. Here the petiole springs off higher up, so that when the leaf falls the petiole parts above the point of its attachment to the stem, the lower part remaining to protect the bud. The barberry has three spines corresponding with a leaf and two stipules, but this is to guard the bud from animals. The importance of protection against cold was shown by a diagram of an expanding bud of the tulip-tree, where the two leaves sheltered by the outermost pair of scales had withered, while those that had had the protection of an additional pair of scales within the first were vigorous. A diagram showing the bud of *Bucklandia* was interesting, as affording the only instance the lecturer knew of a petiole being folded in the bud. The bud of the alder is covered by a complete leaf blade and two stipules, while that of the maple differs from it in being covered by a scale that is a leaf base. Moreover, instead of dropping off they expand and become coloured, and sometimes, as in the Norway maple, leaves grow out from the ends of the scales. The bud of the ash is interesting; its scales have fingers at the extremities which represent leaves. Their black colour is due to a coat of closely-set hairs. In spring the black colour is replaced by green owing to the growth of the tissue without a corresponding increase of the hairs. An interesting contrast is shown between *Magnolia tripetala* and *M. conspicua* in the behaviour of their stipules. Those of the latter fall while the stipules of the former, which appears to be a more highly developed plant, remain as a protection to the young bud. The scale on the bud of the lilac and willow is itself a leaf, and by closely related intermediate forms the two forms merge gradually into one another. The lime is remarkable in that its bud scales are formed of the stipules of the leaves contained in the bud. They are brilliantly coloured, and in expanding exhibit a feature common to many plants in hanging vertically for a time until hardy enough to take the natural exposed position. For a similar reason those of the whitebeam are turned upwards. The bud of the beech resembles that of the lime, but is more complicated. That part where there were stipules and no leaves does not elongate, so that the beginning of every shoot is marked by a number of close rings, which are persistent for, in some cases, even twenty-five years. That of the oak is still more complicated. There are as many as forty coverings to be removed before the leaf is laid bare. In this case the scale is a single stipule, but in the elm, which has a similar arrangement, each scale is formed from two stipules grown together. In the hop, again, where the leaves are opposite, the pairs of stipules that grow together do not belong to the same leaf, but each to one of the opposite leaves. The scales are thus seen to represent very different parts of the plant. In alpine regions, with their coat of hairs, they serve to keep off moisture, while in the dry desert they exert a directly opposite influence in preventing the plant from transpiring too freely. They also serve to protect the bud from caterpillars, and, lastly, acting like a great coat in this country, they keep the bud warm. Some hairs are filiform, but others are glandular, as instanced by the flowering currant. Many secrete gummy matter, and the lavender, that is so pleasant to the smell, is found to be decidedly unpleasant to taste; hence it is protected from browsing herds. The bud of a certain plant is defended from other insects by a species of ant that makes its home in it and lives upon the secretion. Stipules have other various functions They may become cup-shaped leaves when they store up rain water for the plant's advantage. Again, in the *Polygonums*; he stipules form a support to the growing joint. Although the variation in stipules is not so great as in leaves, there is still a great variety. Some species of *Lathyrus* have broad stipules; others have narrow ones. A similar variation is shown in the flower-heads of the red and white clovers, and the reason for it appears on examining the flower-heads. The buds of the red clover remain almost sessile, while those of the white clover spring out on a fairly long stalk, so that wide stipules would be useless to the latter, the narrower ones offering sufficient protection to the bud while young. In the bud of the Scotch fir we have a number of brown leaves enclosing some green ones belonging to the next summer but one. That the bud has a direct influence on the form of the leaf is shown by several considerations. The kidney-shaped first leaves of mustard and cress are differently shaped from the leaves produced after, and the reason is to be traced directly to the fact that the leaves must conform to the shape of the seed. Why the wallflower has not also two kinds of leaves is, of course, because its leaf is not folded in the seed. The same considerations apply to the saddle-shaped leaf of the tulip-tree. The lecturer, after close examination, had satisfied himself that the form of the leaf is due to the peculiar arrangement of the leaf in the bud. The stipules fill up one part of the bud, the stalk occupies another, while the leaf-blade fills the remaining space. Diagrams illustrating this arrangement were shown. Lastly, a description of the circumstances attending the fall of the leaf were given. The chlorophyll is too valuable a substance to be thrown away, and is, therefore, withdrawn from the leaf through the stalk. The process is one not of death but of life; a fresh layer of cells is produced at the base of the leaf, by which it is cut off, and thus a dead branch that does not produce this layer of cells does not shed its leaves.

BRITISH ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE.

The Mayor and Mayoress of Bristol (Sir Robert and Lady Symes) and the local Executive Committee having charge of the arrangements for the Bristol meeting next autumn of the British Association for the Advancement of Science last week gave an interesting conversazione, which was attended by a large and influential committee. The Committee had been most liberal with their invitations, and they met with most generous response, the gathering being the largest of its kind that has assembled in the Victoria Rooms, Bristol, for a long time. Sir William Crookes, the President-elect of the British Association, was among those present, and the Mayor extended to him a cordial welcome. Sir William Crookes, in acknowledging the Mayor's welcome, said if the success of that gathering was an augury of the success of the meeting of the Association in September next, he thought they should have a very pleasant and successful conference.

NOTICES OF BOOKS.

THE 'ELEMENTS OF LATIN,' by G. D. Crothers, A.M., M.D., and H. H. Bice, A.M. (Philadelphia, U.S.A. : F. A. Davis Company, 1914-16, Cheny Street. Flexible Cloth, $1·25 net) is a book for the use of students of pharmacy and medicine, designed to present within the briefest possible compass those principles of Latin etymology and construction which are essential to an intelligent use of the terminology of pharmacy and medicine. Special features of the work are that the simple sentence is used exclusively in the exercises ; parts of the verb not essential to the study of pharmacy and medicine are omitted ; the subjunctive present—in the Hortative or Jussive sense—alone is used ; and there are two independent sets of exercises in each chapter—one pharmaceutical, dealing more especially with medicaments, the other medical and surgical, containing anatomical and pathological terms. In addition, some of the exercises treat of special subjects, such as the eye, the ear, obstetrics, etc., and there is a chapter on prescription-writing. More than forty pages are devoted to detailed descriptive notes on the exercises, following which are tables of declensions and conjugations, a list of anatomical equivalents in English, Latin, and Greek, a table of Greek prefixes and suffixes, and a list of anatomical proper names and their origins. Finally, a very full general vocabulary precedes a usefully arranged index. The book is beautifully printed, well arranged, and should be found of the greatest value by all pharmaceutical and medical students.

'OUTLINES OF RURAL HYGIENE,' by Dr. H. B. Bashore, comes from the same publishers (Extra Cloth, 75 cents net), and treats of water supply, disposal of waste, the soil, habitations, and disposal of the dead, whilst an essay on the normal distribution of chlorine forms an appendix. The book has been written for the guidance of persons living in districts away from large towns in the hope of aiding in the diffusion of sanitary knowledge where it is most needed. For that purpose it should prove extremely useful.

THE 'TUTORIAL CHEMISTRY,' by G. H. Bailey, D.Sc., and William Briggs, M.A. (London: W. B. Clive, 13, Booksellers' Row, W.C. Cloth, 3*s.* 6*d.*), is now complete, the volume on the non-metals, which was favourably referred to some time ago, being now supplemented by part two, dealing with metals. Numerous as students' manuals on the subject are, certain advantages attach to this work and fully justify its existence. Thus considerable prominence is rightly given to chemical physics, the earlier chapters being devoted to the determination of atomic weight, the relations between atomic weights, the constitution of gaseous and liquid compounds respectively, solution, and the nature of the chemical reaction. Then follow chapters on the alkalies, alkaline earths, the magnesium group, the aluminium group, etc., the elements being considered in the order suggested by the periodic system. The characteristic properties of each family are summarised so as to bring out the relationships which exist between the different members of the same family, and thus represent the whole of the chemical elements in a continuous series. Crystallisation and crystallography receive attention in an appendix, as also does spectrum analysis, both these sections being freely illustrated. A third appendix consists of a list of experiments selected to illustrate the text. The merits of the plan on which the book is arranged are undoubted, and the work should commend itself to all students of chemistry.

'INTERMEDIATE ALGEBRA,' by William Briggs, M.A., and G. H. Bryan, Sc.D., F.R.S. (London : W. B. Clive. Cloth, 3s. 6d.), is another work in the "Tutorial Series" which is of more especial interest to those readers of the Journal, and they are numerous nowadays, who are taking an advanced course of mathematical studies preparatory to taking a degree at the University of London. It is a marvellously low-priced book, probably on account of the fact that it is an adaptation of another work—the 'Algebra of Radhakrishman.' The book published by Professor Radhakrishman, a native of India, has been adapted because it possesses peculiar excellences, "the outcome of an intelligent digestion of the best English authorities, particularly of Dr. Morgan, Clifford, and Chrystal." A knowledge of the more elementary properties of quadratic equations and progressions is assumed on the part of students commencing to work with the 'Intermediate Algebra,' but otherwise they will find it contains all they require in the subject of examinations such as the Intermediate B.A., or B.Sc., of the University of London.

'SCIENCE PROGRESS' commences the second volume of the new (quarterly) series with the current issue, and the contents of the number are as varied and solid as could well be desired. Anthropometry is explained by Professor A. C. Haddon, the extent to which Oxford has influenced the history of geology is considered at length by Professor W. J. Sollas, whilst W. Bateson and J. L. Myres continue their respective articles on "Progress in the Study of Variation," and "Prehistoric Man in the Eastern Mediterranean." Metamorphosis in plants receives attention at the hands of Professor S. H. Vines, the bacillus of plague is discussed by Dr. G. A. Buckmaster, and the problems involved in the secretion and absorption of gas in the swimming-bladder and lungs are treated by J. S. Haldane. It is unnecessary to say more than that the fare offered is as good as it is adapted to a variety of tastes.

A 'REPORT UPON THE ESSEX FIELD EXPERIMENTS' carried out for the Technical Instruction Committee of the Essex County Council during 1896-97, has been compiled by T. S. Dymond, the Staff-lecturer in Chemistry, who was formerly on the teaching staff of the School of Pharmacy. The experiments referred to have been conducted during the past two years, and are of four kinds—1. Manurial trials on beans followed by wheat ; 2. Manurial trials on permanent pasture ; 3. Experiments on laying down land to grass ; and 4. Manurial trials on oats followed by mangolds. Their object was to afford a practical demonstration of the principles of manuring, whilst also determining how those principles can best be applied under the particular conditions of soil and climate found in Essex. Detailed results are given, and it is stated that further experiments are proceeding.

THE 'FORMULAIRE DES MÉDICAMENTS NOUVEAUX' for 1898, by H. Bocquillon-Limousin (Paris : J. B. Baillière et Fils. Cloth. 3 francs), is as prompt in appearing as usual, and it is needless to say that it is brought well up to date. Amongst other medicaments, of more or less recent introduction, are mentioned the following, very full particulars of which are given :—Cacodylic acid, cardol, chetidonine, chinaphthol, chrysoidine, eucaine, ferro-somatose, heparadine, holocaine, ichthyalbin, mydrol, protargol, tannalbin, and numerous other synthetic remedies, as well as many of animal origin. As on former occasions when this work has been mentioned in these columns, it is recommended as a most useful work of reference on matters concerning the newer remedies, and the fact that it is printed in French should not deter British pharmacists from attempting to utilise it.

A KEY TO PRINCIPAL PLANT SUBSTANCES.*

BY RODNEY H. TRUE.

The following key is an attempt to arrange for ready use in the laboratory the simpler methods of identifying the commoner plant substances. The device that has proved of service in the identification of plants seemed to the compiler capable of adaptation to the present case, and an experimental trial of this key in laboratory practice during the past two years has seemed to confirm this thought. Standard works on micro-chemistry were used in the preparation of the following, and no claim to originality in subject-matter is made.

The manner of use is so simple that explanation seems hardly necessary. Confirmatory reactions, referred to in the key by numbers in parentheses accompanying the names of the substances, are appended and should be made use of.

One direction must be strictly observed. Each separate reaction demands a fresh section and a clean side and cover-glass.

Zinc Chloriodide.

A. i. Colour red.
  B. i. Cell contents ..... Tannin. (1)
  B. ii. Cell walls ..... Lignin.†
A. ii. Colour brownish, cell contents ..... Protoplasm and proteids. (2)
A. iii. Colour blue.
  B. i. Amorphous mass ..... Plant mucilage. (3)
  B. ii. Granular cell contents ..... Starch.
A. iv. Colour violet.
  B. i. Cell walls ..... Cellulose.
  B. ii. Cell contents ..... Tannin. (1)
A. v. Colour yellow.
  Phloroglucin and HCl.
  B. i. Rose-coloured walls ..... Lignin.
  B. ii. Uncoloured.
    C. i. Unswelled cell walls ..... Suberin. (4)
    C. ii. Swelled cell walls or amorphous.
      D. i. With iodine and H_2SO_4, blue ..... Plant mucilage. (3)
      D. ii. With iodine and H_2SO_4, yellowish or brownish ..... Proteids and Protoplasm. (2)
A. vi. No colour reaction.
  Trommer's reagent. (10)
  B. i. Orange-brown precipitate formed (Cu_2O) ..... Dextrose.
  B. ii. Deep violet colour, no precipitate ..... Cane sugar.
  B. iii. No visible reaction.
    Tincture of alkanet.
    C. i. Red cell contents ..... Resins. (5)
    C. ii. No visible reaction.
      D. i. Crystalline bodies.
        E. i. Crystalline masses, rounded ..... Inulin.
        E. ii. Crystals distinct, not rounded.
          F. i. Dissolves in HCl without effervescence.
          Treat with dilute neutral $AgNO_3$.
            G. i. Assumes yellow colour ... Calcium phosphate. (6)
            G. ii. Does not assume yellow colour .. Calcium oxalate.
          F. ii. Dissolves in HCl without effervescence ... Calcium carbonate.
          F. iii. Dissolves in HCl little or none.
            (Seldom present in plants.) ..... Calcium sulphate.
      D. ii. No crystalline bodies.
        E. i. Soluble in cold absolute alcohol, ropy masses .. Volatile oils. (7)
        E. ii. Insoluble in cold absolute alcohol.
          F. i. Soluble in ether, spherical masses .... Fatty oils. (8)
          F. ii. Insoluble in ether.
            G. i. Incinerating without ash ..... Gums. (9)
            G. ii. Incinerated, leaves ashy skeleton ..... Silica.
              (Treat with HCl to remove Ca salts.)

CONFIRMATORY REACTIONS.

1. *Tannins.*—In sections not wetted either with water or alcohol, when placed in ferric sulphate, tannins take on a deep blue or deep green colour.

2. *Protoplasm and Proteids.*—In Millon's reagent, a rosy-red colour appears after a time, especially after warming. Millon's reagent is mercury dissolved in its own weight of conc. nitric acid, the solution then diluted with an equal volume of distilled water. Reagent to be used when fresh.

3. *Plant Mucilages.*—Usually swell in water. Iodine and H_2SO_4 give either a blue or a violet-brown colour.

4. *Suberin.*—Insoluble in conc. H_2SO_4. In boiling KOH, ochre-yellow, granular masses are exuded. Stains blue in aniline violet, especially plainly when colour is drawn from non-lignified tissues by use of acidulated alcohol.

5. *Resins.*—In sections mounted in water and not previously exposed to alcohol or glycerin, after several days' treatment with copper acetate an emerald green colour appears. Hanstein's aniline violet stains resins blue.

6. *Calcium Phosphate and Oxalate.*—Test does not exclude salts of other bases, but these rarely occur in plants.

7. *Volatile Oils.*—In sections not previously treated with alcohol or glycerin, these stain red in alkanet tincture. Distinguished from resins by copper acetate reaction (see 5 above).

8. *Fatty Oils.*—Treat section with conc. sulphuric acid and oil drops collect, becoming larger and more conspicuous.

9. *Gums.*—Usually swell in water. Not coloured blue by iodine and sulphuric acid.

10. *Trommer's Reagent.*—A moderately thick section is placed for from two to ten minutes in a conc. solution of copper sulphate, Surface then quickly rinsed off with distilled water; section then transferred to a boiling mixture of equal parts by weight of water and KOH.

* From the *Pharmaceutical Review.*

† See for confirmation, test with phloroglucin and HCl.

ORTHOFORM.

Orthoform is a substance discovered by Einhorn and Heinz in the course of an investigation undertaken to discover a chemical compound having the anæsthetising properties of cocaine without its toxic properties; thus these investigators worked in the same direction as Merling, who discovered eucaine. Reflecting that many bodies in the aromatic series, *e.g.*, methyl blue, possessed anæsthetising properties, Einhorn and Heinz directed their attention to the hydro-aromatic group of molecules comprised in that of cocaine, hoping to find therein the seat of the anæsthetic power of the drug. In the research many compounds were synthetised, all possessing more or less of the desired physiological action. H. Neumeyer (*Münch. Med. Woch.*, Nov. 2, 1897) found that two of the synthetised bodies were more powerful than the rest. These were *p*-amido *m*-oxybenzoic methyl ester or orthoform and, almost equivalent to it, *m*-amido *p*-oxybenzoic methyl ester. Both substances have a slight basic reaction, and are but slightly soluble in water. Their salts, especially the chlorides, are easily soluble. Neumeyer found their action on painful tubercular ulceration of the larynx, the persistent pain and its increase on swallowing, were removed on insufflating about 0·2 Gm. of powdered basic orthoform or its hydrochloride. Relief was felt in from 10 to 15 minutes, and lasted for 12 to 24 hours. Similar results were obtained in cases of cancer of the tongue, in ulcerative stomatitis, and other painful conditions.

Neumeyer tried both orthoform and the *m*-amido *p*-oxybenzoic acid methyl ester in a concentrated solution on the hypertrophoid mucous membrane of the nose before using the cautery, but no anæsthesia resulted, whilst cocaine subsequently produced complete anæsthesia. Thus orthoform does not appear to act on an unbroken mucous membrane.

In a case of gastric ulcer Neumeyer found that 0·25 Gm. of orthoform in 20 Gm. of water gave freedom from pain for 3 hours, and this same effect was observed in 4 successive days, and on the fifth and sixth days, orthoform being withheld, the pain returned. After the sixth day the pain was annulled for periods varying from 3 to 6 hours, according to the dose. In other cases of gastric ulcer, and in a case of cancer of the stomach, the drug had a similarly satisfactory result. Injected in a 5 per cent. solution into the injured urethra of a boy, pain was removed and catheterisation was rendered easy. Tried for neuralgias of various kinds, *e.g.*, sciatica, headache, and the lightning pains of tabes, it was found to have no effect when given internally in doses of 2 to 3 Gm. whether as base or salt. Thus Neumeyer concludes that orthoform only acts locally on nerves exposed in ulcers, wounds, burns, etc.

Orthoform does not appear likely to replace cocaine, but it can be used in addition to it. Thus, whilst cocaine will give anæsthesia of short duration in intact mucous membranes, orthoform gives analgesia of long duration in broken or ulcerated surfaces. Neumeyer took doses of from 3 to 4 Gm. without experiencing any toxic effect, nor were any bad local effects observed. Slight smarting of short duration was mentioned in some cases where the hydrochloride was used. In the mouth, whilst pain was removed, the senses of touch, temperature, and taste were unaffected.

The base and its salts have similar actions. The former is indicated when slow solution, and long action is required, and also on painful wounds.

SULPHOBORIC ACID.—This acid is said to be similar to sulphuric acid, but more safe to handle and slower in action. It is prepared as follows:—150 grammes sulphuric acid are stirred in very gradually with 150 grammes pure boric acid, and the paste set aside for 2 or 3 days. It is then powdered and slowly mixed with 450 grammes sulphuric acid. On heating the resulting milky solution till clear, the acid is then ready for use.—*Pharm. Centr.*, xxxviii., 664

THE STUDENTS' PAGE.

EXPLANATORY NOTES ON THE B.P.

SALICIN.—When salicin is boiled with dilute sulphuric acid it undergoes hydrolysis, *i.e.*, a molecule of water is taken up with decomposition of the substance into simpler bodies—in this case two, viz., glucose and saligenin. This reaction is typical of all glucosides, to which class of substances salicin belongs, the name glucoside being derived from the fact that when hydrolysed glucose is always formed, the other substances produced simultaneously being of course different with each glucoside. Since the glucose may be detected by means of Fehling's solution, this hydrolysis with dilute acids forms a general test for all glucosides. In performing the test the substance to be examined should be boiled for three or four minutes in water *acidulated* with sulphuric or hydrochloric acid. Almost any acid will effect the same change, only not so rapidly as the two acids mentioned. After boiling, the fluid should be neutralised or made slightly alkaline with potash or soda, a little Fehling's solution added, and boiled again. Presence of glucose will be indicated by reduction of the Fehling's solution (potassio-cupric tartrate) with precipitation of red cuprous oxide, Cu_2O. It is advisable to neutralise the fluid after boiling because the reaction between glucose and Fehling's solution, as described, only takes place in alkaline solution, and sufficient acid may be present to neutralise the alkali contained in the Fehling's solution added. If only a small quantity of glucoside be taken sufficient glucose may not have been produced to reduce all the cupric salt in the Fehling's solution added; in this case the fluid remains blue, and renders difficult the detection of the correspondingly small quantity of cuprous oxide produced. This may, however, be accomplished by setting the test-tube aside, when even a very small quantity of cuprous oxide will form an easily discernible orange-red layer on the bottom of the tube. Saligenin, the other product of hydrolysis, is interesting on account of its relationship to salicylic acid. It is ortho-hydroxy-benzyl-alcohol, $C_6H_4(OH)(CH_2OH)$, salicylic acid being the corresponding ortho-hydroxy-benzoic acid, $C_6H_4(OH)(CO\cdot OH)$. This is just the relationship that exists, for example, between ethyl alcohol, $CH_3(CH_2OH)$, and acetic acid, $CH_3(CO\cdot OH)$. And just as we can obtain acetic aldehyde, $CH_3(C\cdot O\cdot H)$, as an intermediate oxidation product between ethyl alcohol and acetic acid, so by oxidation of saligenin the corresponding salicylic aldehyde, $C_6H_4(OH)(C\cdot O\cdot H)$ is first produced. It is this aldehyde which is produced in the treatment of salicin with sulphuric acid and red chromate of potassium, and to which the aromatic odour of meadow-sweet is due. Some salicylic aldehyde is also produced when salicin is cautiously heated in a dry tube.

SODII BICARBONAS.—Absence of normal carbonate is roughly indicated by absence of colour in the precipitate produced with mercuric chloride. The volumetric test with standard acid solution requires absolute purity.

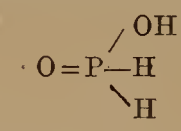
(i.) $\underbrace{2NaHCO_3}_{168} = \underbrace{Na_2CO_3}_{106} + H_2O + CO_2.$

(ii.) $\underbrace{Na_2CO_3}_{106} + \underbrace{H_2C_2O_4,2H_2O}_{126} = Na_2C_2O_4 + 3H_2O + CO_2.$

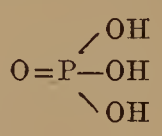
Since 1000 C.c. of normal acid solution contain 63 grammes oxalic acid ($\frac{1}{2}H_2C_2O_4,2H_2O$), this quantity will neutralise the 53 grammes of normal sodium carbonate procurable from 84 grammes of bicarbonate.

SODII BROMIDUM.—The principles involved in the preparation of sodium bromide are precisely the same as those explained under potassium bromide (*q.v.*), but in order to obtain the anhydrous salt, it is crystallised from warm solutions. At ordinary temperatures a salt containing two molecules of water crystallises out. The B.P. volumetric test corresponds to nearly 99 per cent. purity. Presence of alkaline chlorides would increase the quantity of volumetric silver solution required in the titration, owing to the lower molecular weights of NaCl and KCl. For 1 gramme, NaBr requires 97·1 C.c. $\frac{N}{10}$ $AgNO_3$, while 1 gramme of NaCl will require 170·9 C.c.

SODII HYPOPHOSPHIS.—Sodium hypophosphite may be obtained directly by boiling phosphorus with sodium hydroxide solution. It is, however, more conveniently and economically obtained indirectly through the calcium salt prepared in the first place from calcium hydroxide and phosphorus, because in the reaction between sodium hydroxide and phosphorus several secondary reactions occur leading to the formation of a considerable quantity of sodium phosphate. These occur to a much smaller extent in the formation of the calcium salt owing to the sparing solubility of calcium hydroxide, and the yield of hypophosphite from a given weight of phosphorus is proportionately greater. For the same reason the reaction between calcium hydroxide and phosphorus is not so violent and dangerous as is the case with sodium hydroxide. Moreover, any calcium phosphate is readily separated from the hypophosphate owing to the insolubility of the former. The formula of hypophosphorous acid is written usually HPH_2O_2 and not H_3PO_2. The separation of the hydrogen atoms in the formula indicates that only one of the three is replaceable by metals to form salts, and from this fact and certain other considerations the constitution of the acid is usually regarded as—



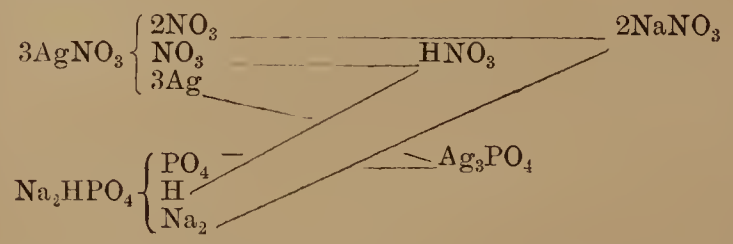
which shows clearly why one of the three hydrogen atoms behaves differently to the other two, this replaceable hydrogen being combined in a hydroxyl group, while the remaining two are linked directly to the phosphorus. On the other hand phosphoric acid is tribasic because all three hydrogen atoms are in the hydroxylic condition, thus—



Consequently the hypophosphite radicle, PH_2O_2, is monobasic, and the calcium salt has the formula $Ca2(PH_2O_2)$. When strongly heated, a complicated decomposition occurs, and a part of the hypophosphite is oxidised to (meta- and pyro-) phosphate, while the phosphorus of another part is reduced to hydrogen phosphide. A similar case of mutual oxidation and reduction between molecules of the same composition is seen in the conversion of manganates into permanganates with simultaneous production of a lower oxide of manganese (see the article on potassii permanganas). Owing to the tendency to absorb oxygen with formation of phosphates, the hypophosphites constitute powerful reducing agents.

SODII IODIDUM.—Compare the remarks made under potassii iodidum.

SODII PHOSPHAS.—When nitrate of silver is added to sodium phosphate solution the normal silver phosphate is precipitated, while the solution becomes acid. This latter effect is due to the fact that the sodium phosphate is an acid salt—that is, only a portion of the replaceable hydrogen of the phosphoric acid is displaced by sodium.



Since, therefore, the silver replaces the remaining hydrogen in the phosphate, the hydrogen will appear combined with the radicle formerly united with the silver, *i.e.*, as nitric acid. When heated to redness sodium pyrophosphate is formed.

$$\underbrace{2(Na_2HPO_4,12H_2O)}_{716} = Na_4P_2O_7 + \underbrace{25H_2O}_{450}$$

This corresponds to a loss of *about* 63 per cent. of its weight, since

716 : 450 :: 100 : 62·8

The pyrophosphate of sodium dissolved in water yields a precipitate of barium pyrophosphate on the addition of solution of barium chloride. This is soluble in dilute nitric acid, while if the sodium phosphate contained sulphate a portion of the precipitate (barium sulphate) would remain undissolved by the nitric acid.

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OF ETHICS AND ETIQUETTE.

OF all the thankless tasks that a pharmacist can undertake there is probably none less promising in results than an attempt to draft a code of so-called "pharmaceutical ethics," the more especially as it is very doubtful whether those who spend time in propounding and discussing such codes ever devote much consideration to what is actually implied by the term they apply so glibly to rules that have little or no bearing on ethics. Purists object at times, with some reason, to the use of the terms "pharmaceutical chemistry," "pharmaceutical botany," and so forth, but they might object much more forcibly to "pharmaceutical ethics." For the term is not only a misnomer; it implies what cannot possibly be conceived. Ethics is defined by Dr. MURRAY as "the science of morals" or "the department of study concerned with the principles of human duty." Unless, therefore, we grant that pharmaceutical morals differ from morals generally, it is difficult to imagine any correct application of the term "pharmaceutical ethics." The fact of the matter is that many English-speaking people value their language so little nowadays that by their carelessness they foster the tendency to misapply important words, and so minimise their force. For "ethics" and "system of ethics" let us substitute "etiquette" and "code of honour," and we arrive at the real meaning of what is usually meant.

In Mr. STORRAR's paper, printed at page 94, ethics and etiquette are mixed indiscriminately. At the outset he rightly observes that the term "ethics" can best be expressed by the words "Do to others as you would that they should do to you," but immediately afterwards he adopts a definition by a contributor to an old volume of the Journal, in which a professional code of honour is improperly elevated to the position of a system of ethics. Whilst, therefore, we agree with Mr. STORRAR regarding the uselessness of discussing ethics with a man who does not understand the meaning of the term, we fail to see that he cleared the way sufficiently for his own audience. Moreover, the same confusion manifests itself throughout the rest of the paper. How, for example, can morality be affected in any degree whether or not a chemist and druggist does anything that may affect the position secured to the Pharmaceutical Society by Act of Parliament? It is doubtless an imprudent thing to do anything that may risk the security of that position, but indiscretion should not necessarily be branded as immorality. Not that Mr. STORRAR meant it should be, but by speaking of the business and professional relations of pharmacists to each other, to medical men, and to the public, as though they were capable of regulation in accordance with an ethical system, he leaves his remarks open to considerable misapprehension. Anything that may further the establishment and observance of a professional code of honour in pharmacy is of the greatest possible value, but that value will not be enhanced by the use of incorrect and misleading nomenclature.

Such a code of honour can only crystallise itself gradually, and as the nature of those concerned becomes fit for the application of fixed rules. An unwritten code, far-reaching in its scope, already exists in pharmacy, as in other trades and professions, but variations in one direction or another indicate the inexpediency of any attempt to enforce hard and fast rules of business conduct. "Men's thoughts are much according to their inclination," observes BACON, "their discourse and speeches according to their learning and infused opinions; but their deeds are often as they have been accustomed. And therefore . . . . there is no trusting to the force of nature, nor to the bravery of words, except it be corroborate of custom." In other words, if the inclination of thoughts be directed, cautiously and persistently, and right views consistently advocated, in the course of time men will come by force of custom to act in accord with one another, and with the preconceived views of preceptors who are qualified to direct them. And when all realise the necessity of a fixed code of honour, that code will be practically already existent, having gradually and naturally developed as the individual became fitted to practise it. Not only should a man not force a habit, however good, upon himself without intermission, as the Elizabethan philosopher advises, but it is equally inadvisable for others to attempt to perfect him by keeping him ever in practice; otherwise "he shall as well practise his errors as his abilities, and induce one habit of both, and there is no means to help this but by seasonable intermissions." To the well-balanced mind this is self-evident, and a would-be reformer who is fitted for the part he wishes to play will not fret unduly if progress appears slow. As a wise man he will wait upon events, whilst making more opportunities than he finds, whilst ever bearing in mind that "men's behaviour should be like their apparel, not too strait or point device, but free for exercise or motion."

THE LORD MAYOR OF MANCHESTER.

WE have great pleasure in joining our congratulations to Alderman ROBERT GIBSON, Lord Mayor of Manchester, with those of the leading representatives of British pharmacy, and those others, perhaps still more important, of his fellow-craftsmen in Manchester and the surrounding district. The pharmacists of that important centre have, of late, appeared to observers to be somewhat lacking in unanimity, but there seems to have been no indication of the sort in connection with the recent festivities. This should augur well for the prospect of further agreement, such as we earnestly hope may be arrived at before long in connection with the Pharmacy Acts Amendment Bill, the more especially as the influence of the Manchester district cannot make itself properly felt, unless it is a practically unanimous index of local feeling.

ANNOTATIONS.

The Draft Pharmacy Bill continues to be the cause of much misapprehension in quarters where it could hardly have been expected, and with the view of helping to clear away some of the cobwebs that appear to obscure thought in the case of many readers, it may be as well to recapitulate what changes the Bill is intended to effect. Those changes are four in number. Thus it is proposed (1) that those subscribers to the Pharmaceutical Society who are now termed "Apprentices or Students" shall in future be known as "Student-Associates"; (2) that everyone registered as a "Chemist and Druggist" shall be eligible for election as "Member" of the Society, and subsequently, as a matter of course, be eligible for election on the Council; (3) that only one-third of the members of the Council shall retire each year instead of two-thirds as at present; (4) that the Secretary shall be enabled to receive voting papers for the Council election up to twelve o'clock noon on the day of election, whether delivered personally or not.

The Proposed Extension of the Membership Limits is the only point in the Bill that serious objection has been taken to, and there is every reason to believe that the opposition to Clause 3 on the part of a few pharmaceutical chemists is purely based on sentimental considerations. Though our correspondent, whose letter is published this week, raises the plea of an imaginary bargain with "the present 'Major' men" as a ground for not proceeding with the Bill in its existing form, there is little doubt that most, if not all, of the declared opponents of the proposed change have taken their stand upon the necessity of a *quid pro quo*. In other words, they ask what they are to receive as a recompense if they agree to share the privilege of membership with chemists who have not passed the Major examination. They will not recognise that to admit all chemists and druggists to full membership is but to revert to the original intention of the founders of the Society, nor that it is required in common justice. Or, if they do recognise it, they insist, nevertheless, that they must first receive a definite assurance of some personal benefit being forthcoming in exchange.

The Royal Charter of Incorporation, granted to the Society within two years of its foundation, distinctly specifies that "The Pharmaceutical Society of Great Britain shall consist of persons to be called members thereof, and that such members shall be chemists and druggists, who are or have been established on their own account, or who shall have been examined in such manner as the Council of the said Society shall deem proper." The Pharmacy Act of 1852 confirmed the Charter in this respect and, in addition, provided that all chemists and druggists who were then members of the Society should be entitled to assume the title of pharmaceutical chemist. Finally, the Act of 1868 would also have permitted the election of all chemists and druggists as members but for difficulties raised by some pharmaceutical chemists almost at the last moment. And though, rather than sacrifice the measure when it had almost become law, the promoters agreed to admit those who in future qualified as chemists and druggists as associates only, it is well to bear in mind that the Legislature was content to regard qualification under the Act as being sufficient for all practical purposes.

The Only Legal Qualification to practise pharmacy has since been that indicated by a person's name appearing on the Register of Chemists and Druggists. Those who were in business before August 1, 1868, and had not passed any examination, together with "Modified" men, "Minor" men, and "Major" men—all stand in precisely the same position in the eye of the law; they are all registered as "chemists and druggists." The pharmaceutical chemist's qualification is not a necessary one, and is not recognised by the law, except in so far as it protects the title. Beyond this, the pharmaceutical chemist occupies no better position than the chemist and druggist from the public point of view. The personal advantage of exemption from jury service under certain conditions was acquired in 1862, and it was limited to pharmaceutical chemists solely because they were at that time the only persons who possessed a recognisable qualification to practise pharmacy. This exemption had no kind of connection with pharmacy legislation, and an attempt made in connection with the Pharmacy Bill of 1868 to extend the privilege to all chemists and druggists in business, proved futile because the matter was held to be outside the province of such legislation. As regards the Pharmaceutical Society, all chemists in business who are connected with that body —whether they are pharmaceutical chemists or not—already pay the same subscription and they possess the same privileges, except those who have become qualified since 1868, and are not entitled to stand for election as members of the Council.

Chemists and Druggists also constitute the majority of the supporters of the Society, but whilst those who are in business on their own account take an equal share in its burdens, all but a small proportion of them are denied direct representation on the executive body. Not only are chemists and druggists in a majority, but it is a constantly increasing majority, for the roll of members—whether pharmaceutical chemists or chemists and druggists who were in business prior to August 1, 1868—shows a steady decrease. The pharmaceutical chemist members at the end of 1897 numbered only 1552, as against 1584 at the end of 1896; the chemist and druggist members only 556, as against 575; but associates in business had increased from 1682 to 1721, associates not in business had decreased from 984 to 946, whilst the number of students had risen from 846 to 873.

The Total Strength of the Society for the year ending December 31 last shows a slight falling off, the numbers being 5671 for 1896 and 5648 for 1897. Finally, of the 15,166 chemists on the Register twelve months ago, 4825 were connected with the Society, and of the 15,215 now on the Register, only 4775 are members and associates. The significance of these figures is obvious; whilst the Society as a whole is practically at a standstill, and the number of its supporters who are registered is in a decreasing ratio, there is the still more serious symptom of a steady diminution—both relative and absolute—in the proportion of those entitled to exercise the complete functions of members. Everything, therefore, points to the necessity of imposing an effective check, and that as speedily as may be. No better check could be found than throwing open the ranks of membership, so that the proposed step appears as expedient as it is just.

Fears Have Been Expressed lest the granting to associates of the style of "Member" and the right to seats on the Council should result in the relegation of pharmaceutical chemists to a secondary position. But, as has already been pointed out more than once, those are idle fears, the more especially as it is quite possible for an identical state of affairs with that contemplated to exist at the present time. The existing members include 1552 pharmaceutical chemists and 556 chemists and druggists. But there are only 2251 pharmaceutical chemists altogether, whilst there are not far short of 4000 chemists and druggists who were in business prior to August 1, 1868, and are

therefore eligible both as members and for seats on the Council. The danger, therefore, if danger there be, already exists, and it is not likely to be intensified by granting the full franchise to an increased number of persons.

THE SEATS ON THE COUNCIL are only twenty-one, but out of the more than two thousand individuals at present eligible as Councillors there is the greatest difficulty in inducing more than twenty-one to contest those seats. And if it be correct to assume that pharmaceutical chemists constitute the more leisured class in pharmacy, there seems but little risk of displacing any considerable proportion of their direct representatives on the Council. Apart from that, however, why should it be supposed that representative chemists and druggists will be less public-spirited and more petty-minded than those who now serve on the Executive body? The suggestion, we imagine, is too absurd to be entertained for a moment, and that being so, it is difficult to see what possible objection to the passing of the Pharmacy Bill still remains. Expediency suggests the desirability of the step, justice demands it, and no pharmaceutical chemist can honestly assert that it will do him the least harm. As for objectors, not pharmaceutical chemists or chemist and druggist members, they have no status in the matter, and decency bids them be silent.

MR. STORRAR'S REFERENCE to the work accomplished by the founders of the Pharmaceutical Society was not altogether justified by the facts of the case. He said (see p. 94) "their action welded a disunited trade into an organised and influential body," but that is far from accurately representing what was done, and not only so, the disunited trade is still awaiting the welding operation. Out of some fifteen thousand registered chemists, less than one-third lend their adherence to the Society; the rest are badly in need of organisation, but for the most part they are probably as far as ever from becoming united. One must also disagree with Mr. Storrar's assertion that "the Society can never be, in the strict sense of the term, a trade society." Why not? It was founded for that very purpose, amongst others, as witness the words of the Charter—"for the protection of those who carry on the business of chemists and druggists." True, it now performs a dual function, administrative functions having been thrust upon it at a later period, and those administrative functions have, unfortunately, grown out of all proportion to the rest. But they need not prevent the Society developing as a trade society, properly so-called, if only the trade would support it. Let the Society become representative of two-thirds instead of one-third of the trade, and let the members agree upon what they wish to do or have done, and there is little that need remain undone. The administrative work must be carried on and will continue to be carried on in its entirety, whether the Society secures the adherence of the trade or not; but there is nothing to prevent the organisation, which now represents less than five thousand of the craft, becoming a real union of the trade—safeguarding all its interests, commercial and otherwise—if only the trade will agree to make it so.

THE RE-COPYING OF PRESCRIPTIONS ordering scheduled poisons, when the medicine has to be repeated, has been the subject of communications to the Editor since the publication of the note on the subject in last week's Journal, and objection is taken to the suggestion that such re-copying is necessary. In reply it can only be said that the expression of opinion objected to was based on what appears to be the literal interpretation of Section XVII. of the Pharmacy Act. It is there stated that the provisions with regard to labelling poisons and recording their sale shall not apply to any article when forming part of the ingredients of any medicine dispensed by a person registered under the Act,

> "Provided such medicine be labelled in the manner aforesaid with the name and address of the seller, and the ingredients thereof be entered, with the name of the person to whom it is sold or delivered, in a book to be kept by the seller for that purpose."

Confirmation of the view that those words imply copying the prescription on the second and every subsequent occasion that the medicine is dispensed, no less than on the first, appears to be afforded by the provision in the earlier part of the Section—which should, of course, be considered as a whole—that in the case of poisons in the first part of the Schedule, the seller shall, before delivery, make or cause to be made, an entry in a book to be kept for that purpose, "on every sale." And though it may be contended that the dispensing of medicine differs from a mere sale, the use of the words "seller" and "sold" in the passage quoted above seems to indicate that the difference is only one of degree, or to put the matter simply, the delivery of medicine dispensed by a person registered under the Act, and containing a scheduled poison, is a sale under special conditions. Of course, the point has not been decided in a court of law, and the adoption of the extreme precautions advocated last week must of necessity cause much trouble to dispensers, which may appear needless. But that would not be accepted as a valid excuse, if at any time a judge should arrive at the conclusion that, by neglecting such precautions, chemists appeared to desire to evade the Act they are so directly interested in upholding.

TROUBLE SHOULD NOT BE CONSIDERED in such matters, and it may be taken for granted that the chemists of this country are not likely to allow it to enter into consideration when once they have looked at the questions involved in a right light. In the public interest, most chemists already go beyond the strict legal requirements by labelling and otherwise treating carbolic acid, strong mineral acids, and other dangerous articles as though they were scheduled poisons. This plan saves trouble, too, for as suggested last week, it obviates the necessity of stopping to consider what are the exact legal requirements in any particular instance. But it is safe to conclude that this and other precautions adopted by registered chemists in dealing with poisons and other dangerous articles—though not required by the law, and the cause of much trouble that, to some, may appear needless—are not suggested by selfish motives, but in the interest of the public safety, and they are therefore indicative of a highly commendable professional spirit. It is going but a step further to adopt similarly extreme precautions in the case of prescriptions ordering poisonous remedies, and whether such precautions are actually required by the law or not, the pharmacist who does adopt them has no occasion to fear that he will not be fully compensated for the extra trouble involved. What Mr. Goode (see p. 113) describes as being, in his opinion, sufficient in the case of repetitions, might not be considered so in a court of law, but as already stated, the point has not yet been raised. The question is not free from difficulty, and the careful consideration of it by our readers is strongly recommended. Uniformity of practice should be aimed at in dispensing, and that practice must be in complete accord with the legal requirements.

THE NEXT EVENING MEETING of the Pharmaceutical Society will be held on Tuesday, February 8, when Mr. Leo Atkinson will read a paper on "Bacteriology for Pharmacists," illustrated by micro-photographs and practical demonstrations.

Formaldehyde is advocated by Dr. Wyatt Johnston, Bacteriologist to the Board of Health of the Province of Quebec, in the *British Medical Journal* of December 25, as an effective agent in household disinfection. The desiderata in room disinfection consist in efficiency under known conditions, freedom from injury of the goods treated, and the relative cost, which must include not only the direct outlay for the disinfection itself, but the cost of apparatus, means of transportation, etc. All these points are in favour of formaldehyde. The best kind of apparatus for room disinfection is said to be a kind of regenerator made in America, in which the formaldehyde is liberated under pressure, as a gas, from a mixture of equal parts of formalin (the usual 40 per cent. solution) and 20 per cent. calcium chloride solution. Formaldehyde lamps, in which methyl alcohol is used, have not proved satisfactory, as a quantity of the methyl alcohol vapour passes off unconverted. It is important to appreciate the necessity that to obtain successful disinfection with formaldehyde it is advisable to use larger quantities of formaldehyde than is generally recommended, as the results only became satisfactory when using 1 lb. of formaldehyde per 1000 cubic feet, and on prolonging the time of generating the vapour to from one to three hours. As a disinfectant solution for spray work a half or one per cent. solution seems sufficient for the purpose.

The School of Pharmacy Students' Association is again to be favoured by Professor Collie, F.R.S., who is announced to give an account of his mountaineering experiences in the Canadian Rockies to the members, on Friday, February 4. Those who were fortunate enough to hear Professor Collie's account of his experiences in the Himalayas will not need a very pressing invitation to be present on this occasion. Nevertheless, a good audience is desired, and members may obtain tickets for their friends on application to the Secretaries of the Association, 17, Bloomsbury Square, London, W.C.

The Proposed Teaching University of London seems indeed in a fair way to become a reality, as the Duke of Devonshire, speaking on behalf of the Government, has expressed a strong desire to effect the desired reconstitution of the old University. He was addressing a large deputation, including the Vice-Chancellor of the University, the Presidents of the Royal Colleges of Physicians and Surgeons, the President of the Pharmaceutical Society, and representatives of the leading colleges and medical schools, who had waited upon him to urge the desirability of bringing the question within the range of practical politics. The Government was stated to be fully impressed with the importance of the subject, and the members of the deputation were thanked for the trouble they had taken in again appearing to urge the necessity for establishing a real and genuine teaching university. The Duke of Devonshire also said that both political parties are fully in accord as to the desirability of establishing a teaching university in London, and that he would be able to assure his colleagues that the measure asked for would involve a very small sacrifice of time in the future. The delay which had taken place was not lost, because it had served to bring about a compromise which had substantially removed any serious opposition to the measure. With regard to the great work done by the London University in the past, there should be no change made in its constitution which would debar or incapacitate it from continuing the work already well done. Matters were now so advanced that he believed it was in the power of the Senate of the London University to present to the Government a scheme, and ask for a charter that would meet all requirements.

THE WORLD OF PHARMACY.

PHARMACEUTICAL SOCIETY.

EVENING MEETING IN EDINBURGH.

The third evening meeting of the session was held in the Society's Hall, 36, York Place, Edinburgh, on Wednesday, January 19, at 8.30, Mr. J. Laidlaw Ewing in the chair. The minutes of last meeting were read and approved, and an apology for absence was intimated from Mr. Alexander Davidson, Montrose. —A paper was then read by Mr. David Storrar on—

Pharmaceutical Ethics.

This is printed in full at page 94. At the conclusion of the paper, the Chairman said they had all listened with pleasure to Mr. Storrar's wise remarks, and he would be glad to hear what any gentlemen in the meeting had to say.—Mr. David McLaren, in moving a hearty vote of thanks to Mr. Storrar for his paper, said he was sure that every one of its propositions would be adhered to by every respectable chemist. Referring to the latter part, he said he did not think it could be too strongly emphasised. If any scheme deserved the support of every chemist and druggist it was the Benevolent Fund of the Society. There were difficulties which certain of their brethren had to contend with in different parts of the country. In Edinburgh they were peculiarly situated. There medical men did no dispensing at all; but in many outlying districts there were men quite as able as themselves to excel in the race of life who were prevented from doing so owing to their surrounding circumstances. They were in duty bound—as trade unionists should—to join together to help each other when a little difficulty occurred, and the only way they could do that was by supporting the Benevolent Fund as far as their means would permit them.—Mr. J. Anderson Russell (Glasgow), in seconding the motion, said they might listen to a paper such as this, or consider the subject of it by themselves, and say these things were all true, but how were they to maintain them? It appeared to him that associations, or at least committees of associations, might do much to improve the moral tone of the business conducted by pharmacists in their respective districts. They could not compel individuals outside the Association or within the Association to act in accordance with their ideals of right and wrong, but much could be done by laying down rules, non-compliance with which might be considered a breach of the ethical code. He thought it would be inadvisable to lay down very strict rules at the beginning, because they wished to get a very large percentage, if not all the members, to comply with them. When they considered

The Various Sides to the Faults

that had been referred to, one had a difficulty at times in saying whether individuals were more sinned against than sinning. They had an outcry in Glasgow and the West of England against medical men dispensing and chemists prescribing. The medical men had their difficulties to avoid just as the chemists had. Beyond the force which local associations might give to pharmaceutical ethics, he thought the chemists might give it a start, and give the local associations a big lift by approaching the Council of the Society and indicating their feelings on this matter. He thought, if it were permissible, they should send up a resolution to the Council expressing their opinion that it should have disciplinary powers given to it to strike names off the Register in cases of default. While the power at present existed of the Council striking names off from membership the influence bearing upon it would always be towards not using that power, but of keeping up the membership as far as it possibly could.—Mr. J. Rutherford Hill said it seemed to him that while, as Mr. Storrar had already said, the subject of pharmaceutical ethics had been very ably treated by Mr. Ince somewhere about thirty years ago, it was a subject that pre-eminently deserved their close attention at the present time. Mr. Storrar referred to the fact that the main difficulties they had to contend with in regard to trade matters seemed to emerge in connection with what is called the co-operative movement. Now while there were many things in the co-operative movement which they might strongly disapprove of, they were forced to recognise that it was only part of a great social revolution that

was going on all over the world; and it seemed to him that any attempt to get over the difficulty by stereotyping the existing conditions was bound to fail, and that in any readjustment that might take place a knowledge and grasp of the fundamental principles of ethics was of first importance. In that connection it occurred to him to say that for the pharmacist there were two lines of policy which for him would inevitably secure a future. These lines of policy were, first of all, that he should maintain

A High Standard of Educational Sufficiency,

and alongside of that he should also maintain a high standard of professional efficiency. If these were combined, no matter what readjustment might have to be made in the future, there would always be a place and always a remuneration for the pharmacist who was educated and trained for the work he had to do. With regard to dispensing by doctors, he thought that in cities at least they had a very decided grievance when doctors opened retail pharmacies for dispensing medicines not under their own personal charge, but under the charge of assistants, who were in most instances unqualified. But even when they were qualified he thought they had a grievance which ought to receive the attention of the Legislature. They perfectly recognised that a physician ought to have the power to dispense his own medicines to his own patients if he saw fit, but when he opened a pharmacy and conducted a retail business that was wholly outside his professional rights. Another point that occurred to him was that, as Mr. Storrar said, the dispensing of drugs was a professional art. The selling was a trade, but to dispense was a professional art, and there was much in thus being specially trained in having passed a special examination and received a certificate of competency for that work. And yet, strange to say, that professional art was not limited to the men who were trained for doing it, but any man might dispense drugs so long as he did not dispense the few articles included in the Poisons Schedule. It was very strange that in a matter of this kind Ireland, which was often said to be behind them, was in front of them in that department, because in Ireland the dispensing of physicians' prescriptions was absolutely restricted to the hands of trained chemists. That was a matter which ought to receive attention from the Legislature at no distant date. He hoped it was one of the subjects in the future of pharmaceutical politics. Mr. Hill concluded by referring to the value of Mr. Storrar's paper, which was enhanced by the fact that it came with the immense advantage of thirty-five years' experience.—The Chairman said he was sure the vote of thanks would be very cordially adopted. There was only one remark he would like to make, and that was to the remuneration that the qualified pharmacist ought to expect for dispensing prescriptions. He wished to emphasise that point. He thought they too often lost sight of it, and that they did not charge enough for their skill.

The Question of Prices

was one about which he had probably as much experience as any man in the room. He thought Mr. Ince, who had been referred to, said it was a very difficult thing to arrange prices in a community, because environment had to be taken into consideration in every case. There was also the fact that they had to deal with men who had very small businesses, and those also who had large ones, and while, on the one hand, the man with the small business perhaps in a poor locality had to charge prices which were more, perhaps, than he ought to expect, on the other hand, the freedom of the larger house was tied too much. That was his experience in former days, and he always tried to emphasise the fact that while they charged—and he thought rightly charged—for dispensing because there was a certain amount of professional skill, they should be as moderate as they could in serving the public with drugs. As to the question of medical men and their position, he asked them to remember that the teaching of medical men was very much changed within his time. A great deal of the practice of medical men prescribing proprietary medicines was due to the fact of their insufficient acquaintance with materia medica. He hoped the teachers of materia medica and therapeutics in their colleges would pay more attention to that point in future. They often found medical men prescribing in a way that was no credit to them. Another question touched upon by Mr. Storrar was social friendship, and he was glad to say that for the last two years in Edinburgh social friendship had increased, partly by means of their meetings there, and in great measure by those amusements which brought them together and showed them what mettle they were made of, and that one man was not better than another. In regard to the Benevolent Fund, he was glad to say that in Edinburgh they had set a very good example in the Jubilee year. He hoped the impetus thus given to the Benevolent Fund in Edinburgh would be maintained.—The motion was adopted, and Mr. Storrar said he was very much indebted to them for the kind reception they had given to his remarks.

Donations to the Museum.

The Assistant Secretary directed attention to the following donations:—1. Specimens of hydrobromide of emetine and hydrochloride of cephaeline, presented to the Museum by Mr. Thomas Whiffen, Battersea, London. Mr. Whiffen wrote saying he intended to introduce the salts of these alkaloids to commerce, and the specimens sent represented the produce of one pound of Carthagena ipecacuanha root and one pound of Rio ipecacuanha root respectively. Carthagena root was found to yield 1·1 per cent. of pure emetine and 1·2 per cent. of pure cephaeline, and the product of one pound of the root was 113 grains of emetine hydrobromide and 110 grains of cephaeline hydrochloride. Rio root was found to yield 1·8 per cent. of pure emetine and 0·2 per cent. of pure cephaeline, and the product of one pound of the root was 185 grains of emetine hydrobromide and 18 grains of cephaeline hydrochloride. 2. A set of autometric stoppers graduated in cubic centimetres and also in minims and grain measures, and a set of thermo-hydrometers and a thermo-urinometer, presented by Fletcher, Fletcher and Co., of London, through Mr. Alexander Coats. These had been sent on reading the paper on "The Metric System in Prescriptions," by Dr. Dewar and Mr. Jack, and the discussion thereon, at the last evening meeting, the autometric stopper pipettes being well adapted for use in the way suggested in the paper. At the close of the meeting, the Assistant Secretary exhibited a tube of argon and a tube of helium, kindly lent by Professor J. Norman Collie, F.R.S., London. By means of an induction coil and spectroscope, the distinctive spectra of the two elements were shown, and in the case of argon, the change from purple to blue was shown by introducing a Leyden jar into the circuit.—On the motion of the Chairman, cordial votes of thanks were awarded to the donors of specimens and to Professor Norman Collie.—The meeting then closed.

The Pharmacy Acts Amendment Bill.

Subsequently a special general meeting of registered chemists and pharmaceutical students was held for the purpose of considering the Bill drafted by the Council of the Pharmaceutical Society to amend the Pharmacy Acts. On the motion of Mr. D. Storrar, Mr. J. Laidlaw Ewing again occupied the chair.—The Chairman stated the object of the meeting, after which it was agreed to hold the Draft Bill as read, and the Chairman called on Mr. C. F. Henry to propose the resolution of which he had given notice:—

> That this meeting of registered chemists and pharmaceutical students, having considered the Pharmacy Acts Amendment Bill drafted by the Council, cordially approves of the same, and especially recognises the prudence and wisdom, at the present time, of limiting the scope of the Bill to urgent and non-contentious matters relating to the internal organisation and consolidation of the Pharmaceutical Society. The meeting further pledges itself to use every legitimate means to aid the Council in securing its speedy enactment.

Mr. Henry, in submitting the motion, which he said he had much pleasure in proposing, indicated the main features of the Bill. He said it was intended first of all to alter the title of student-apprenprentice to that of student-associate in the case of those who had passed the Preliminary examination and joined the Society. In the second place, it was intended to open the doors of membership of the Society to all registered men. The remaining parts of the Bill he was sure would meet with unanimous approval. They were, that instead of the antiquated system of part of the Council retiring by ballot, a third of the members should retire, namely: The seven who had sat longest on the Council; and there was also provision for receiving voting papers in London up to the last moment. In regard to the alteration of the title to student-associate he thought that would commend itself to everyone. At present, as was pointed out by the President very distinctly, there was no means of differentiating between those students who had passed the Preliminary examination and who did not join the Society and those who did join the Society. In future, it was proposed that those who joined the Society after passing the Preliminary examination should have the title of student-associate. He had no doubt that this would have a good effect upon young men, and was a step calculated to strengthen the Society, because

the time when students were looking forward to a pharmaceutical career was when they could best be got hold of. If they did not join at that time it would probably be difficult to get them to join it in later years. Coming to

The Most Important Part of the Bill,

and the one about which there had been some controversy —the opening of the doors of membership to all registered men—he urged that this was a very advisable step, first of all, because it was indicated in the Charter of the Society. Anyone who had studied the Charter would see that it was originally intended that there should only be two grades in the Society—Members and Associates. It would also be observed that the Associates were not to be registered men. The original intention of the Charter had not been carried out. Why he did not know. In the Act of 1868, and also in the Bye-laws, the present complicated system was introduced, namely, a number of grades which were, as they knew, members of the Society, chemists and druggists in business in 1868, associates in business, and associates not in business, men who became associates, the Modified examination, and students. The object of the Bill was to do away with these grades, and to consolidate the Society by forming two grades only, in fact, to carry out the original intention of the Charter. In answer to those who thought that this was taking away from the title of pharmaceutical chemist by introducing those who were not pharmaceutical chemists into membership of the Society, he would point out, first of all, that membership was not really a qualification, and a large number of the present members of the Society were not pharmaceutical chemists. He gave some very interesting figures, showing that at the end of 1896 out of 2159 members of the Society 1584 were pharmaceutical chemists and 575 chemists and druggists, so that the members of the Pharmaceutical Society included 26 per cent. who were not pharmaceutical chemists, or if they put it in another way, for every three pharmaceutical chemists there was one who was not a pharmaceutical chemist. There was nothing in the nature of the examination which qualified a person to be a member of the Society. There was nothing more in the Major than in the Minor examination to qualify a person to be a member, and the fact of passing only the Minor examination should not therefore debar a person from becoming a member. Again, he would urge that this particular part of the Bill should be allowed to pass, because sooner or later the passing of such a Bill would be

An Absolute Necessity.

In the *Pharmaceutical Journal* of January 1 there were some very interesting figures given, which showed that in 1876 there were 2062 pharmaceutical chemists who were members of the Society. In 1896 they had decreased to 1584. It was therefore only a question of arithmetic to find out at what time in the future there might be no pharmaceutical chemist members at all. Then, again, there were 839 chemist and druggist members in 1876, and in 1896 they had decreased to 574. In the course of nature the chemist and druggist members who were in business in 1868 and who were admitted solely on that account, although they had not passed any examination, must become extinct; therefore, if such a Bill as this did not pass, in course of time there would be no Council, because there would be no members. In 1876 there were 1520 associates of the Society; in 1896 they had increased to 2666, which showed that although pharmaceutical chemists and chemists and druggists in business in 1868 were decreasing, the associates of the Society were increasing in a marked degree. In regard to the Major examination, there were fewer passing now than formerly. That was another argument why the Society should be consolidated and increased in numbers by admitting all persons legally qualified to practise pharmacy. There was some reference in the resolution to recognising the prudence and wisdom at the present time of limiting the scope of the Bill to urgent and non-contentious matters. That would be obvious to them all. If the Council proposed to put anything else into the Bill there might be such opposition that it would be at once swamped, and, as had happened over and over again, the Bill would come to nothing. He thought the Council was wise in going on with one thing at a time and in consolidating the membership of the Society, so that on some future occasion it could move in other matters. At present if a Bill was proposed, and the Government were to inquire into it, the question would be asked how many members there were in the Society, and what proportion these in the Society bore to those not in the Society, and they could only be told that there were something like 5000 connected with the Society out of about 15,000 registered persons. The Government would at once tell them that they could not go forward as representing the body of chemists, because they were in a hopeless minority. The object of the Bill was to do away with that state of things and give the Council some support—some solid basis on which to go in its future efforts for the benefit of the trade.—Mr. T. Dunlop, pharmaceutical chemist, Glasgow, who seconded the resolution, said it was not a new thing for him to advocate

The Membership of Chemists and Druggists.

Three or four years ago, at a meeting of the Glasgow and West of Scotland Pharmaceutical Association, he moved a similar resolution, and since then his opinion had remained unchanged, and he thought the action of the Council in promoting this Bill should meet with the support of all pharmaceutical chemists. He referred to the correspondence which had recently appeared in the *Pharmaceutical Journal*, and said he had noted some of the objections raised on the pharmaceutical side, and the pleas put forward by those who had the Minor certificates. Some chemists and druggists based their claim on right and justice. Of that he disapproved, because, as matters stood, he scarcely thought that any man was entitled to claim as a matter of right and justice a thing to which, as the law at present stood, he had access through the Major examination. There was also the question of the education and status of the men of to-day as compared with the men of many years ago—the Major men of the past and the Minor men of the present. But the chemists and druggists who advocated the extension of the membership to all on the Register on that ground must not forget that if the Minor examination had been raised, so also the Major had been made more thorough than it used to be. As regarded the pharmaceutical chemists, objection was taken to the Bill on the ground that it was like taking away their birthright, while others said the one thing that induced them to go forward for the Major examination was that they might become members of the Pharmaceutical Society. He was sorry to think that men should go forward to the higher examination in that spirit. He looked upon the higher qualification as being an acquisition in itself worth working for, as it gave its possessor an advantage over those with the Minor qualification, and fitted him better for the discharge of his duties to his fellow pharmacists and the public. Personally speaking, he said the Bill had his entire approval. Since he passed the Major examination twenty years ago he had been connected with the Pharmaceutical Society, and he had always felt it was good for him to be so. It had been helpful to himself, and had given him better views of pharmacy than he could have had by remaining outside.

The Preliminary Examination

was to be raised also, so that the Society had been raising the status as regarded education, examination, and fees, and the time had fully come when he thought they would be justified in giving a *quid pro quo*, and in that way induce all those who were registered to become connected with the Society. It was expedient that the Bill should pass, and he had not a shadow of doubt that it would tend to the consolidation of the Society.—Mr. G. Coull did not believe that even if the door was really opened it would do the good which the Council and those who were promoting the Bill thought it would do. In 1868, the Society opened its doors as wide as possible and no advantage was taken of it. He did not agree with the terms of the Bill, but he would not move an amendment.—Mr. Nesbit said Mr. Henry's remarks were not consonant with his knowledge of the case. The Society was altogether a voluntary body prior to 1868, with two grades—pharmaceutical chemists and associates. He thought Mr. Henry told them there were no associates, but there were associates till they commenced business in connection with the Society. When a Bill was promoted at that time by the Society, its terms were not satisfactory, and the Bill was opposed in the country and in Parliament. The Society was not successful in getting what was proposed, and it made the best terms it could. And the terms were that those who were in business were to be members of the Society, but persons not in business, and those who afterwards passed the examination, were not to become members, because the Council anticipated that those men would go on to the higher or Major examination, and become members of the Society in that way. But in that the Council was disappointed, and now it is proposed to open the

doors to those who pass the Minor examination and are qualified to perform their duties. He thought the Council was quite right. Any Bill that might hereafter be presented to Parliament would have a much better chance of passing, because then the Society would have a larger number of members to support it.—Mr. Archibald Currie said he could not agree entirely with the first proposal in the resolution, to change students and apprentices to student-associates. It would in his opinion make them appear ridiculous in the eyes of other bodies. With regard to the second part—to allow those who had passed the Minor examination to become members—he supported that on one ground—

The Consolidation of the Society.

The legal qualification should, he thought, become the qualification for the membership of the Society. Those who were qualified to conduct the business were, he thought, qualified to be members of the Society which regulated the conduct of their business.—Mr. J. Anderson Russell said that every chemist in Glasgow connected with the Association approved of the Bill so far as he was aware. The subject had been again and again before the Association and had always been approved of. It would, he said, be interesting to know the number of students and apprentices who passed the Preliminary examination and joined the Society, compared with those who did not. He was afraid that not many joined the Society. He thought all those who joined became associates. The only advantage he could see to be gained by this Bill was that the Minor men in business were to be elected members of the Society.—Mr. J. T. Coats said he did not think it was necessary to pass a Bill only to get this ethereal title of M.P.S. He asked if a chemist and druggist was not a member of the Society in virtue of being in business in 1868.—Mr. J. Rutherford Hill replied in the negative.—Mr. Coats said he did not wish to contradict Mr. Hill, but he thought he might have a seat on the Council and might become president.—Mr. Hill said he could never be anything but an associate (*sic*).*—Mr. Coats said he believed the proposals in the Bill would have the effect of consolidating the Society, and on that ground he would support the resolution.—Mr. Rutherford Hill said he thought Mr. Currie grasped the kernel of the resolution—that the object of the Bill was the consolidation of the Society, and that was the internal organisation of the Society. It might or might not result in an acquisition to the membership. The proposition just now was not primarily a proposal to increase the membership. It was a remedy of a practical difficulty that existed, and was pressing and urgent, and that practical difficulty was that no person who had passed the Minor examination, and was a chemist and druggist in virtue of that, could have a seat on the Council or a direct voice in the management of the Society. The practical situation was that

The British Pharmacist of To-Day

was the chemist and druggist, and those who had passed the Minor examination ought to-day to represent the pharmacists of Great Britain. A chemist and druggist might be President of the British Pharmaceutical Conference; he might be the president of any local association that might be formed in any part of Great Britain, or he might be chairman of the Executive of the North British Branch. They had illustrations of the fact that among the ranks of those who belonged to the class of chemists and druggists and were associates in business, there was a large number of men whose services would be available and of great practical value to the Pharmaceutical Society. As far as he could make out, the idea of the Bill was to take away everything that prevented registered men from meeting on the same platform in the Society. At present they had four grades—pharmaceutical chemist members, chemist and druggist members (of which there were 4000 eligible persons who had passed no examination whatever, and these 4000 people were fully competent to be full members of the Society and members of Council); there were associates in business who were members in everything except that they could not call themselves members and could not have a seat on the Council; and there were associates not in business. It had been convincingly proved again and again that this element of distinction among registered men was an obstacle and a difficulty. It would be for the advantage of the whole craft, whose interests were one, if they could meet on the same platform as members of the Society. As to the Major men, he did not think their interests were being sacrificed at all. They would always have that position, and hold their own and come to the top if they were otherwise men of sound sense and common prudence. Their only distinguishing mark was their superior education and training.

Membership is not a Distinguishing Mark.

Those might be members who had no qualification whatever. It was on that ground alone that he strongly supported this proposition as one that was wise, urgent, and desirable.—Mr. Coull asked if there were 4000 men when the door was open, why did they not come in?—Mr. Hill said it was not a question of opening the door but of arranging the men already inside the house. It might be that by and by, others might come in, but the difficulty was just now the adjustment of the membership of the Society. The persons inside seemed to be badly arranged, and might be made much better.—Mr. Peter Boa said he should not propose an amendment, but he did not wish to sit still and say nothing in case he might be misunderstood. So far as he understood this Bill, it was simply a movement towards preserving the membership of the Society, which, without some such Bill, would very soon be non-existent. According to Mr. Henry, Major men were passing in such a small proportion that very soon they would be out of existence. Then the men who were in business before the passing of the Pharmacy Act would in course of Nature very soon be all removed. If the membership of the Society was to be maintained he did not see that it could be done in any other way than by a Bill such as this. He thought there had been a certain want of straightforwardness in the promulgation of this Bill. It would have been quite enough for the Council to say that the Bill was necessary on these grounds without taking so much trouble to say there was not much difference between the Major and the Minor qualifications and that no interests were being sacrificed, because that was not the case. A man at present eligible for membership might regard that privilege as a right, and he thought he was perfectly right in regarding it as such, although he did not pass any examination. Still they were the men who were at the forming of the Society into a corporate body, and they might say that as the original members, not of the Society, but of the chemist and druggist body, they were quite entitled to that privilege. The Major men maintain these privileges by taking the superior qualification. Personally he did not object to the Bill—to this clause of the Bill or any part of it—because it was reasonable, and he did not think it at all premature. He would only say, further, that although he did not object to this taking away of what might be regarded as a privilege, he was quite alive to any movement that might be made in any further direction towards the assumption of privileges which had been gained in a legal way.—Mr. Dott said he approved generally of the object of the Bill to consolidate and

Improve the Position of the Society.

He suggested that it might be just as well, when they were going to Parliament, to accept one title and become pharmaceutical chemists. He agreed with the objection to the term student-associate. Apprentice was a very good word.—Mr. D. McLaren entirely supported the Bill. He said he had a decided grievance, because unless he began at the A B C and passed through the Preliminary, the Minor, and the Major examination, he could not be a pharmaceutical chemist. Would it not be a wise step of the Society to make every man in business pay a fee once a year?—Mr. Henry, in reply, said he seemed to have been misunderstood, and he thought Mr. Nesbit and he were in substantial agreement. If there had been anything in the Bill to touch the title of pharmaceutical chemist he would have most strenuously opposed it. The man who passed the Major examination was entitled to the full credit for what he had expended in brains and time in acquiring it. To offer it to those who had not done the same thing would be an act of injustice. It was sometimes said that this Bill would not have much effect. He thought it would have a little effect. It was the experience of some of them who went to men and asked them to join the Society as associates in business. They generally asked "What am I to get?" and the reply was they would get the title A.P.S. He was one of those who would as soon put A.P.S. after his name. He did not think matters would be improved until associates in business and associates not in business were made members. He appealed to all Major men not to be behind their fathers and grandfathers, who admitted all chemists and druggists in business in 1868,

* There appears to be some confusion in the report. A chemist and druggist who was in business as such prior to August 1, 1868, is not only eligible as a member of the Society, but he may also be elected on the Council and even as President. [Ed., *P.J.*]

although they never passed an examination, and to admit to membership all those who had passed the examination.—On being put to the meeting by the Chairman, the resolution was declared carried, Mr. Coull dissenting.—Mr. Lunan pointed out that Mr. Coull was a consenting party to the carrying of this proposal in the Executive.—Mr. J. Anderson Russell then called attention to the last sentence of the resolution, and moved the appointment of a representative committee to take the steps necessary to carry out the resolution. The Bill was not one which would bring powerful opposition interests in contact with it. They should be unanimous and show how they could best organise their forces so that they could press Parliament at the critical moment. He suggested that

A Representative Committee

should be appointed which could divide Scotland and appeal directly to the members representing their respective constituencies in Parliament. That might be done over and above what representations might be made directly from the Council of the Society or the Executive in Edinburgh or by local associations.—Mr. T. Coats asked if the motion was carried, as he intended to move an amendment with reference to the term "student-associate."—The Chairman said the resolution had been already adopted.—Mr. McLaren said he would second Mr. Russell's motion on condition that he handed the matter over to the Executive.—Mr. Russell said he would prefer to put it as individuals, and not as an Executive.—Mr. Hill said he did not think it would be wise to appoint a committee representative of the meeting, because they were all connected with one or other of the local associations already, and they would be starting another organisation, which would be crossing the lines of the different organisations already in existence. He assured Mr. Russell that means were being taken to approach all the Scottish members of Parliament with regard to the Bill.—Mr. Storrar said it might meet Mr. Russell's purpose that this meeting should recommend local associations to appoint a small committee to look after the promotion of this Bill. If they let the Bill alone, it would be passed. What they had to do was to try and prevent petitions against the Bill from being presented to Parliament.—The subject then dropped, and the meeting terminated with a vote of thanks to the Chairman.

PLYMOUTH, DEVONPORT, STONEHOUSE AND DISTRICT CHEMISTS' ASSOCIATION.

The general quarterly meeting of the above Association was held on Wednesday, January 19, Mr. Jas. Cocks, President, in the chair, others present including Messrs. C. J. Park, J. H. Bailey, Condy U'Ren, J. R. Johnson, G. Breeze, W. H. Woods, F. W. Hunt, H. C. Cantle, A. D. Breeze, and F. A. Roper. As it had been decided to pay off three of the furnishing shares, they were balloted for, and fell to the share of Messrs. J. Barge, A. D. Breeze, and W. Mathew.

Educational Report.

Mr. Johnson (Secretary of the Educational Committee) read his report. The Committee regretted that full advantage was not being taken by the students of attending these classes. It had been decided to expend the generous gift of Mr. Jas. Maurice in purchasing a lantern and accessories for lecture purposes. A scheme had also been formulated to approach the local technical schools with regard to establishing classes for a full Minor course.

Trade Section.

Mr. Park (President of the Trade Section Committee) read the following report of this section :—

"In presenting the report of the Committee of the Trade Section, I am very pleased to be able to state that this section has made very marked progress during the past year, and has been the means, I trust, not only of strengthening the Local Association in regard to its membership, but has enabled the members of this section to purchase large quantities of goods, more especially proprietary articles, at very advantageous terms, without the necessity of overstocking themselves.

"The attention of the Committee has been more particularly directed to the purchase of proprietary articles, first, because those articles are the ones that are liable to such excessive competition; secondly, because they are more easily distributed and parcels divided up than would purchases of drugs, chemicals, or sundries. As Chairman of this Committee I see no reason why members should not further benefit themselves pecuniarily by extending their operations to the purchase of original parcels of drugs, chemicals, etc., in the immediate future.

"Speaking approximately, the amount of purchases by members of the trade section in a co-operative sense during 1897 has been £1000. This estimate is really under the actual amount, but owing to want of time I have been unable to get returns from every member. Whilst acknowledging the greater difficulty in arranging for the purchase and distribution of goods other than proprietaries, many members have seen their way clear to co-operate in this direction with considerable pecuniary benefit to themselves without overstocking.

"As Chairman of this section I am pleased to report that this community of monetary interests has, in my opinion had a beneficial and strengthening effect on our Local Association, and tends to the recognition of that community of interests that has been the object of this Association from its commencement.

"Good work has also been done by this section by writing to manufacturers and wholesalers, urging them to join the P.A.T.A. and place their articles on the same, thus assuring the retailer a legitimate profit for handling their goods. Replies to some of the communications have not proved satisfactory from the retailer's point of view, and the question arises whether active measures should not be taken by the retail trade to discourage the sale of those articles which do not give a fair margin of profit.

"In conclusion, I wish to point out to members of this section in particular that in order to make this section a thorough success, mutual co-operation in every way is essential, that it is expected that every member will undertake to purchase and be ready to distribute to other members one or more articles, otherwise they would be reaping the benefit of the other members' time, trouble, and capital.

"I beg to tender my personal thanks to Mr. Condy U'Ren for the very able assistance he has rendered me as Chairman of this section during the past year, and I feel sure that every member of this section feels indebted to him for the large amount of time and trouble he devoted at the starting of this section to make it a success, and I feel sure that in Mr. F. Roper we shall find a worthy successor."

Mr. Park then proposed, and Mr. Turney seconded the proposal, that the following resolution be sent to the Sanitas Co. :—

> That this Association, numbering sixty-three chemists in business, greatly regrets that the proprietors of Sanitas appear to have mistaken the opinion of chemists with regard to their preparations. The fact of so large a number, 3000 belonging to the P.A.T.A., and its Secretary and the Secretaries of various local associations having communicated with them, would render it almost superfluous for individuals to communicate their views.
>
> That this Association begs to point out that the 1s. Sanitas Fluid is listed and sold in this town at 9½*d* per bottle by the Army and Navy Stores. That its members regard it as folly on the part of the Sanitas Company to recommend the endeavour to make mutual agreements locally, as this has been tried and found unworkable.

The proposition was unanimously agreed to.

BRITISH PHARMACEUTICAL CONFERENCE, 1898.

A meeting of the Ulster Executive Committee was held in 10, Garfield Chambers, Royal Avenue, Belfast, on the 18th inst. at 11.30 a.m. There were present Mr. J. C. C. Payne, J.P. (Chairman), Dr. Fielden, Dr. Tweedie, Messrs. Saml. Gibson, J. Tate, T. N. Moffatt, J. H. Shaw, J. Guiler, S. Clothworthy, Saml. Acheson, W. J. Rankin, and R. W. McKnight. A letter of apology for non-attendance was read from Sir J. H. Haslett, M.P.—The Local Secretary read a letter from the Hon. Secs. of the Conference approving of the Local Committee's suggestion as to the date of the opening meeting of the Conference, suggestions as to entertainments, excursions, etc. Although the Secretaries to the Committee reported favourably on the progress of the Guarantee Fund, it was considered advisable to keep it still open for subscriptions, and a small committee was appointed to make a further effort to secure the amount aimed at at as early a date as possible.—The Students' Union buildings, in the grounds of the Queen's College, was considered by all a suitable place for holding the meetings. A sub-committee, consisting of the Chairman, Dr. Fielden, Dr. Tweedie, Messrs. S. Gibson and J. Tate, were appointed to wait on the College authorities to make the necessary arrangements. For an all-day excursion four excursion routes were suggested to choose from, and as it was found difficult to decide which was the most interesting, a sub-Committee was appointed to make full inquiries and report at the next meeting.—The Ulster Local Committee desire the members of the Conference to keep in mind Tuesday, August 9, for the opening

meeting, as that day has been specially fixed to give English and Scotch delegates the opportunity of crossing on Monday night, so as to avoid unnecessary waste of time—and they can assure their friends across the water that everything in their power will be done to make the visit to Belfast an interesting one.

SCHOOL OF PHARMACY STUDENTS' ASSOCIATION.

At a meeting held on January 21, Mr. W. B. Nelson in the chair, a discussion took place on

The Pharmacy Acts Amendment Bill,

when Mr. Perrédès moved, and Mr. F. A. U. Smith seconded, a resolution in favour of the Bill.—Mr. Chambers moved the following amendment, which was seconded by Mr. Morgan.

> That in the opinion of this meeting of the members of the School of Pharmacy Students' Association, Clause 3 of the proposed Pharmacy Acts Amendment Bill is inimical to the interests of the Pharmaceutical Society, and if carried into law would be calculated to lower the standard of pharmaceutical education in this country.

On moving the amendment Mr. Chambers said he had failed to find the jealousy between Major and Minor men to which some had referred. It had been said that pharmaceutical chemist, and not M.P.S., was the legal title of the Major man. Then he maintained that chemist and druggist, and not A.P.S., was the legal title of the Minor man. There was good reason for believing that the Council's principal reason for the production of this Bill was the hope that it would shortly lead to the entire abolition of the Major qualification. There would be reason in talking of perfect equality when there was a compulsory curriculum for the qualifying, and not as the President of the Society had suggested, for the optional examination. The fact that chemists and druggists eligible for membership did not join the Society clearly showed that the membership did not attract them. He asked the members in the interests of the Society and of higher education to protest against the Bill in its present form.—Mr. Wilson remarked that some might have objections to the Bill because it makes it possible for the whole Council to be composed of Minor men, but even admitting this to be a danger, if it should happen, yet what had history shown them? At the time of passing the 1868 Act, roughly about 10,000 men became chemists and druggists, eligible for membership, and therefore capable of electing seven of their number to the Council. But what had they seen? Since that Act became law at no one time had there been more than two members other than pharmaceutical chemists on the Council. Though they would share membership with all registered men, yet they would still have the title "pharmaceutical chemist," a title which they certainly ought to stick to, and one which at present there was, he thought, no fear of losing. The great aim of the Bill was consolidation of the Society, and all proposals for new grades in the way of fellowships and such like were entirely at variance with this principle of the Bill, as they would only produce more dissension in their ranks. He heartily supported the resolution proposed by Mr. Perrédès, and only hoped that if the Bill became law it might lead to that union and good-fellowship which they all desired.—Mr. Smith suggested that they should not dwell on fancied injustice to Major men, but reflect that the one main object for the existence of the Society was to join those engaged in pharmacy into one united whole. The fact that 70 per cent. of the pharmaceutical chemists subscribed to the Society, whilst only 20 per cent. of the chemists and druggists did so, showed that pharmacists were not a united body, and that membership offered a greater inducement for joining the Society than did Associateship. Some of their most gifted men were ineligible for the Council under the present condition of things, and the new Bill would remedy this.—Mr. Dewhirst agreed with previous speakers—supporters of the Bill—that the passing of the Bill would not bring in many more members, since only a small proportion of those chemists and druggists who could become members, did so, and that, therefore, its main object, consolidation, would be defeated. This "small and non-contentious" measure had already received a good deal of opposition from provincial associations. In the first place the designation "student-associate" was a curious glorification of the humble apprentice who knew little or nothing of pharmacy or science till a few months before entering for his Minor. Certain members of the Council had shown that it was their ultimate intention to have only one qualifying examination giving the title of pharmaceutical chemist. In this case it seemed hardly necessary for students to do more than pass the Minor now, as in due course they would all be made pharmaceutical chemists. Surely it was only fair that men who had kept up the tone of pharmaceutical education by passing the highest examination possible, instead of scraping through the Minor after several trials, should be distinguished by some such name as "Fellow," which was neither "tinsel" nor a "title." It was very just that Minor men should be eligible for membership, and that they should have ten instead of seven seats on the Council, but that the rest should be assured to the more highly educated men.—Mr. Matthews said that it was only a matter of common justice for all who passed the qualifying examination and paid the maximum subscription to be admitted to the membership of the Society. The Bill had his entire and hearty support.—Mr. Morgan contended that M.P.S. was associated by the public with the title pharmaceutical chemist. He considered that if such a body as the Royal College of Science granted the title of associate after three years' study, the chemist and druggist need not be ashamed of it. If a Council of Minor men were able to appoint and be appointed members of the Board of Examiners, the Major examination might be in danger. He did not think that for the sake of getting a few more members the Council should offend their loyal Major men.—Mr. Lescher, speaking in favour of the Bill, said it would remove the present anomaly and give all registered men direct representation on the Council. He considered this not a concession by Major men, but a reparation for past wrongs. All had the same interests at stake and all should have equal representation. He was afraid the Bill would not accomplish the bringing of many more members into the fold, as it scarcely went far enough, and only touched the fringe of an important subject.—Mr. Perrédès thought the draft Bill would prove a most useful measure. The fear that in the event of the Bill becoming law the Council of the Pharmaceutical Society might become composed entirely of chemists and druggists was groundless. As things are, if all who are entitled to become members were to join the Society they would outnumber the pharmaceutical chemists connected therewith, but though there might be seven chemist and druggist members on the Council, there are actually only three. The advantage to the Society of giving full membership to Minor men seemed too obvious to require explanation. If the chemist and druggist possessed the right of becoming a member he could become part and parcel of the Society, and if things did not work to his liking he would only have himself to blame for the neglect of his own affairs. The objection that Minor men should not be empowered to decide what Major men should or should not be examined in was met by the arrangements which obtain at the University of London, where B.A.'s, B.Sc.'s, etc., as well as those who hold a higher degree, have the right, under certain conditions, to become members of Convocation and have a voice in the administration of the affairs of that learned body. The suggestion had been made that the name "associate" implied as full qualification as in the case of the Royal College of Science. but whilst the associateship of the Royal College of Science is a very good qualification, the associateship of the Pharmaceutical Society is not a qualification at all. It is only the possession of the legal title of "chemist and druggist," which is a true qualification. Neither is membership of the Society in any sense a qualification. It has been proposed by those in authority that in a possibly near future there might only be one qualification in pharmacy. There is already only one legal qualification, and if that should be obtained on the results of an examination representing the present Minor and Major rolled into one, so much the better. This very course has suggested itself to their French neighbours, who propose to adopt the one qualification of "pharmacien de première classe" alone, and it seems to have been appreciated by them at its just value. Finally, it would be an anomalous thing to give the title of Fellow to Major men, inasmuch as only universities, colleges, and institutes grant the fellowship after examination following a prescribed curriculum of study. Most, if not all, societies which grant fellowships do so on purely honorary grounds, and it would be following a very poor precedent for the Pharmaceutical Society to do the same, or to inaugurate a system of granting fellowships on the basis of examination results only.—Mr. Chambers having replied to the points raised, the amendment was put to the meeting and carried, thirty-one voting for, and thirteen against.—Mr. Matthews proposed that the last clause of the amendment be omitted, but, on a division, only obtained three supporters.—The original amendment was then put to the meeting as a substantive motion, and carried by a large majority. The meeting then adjourned.

CHEMISTS' ASSISTANTS' ASSOCIATION.

A most successful musical and social evening was held on Thursday, January 20, at 73, Newman Street, Oxford Street, W., to inaugurate the second half of the session. The PRESIDENT, Mr. T. Morley-Taylor, on taking the chair, said he wished to call the attention of those present to that handsome piece of furniture —the chair—which was a New Year's gift to the Association from one of its oldest friends, Mr. Michael Carteighe. He was sure it would lend an added dignity to the office of its occupier, They could not look at it without thinking of its considerable intrinsic value, but he thought the donor would rather that they looked at it as a token of his sympathy with the Association's work, and as a tangible expression of his interest in the rising generation of pharmacists, which the Assóciation represented. He had great pleasure in proposing a very hearty vote of thanks to Mr. Carteighe for his generous gift.—This was seconded by Mr. J. C. Strother, and carried with acclamation. An exceptionally good programme had been arranged by Mr. Strother, to whom a cordial vote of thanks was accorded at its conclusion.

MIDLAND PHARMACEUTICAL ASSOCIATION.

The twenty-fifth annual ball of this Association was held in the Grosvenor Rooms, Grand Hotel, on Thursday, January 20. In point of numbers the attendance was not quite so good as previous years, but in all other respects the ball was a most enjoyable and successful one.—Mr. Jas. W. Gilmer contributed much to the pleasure of the company by the efficient manner in which he carried out the duties of M.C., and Mr. A. Gregory's band provided excellent music.—The PRESIDENT, Mr. F. J. Gibson (Wolverhampton), took the chair at supper, and was supported by Mr. J. Poole, Vice-President, Mr. Charles Thompson, Chairman of Committee, and other officials of the Association, together with many of the stewards.—A word of praise is due to the Hon. Sec., Mr. H. S. Shorthouse, who performed his numerous duties well, the whole arrangements being carried out in first-class style without a single hitch.

IRISH PHARMACISTS' ASSISTANTS' ASSOCIATION.

The fortnightly meeting of this Association was held on the 21st inst. at 67, Lower Mount Street. Mr. W. J. DUNWOODY, M.P.S.I., presided. The minutes of the last meeting were read and confirmed. Mr. W. M'Carthy, ex-president of the Association, wrote apologising for his inability to read his promised paper at present. He hoped to do so in the near future. Messrs. McMichael and O'Toole were elected members. The Hon. Treasurer announced that a substantial profit had accrued from the concert held on the 7th inst. in the XL Café. Mr. Turner and the various artistes who assisted at the concert were thanked for their kindness. The arrangements for holding the annual dance on the 26th inst. in the Rotunda were completed, and Messrs. Johnston and Dunwoody were appointed M.C.'s for the occasion. Messrs. Turner and Hunt consented to act as door stewards. Mr. O'Sullivan suggested that a distinctive crest or seal be adopted by the Association, which had latterly become a powerful body. He instanced the Pharmaceutical Society, the College of Surgeons, and other bodies possessing crests, and thought the Association might follow suit. The matter was noted. The remainder of the evening was devoted to a discussion on the following subject :—"Is a Pharmaceutical Training Beneficial to the Physician?" Messrs. O'Sullivan, Johnston, Turner, Dunwoody, and other members contributed to the discussion, and as a result the voice of the meeting was unanimously in the affirmative of the question.

EDINBURGH CHEMISTS' BALL.

The fifteenth annual ball under the auspices of the Edinburgh District Chemists' Trade Association took place on Thursday, January 20, 1898, in the Freemasons' Hall, George Street. There were seventy couples present. Messrs. G. H. C. Rowland and T. Jardine acted as M.C.'s, and the music was supplied by Gilchrist's band. Supper was purveyed by Messrs. Hunter and Glover in two rooms simultaneously, an arrangement that proved more satisfactory than the former plan of two consecutive suppers. —Mr. JOHN BOWMAN, President of the Trade Association, occupied the chair in one room.—Mr. RUTHERFORD HILL proposed the toast "Success to the Edinburgh Chemists' Ball," coupled with the name of Mr. Bowman, who replied.—In the other room Mr. DAVID MCLAREN, Vice-President, occupied the chair, and proposed a vote of thanks to Mr. Rea J. MacDougall, convener of the Ball Committee, to whose excellent management the entire success of the gathering was largely due.—Mr. MACDOUGALL replied.—The pleasures of the ball room were then resumed and kept up merrily till an early hour on Friday.

BRIGHTON JUNIOR ASSOCIATION OF PHARMACY.

On Wednesday, January 19, this Association held their usual fortnightly "Social" at Newburgh Hall, 31, Cannon Place, with the President (Mr. C. A. Blamey) in the chair. There was a very good attendance, and with a capital programme well sustained, a most enjoyable evening was the result. The duties of accompanist were most efficiently carried out by Mr. E. A. Hedgcock.

MANCHESTER PHARMACEUTICAL ASSOCIATION.

The complimentary dinner to the Lord Mayor of Manchester (Mr. Alderman Robert Gibson, Ph.C.), which took place at the Albion Hotel, Manchester, on Wednesday evening last, was in every respect a great success.

Alderman Robert Gibson.

The gentleman whom the Manchester Pharmaceutical Association has delighted to honour is a member of the trade whose private duties and business engagements have not been allowed to interfere with a large amount of devotion to the public service which has culminated in the mayoralty of one of the most enterprising cities in the British Empire. The Manchester pharmacists have not been behind-hand in adding their quota to the honours which have fallen so thickly upon Mr. Alderman Gibson, who has for so many years past taken so great a part in the municipal and social life of Manchester and Salford. It may interest our readers to know that Mr. Gibson was born at Carlton-upon-Trent in February, 1832, and at the age of sixteen was apprenticed to Mr. (afterwards Dr.) Pettinger, of Manchester, who had then a chemist's shop in Newark. In 1850 he came to Manchester, and was for two or three years an assistant to Messrs. Mottershead and Roberts in St. Mary's Gate, afterwards commencing business on his own account in Preston Street, Hulme. In 1867 he purchased a small building in Erskine Street, and began the business of a medicated lozenge manufacturer, which has since developed into large works and embraces a most important industry. Mr. Gibson was elected to represent St. George's Ward in the Manchester City Council in 1882, and amongst other things has done signal service on the Baths, Free Libraries, Waterworks, and Gas Committees. Mr. Gibson was for eight years a member of the Stretford Local Board, and held the position of Chairman two years, his resignation on that body being received with universal regret locally. Having in due time been elected to the dignity of an Alderman of the city, he was, in November last, unanimously elected Lord Mayor in succession to Alderman Ffoulkes Roberts, and although comparatively new to the duties of the office, he has given promise of fulfilling them in a manner which will leave nothing to be desired on the part of the citizens generally. In politics Mr. Gibson has been described as "an ardent Liberal," and there is no doubt that he has rendered yeoman service to the party in South-west Manchester, which, however, in opposition to that distinguished man of science, Sir Henry Roscoe, chose at the last election to transfer its electoral affections to the Marquis of Lorne. Socially, Mr. Gibson is exceedingly popular with all classes, and is highly respected by his masonic brethren who meet at Old Trafford. Although highly honoured by them, we believe he has not yet been accorded "provincial honours," but no doubt those will come in due course. As a churchman he acted with loyalty by appointing as his chaplain the Rev. Kenneth L. Jones, vicar of St. Bride's, Old Trafford. It may be mentioned that Mr. Gibson was an active worker in connection with the Church, and on retiring from the position of churchwarden—an office he held for a number of years —was presented with an illuminated address, expressive of the esteem and regard in which he was held by the officers and congregation.

The Dinner.

Thanks to the excellent management of Mr. Harry Kemp, the details were perfection itself, and both that gentleman and the Committee are to be sincerely congratulated on the result. The menu was exquisite, and did credit to the manager of the "Albion" (Mr. Burkhardt), being in every way calculated to maintain the reputation of this well-known house. There was also an excellently arranged programme of songs and glees carried

out by the Abbey singers—Messrs. Cuthbert Blacow, W. T. Haworth, W. H. Kershaw, and J. W. Maltby, Mr. C. Vickers acting as accompanist.—Mr. G. S. WOOLLEY, the respected President of the Association, occupied the chair, supported by the Lord Mayor, Mr. Walter Hills (President of the Pharmaceutical Society), Mr. Newsholme (Vice-President), Mr. Alderman B. Robinson, J.P., Mr. E. Evans, Junr., J.P., Dr. Symes, Dr. Paul, Professor Leech, Professor Young, Mr. Rymer Young, Mr. S. R. Atkins, J.P., Mr. J. Bain, and many other friends.

After the usual loyal toasts had been given from the chair and duly honoured, the PRESIDENT (Mr. Woolley) proposed the toast of the evening, "The Lord Mayor of Manchester," and said their congratulations must be marked with enthusiasm, seeing he was the first pharmaceutical chemist who had ever occupied the position of Lord Mayor in that or any other city in the United Kingdom. He had also been the means of introducing into Manchester a new industry. For that alone he deserved the thanks of his fellow citizens, for the man who did what he could to promote the prosperity of the city deserved well of his fellows. Their guest, in addition to minding his own business, had devoted a large and generous portion of his time to promoting the comfort and happiness of his fellow citizens. He had taken a leading part in the management of the gasworks, and succeeded their old friend, Mr. Joseph Brooks, also a pharmacist, as Chairman of the Gas Committee. In that position he had brought to bear broad-minded common sense, and his administration had been attended with success to the city. He had also had to undertake the electric installation, which had been successful and had now become a separate department. He took it that this was a record for any man to be proud of. Alderman Gibson was the type of the men who had done so much for the progress of Manchester of to-day. He hoped the Lord Mayor and his family would be spared for many years, to look back upon his year of office of Lord Mayor with pride and satisfaction.—The LORD MAYOR had a most enthusiastic reception, the company rising and cheering again and again. He said words failed him adequately to express his sense of the compliment paid to him. After fifty years' connection with the trade, it would have been impossible outside London to have got together such an assembly as that, uninfluenced as they were by motives of gain. He thought that the druggist of to-day held a far higher social position than he did fifty years ago, and that he said in the presence of the President of the Pharmaceuticel Society, to which Society it was mainly due. It had been said that chemists of to-day did not make as much money as they used to do. He disputed that altogether. There was more money made in this country than ever before, and in that the chemists and druggists participated. Of course, they had a right to grumble, as all Englishmen had, but given industry and ordinary economy, he would rather be connected with the drug trade of to-day than of fifty years ago. He was proud of his position, and he thanked them for the generosity with which they had placed upon the topmost stone of the municipal edifice that bright jewel of their affection, which would be more appreciated by him than anything which might happen to him during the year of his mayoralty.—Dr. LEECH proposed the toast of "The Pharmaceutical Society and Local Associations," and bore testimony to their usefulness generally. He urged the necessity of scientific education, and advocated that students should associate themselves with Owens College, which was the first in the Kingdom to establish a pharmaceutical school. The medical profession was rising in the estimation of the public at large, and they had to thank the Council of the Pharmaceutical Society for the help they had rendered lately in producing the Pharmacopœia. He also praised the work of local associations, which had done so much to help on this work.—The toast having been heartily drunk, Mr. WALTER HILLS (President of the Pharmaceutical Society) in responding, complimented the local associations on the work they had done. Speaking generally, the Society had done a great work in the cause of education, but he looked forward to the time when they would have a compulsory curriculum, and he thought they should encourage young men to study from the first day of their apprenticeship to the close. Although the Council had done nothing heroic during the past few years, yet it had done much for the protection of the members in a quiet way. They must remember the Council had something like a hundred cases before it in a year in which proceedings had to be taken against law breakers, and those proceedings were taken in the public interest and also in the interests, at the same time, of qualified men. In that way the Pharmaceutical Society was doing a great deal for the whole craft. They must fight against bogus companies; against the one-man company. Pharmacy, however, could not hold the position it ought in this country until they had the principal dispensing in their own hands. The Pharmacy Bill was a little baby of his own; the object of the draft Pharmacy Bill was to get more unanimity among themselves. It was to secure consolidation of the Society and to enable them to have more influence in any action they might take. It was evident, when they carefully considered the composition of the Society, that this step was very necessary, and he quoted figures showing that the membership of the Society was decreasing, which it ought not to do. The governing body ought also to have a wider representation. The Bill would be one of simplification, and he trusted they would give it their support.—Mr. NEWSHOLME also responded, and said the work of the Pharmaceutical Society was not done for the members only, but for the whole of the trade. He defended the work of the Pharmaceutical Society.—Alderman B. ROBINSON proposed "The Medical Profession," which was responded to by Professor A. H. YOUNG, who congratulated them as members of the Manchester Pharmaceutical Society on having been able to compliment the Lord Mayor on the honour which had fallen upon him.—Mr. HARRY KEMP proposed "The Visitors," which was responded to by Mr. E. EVANS and Mr. S. R. ATKINS.—The toast of "The President" concluded a very pleasant evening.

BRISTOL PHARMACEUTICAL ASSOCIATION.

The annual meeting of this Association was held at the University College on January 26, Mr. B. ALLEN, President, in the chair.—The Treasurer's report showed that after a donation of £5 5*s*. to the Benevolent Fund of the Pharmaceutical Society there was a small balance in hand.—The HON. SECRETARY read the following report:—

Report of Council, 1897.

"The Council has again to report a year of quiet progress in the cause of pharmaceutical progress. The number of members of the Association remains about the same, though we have, unfortunately, lost several friends by death and removal from the city. The feature of special interest to record this year is perhaps the dinner held in March last. This social event was well attended, and was so much appreciated that it is proposed to make it an annual institution. A meeting was held in April at which it was unanimously decided to support the new Bye-laws proposed by the Council of the Pharmaceutical Society, which regulations having received Government approval are now in active operation. A meeting was held in November to consider the Amendment of the Pharmacy Acts, when resolutions were passed very much on the lines of the Bill which is now to come before Parliament. The Council regret there were an insufficient number of students desirous of attending a materia medica class to justify the class being held this winter, but they are glad to know that a good many pharmaceutical students are availing themselves of the lectures given at University College and Technical College. The Council, in closing their report, desire to express their regret at the recent death of an old member of the Association, R. W. Giles. The records of the Association show that Mr. Giles was one of the earliest members, and as long as he lived at Clifton manifested the greatest interest in the work of the Association."

Mr. PITCHFORD moved, and Mr. PLUMLEY seconded, the adoption of both reports, which were unanimously carried.—Mr. H. E. BOORNE was elected a member of the Association.—Mr. PITCHFORD proposed and Mr. YOUNG seconded a hearty vote of thanks to Mr. B. Allen for the efficient discharge of duties as President for three years, which Mr. ALLEN suitably acknowledged, but desired to be relieved of the office after serving so long.—The following were elected as officers for the ensuing year:—President, Mr. G. W. Isaac; Treasurer, Mr. J. Stroud; Hon. Sec., B. Keen; Council: Messrs. B. Allen, T. Buxton, W. Berry, H. E. Boorne, J. Chandler, W. Pitchford, J. G. Plumley, G. T. Turner, E. Young, J. W. White.—Mr. BUXTON proposed, and Mr. YOUNG seconded, a resolution that as the dinner held last year was so successful, it was desirable to arrange for a similar gathering this year. It was subsequently decided that Wednesday, March 16, was the most suitable date, and a small committee was appointed to carry out details.

LETTERS TO THE EDITOR.

Capsaicin, Thresh.—Capsacutin, Mörbitz.

Sir,—Anent the matter of the debated active principle of capsicum, as described by Thresh in 1876 and by Mörbitz in 1897 (*Pharm. Zeitsch. für Russl.*, 1897, xxxvi., 369, and *P. J.* [4], v., 298), it is only fair to the latter investigator to point out that the formula deduced by him for his capsacutin, $C_{35}H_{54}N_3O_7$, has no resemblance to that calculated by Dr. Buri (see *P. J.* [3], vii., 473) for capsaicin prepared by its discoverer, namely, $C_9H_{14}O_8$.

Twickenham, January 22, 1898. J. Oldham Braithwaite.

The New Pharmacy Bill.

Sir,—I fail to see the point of your reasoning in the footnote appended to Mr. R. H. Bell's letter. You state that "the Major man as M.P.S. is now indistinguishable from some 600 registered persons, who are also M.P.S., though not Major men." With all due deference to your opinion, I maintain that they are distinguishable. Is it not a fact that those 600 men are registered M.P.S. by virtue of their having been in business prior to December, 1868, having paid the necessary fees? And is it not impossible to obtain the coveted M.P.S. to-day unless a man has either passed the Major or was in business prior to 1868? It was held out to the present Major men that, as a reward for their passing the higher examination, that they should have the privilege of becoming M.P.S. and Ph.C's. I say, then, in justice to them, if you raise the qualification of the Minor man, you should confer a higher degree upon the Major man. I am quite in favour of the Bill and desirous for the consolidation of the Society. At the same time, I do not think the rights of the Major men should be ignored.

Faringdon, January 22, 1898. W. R. Cook, Ph.C., M.P.S.

*** For many weeks past we have endeavoured to emphasise the fact that no question of qualification is involved in the proposal to amend the Pharmacy Acts, though apparently with but indifferent success, judging from the above letter. To re-state the facts appended in the note to Mr. Bell's letter last week, more than a fourth of the members of the Society are not pharmaceutical chemists and have passed no examination, whilst there are in all more than 6000 registered chemists entitled to be members of the Society, and of those nearly 4000 are not pharmaceutical chemists and have not been examined. Where, then, can be the harm in admitting men as members who possess a full legal qualification? How one member can be distinguished from another member, as such, is a problem that we doubt even Mr. Cook's ability to solve, since in a democratic body every member must of necessity be entitled to all the privileges of membership without distinction of any kind whatever. No such reward as suggested has ever been held out to "the present Major men." Mr. Cook is also quite in error in assuming that any attempt is being made to raise the "qualification" of Minor men, for the letters "M.P.S." indicate neither a qualification nor a degree. The only legal qualification under the Pharmacy Act, 1868, is that indicated by a person's name appearing in the Register of Chemist and Druggists, and pharmaceutical chemists possess no higher legal qualification than chemists and druggists. With regard to the question of a higher distinction for pharmaceutical chemists, that is worthy of, and will doubtless receive, the most careful consideration at the proper time, but that question is not at present before us, and may safely be left to the future. [Ed. *P. J.*]

Sir,—I would not again take the liberty of intruding on your correspondence pages, but for the fact that the occasion is one in connection with which every true and sympathetic brother in pharmacy should try and disabuse his mind from anything approaching selfish and interested motives in discussing the various phases of this short, but to my mind effective, Bill, and inasmuch that it is a primary endeavour to secure a greater and, I trust, a far happier state of consolidation in pharmacy, an already sadly disorganised body. This, I say, must, if necessary, be my apology for so soon again intruding on your valuable space. The object I have in view in addressing you is to try and attract the attention for a few moments of our "Major brethren," and I propose to use as far as I can similar language to that which I employed at our Plymouth meeting, when we discussed (Minors and Majors) our contemplated altered positions under this new Bill. Personally, I regard the proposed salient alterations, to form themselves into a give-and-take policy by both pharmaceutical sections. I mean, of course, Minor and Major men. As a Minor man I strongly objected at that meeting and used argument in the debate to make my views clear, that it would be most unfair to put mere boys, on their entry into the domain of pharmacy, in a position already for many years occupied by men who had in many instances worked hard and had spent often much time, and also much money, to attain the position of associate of the Pharmaceutical Society. That position, I am glad to say, has been safeguarded by the insertion of the words "student-associate" into the Bill. This suggestion comes from one of your members—Mr. Johnson, a pharmaceutical chemist. Minor men generally have no desire to usurp the position worthily fought for and obtained by our Major brethren. I said at that meeting, in answer to a pharmaceutical chemist, that personally I utterly detested, as did many other Minor men, to receive a position we had never worked for or honestly obtained. Such a position for any A.P.S. to occupy who had not passed the necessary examination would be to make himself the laughing-stock of all honest men. Some of your correspondents are, I am sorry to say, somewhat bitter in their remarks to the Minor men, but when, sir, such a splendid pharmacist as Mr. Barnard Proctor can act so magnanimously towards the Minor men it must surely put to utter shame some of the less shining lights in pharmacy who deign to address you, not knowing, or appearing desirous of knowing, the true state of our positions in the world of pharmacy. We are by far the greater supporters of the Pharmaceutical Society, and, naturally enough, feel we are worthy of a greater share in the administrative work of that Society. Some of the Major men have endeavoured to argue this question in the most childlike manner, and also in the most unbusinesslike language I have ever encountered in the whole of my career in the business of pharmacy. I will, with your permission, conclude with this observation to the Major men; it is also a remark I made at our meeting to the pharmaceutical chemists present, namely: Personally, after a life-long connection with pharmacy, I have nothing, from a business point of view, to feel ashamed of that good old name, "Chemist and Druggist." It answered sufficiently for my late father, and will act, I am quite sure, amply sufficient for myself and the public. The world at large understands the designation to a minute degree, but not so the words pharmaceutical chemist, who, although a more learned man from a scientific point of view, is not, I make bold enough to honestly say, and never will be, I am afraid, thoroughly appreciated and understood in his true position by the general public. By that you will infer that I fail to perceive that Minor men will derive any great benefit by any such alteration. I think the boot can safely be said to be on the other leg; any way, it must be a spirit of concession on the part of both sections to derive any permanent good to a profession or business which has passed through the severest possible trials to sustain its honoured position held in the dear old days of yore, and to this end may all Minor and Major men heartily join in wishing.

Devonport, January 22, 1898. Philip A. Kelly.

Sir,—I fail to see what reasonable objection can be advanced by any Major man to the proposed new Pharmacy Bill. Among a large number of Major friends I never knew one that took his Major qualification for the sake of getting the title M.P.S.; they either undertook the Major work for the sake of the additional experience or for the title pharmaceutical chemist. Personally, I feel sure that the outside public do not generally know the actual difference attached to the titles associate and member of the Pharmaceutical Society, but do generally recognise the title pharmaceutical chemist as a superior one. Believing that the proposed change is a just one and likely to benefit our Society,

Grassendale, Liverpool, Jan. 25, 1897. Thos. S. Wokes.

Sir,—In your footnote to my letter in last week's Journal you state that there are 600 registered men who are M.P.S. I suppose it is generally understood that this class will get less, and need cause no anxiety. The 3000 possible holders, I presume, are honorary members, and I do not look upon these as competitors.

Sunderland, January 24, 1898. R. H. Bell, Ph.C., M.P.S.

*** The 3000 possible members of the Society are registered chemists and druggists who were in business before August 1, 1868, and their legal qualification is identical with that of pharmaceutical chemists. [Ed. *P. J.*]

Sir,—As a member of the Society will you allow me to express my opinion regarding the much-abused Pharmacy Bill. The promoters say that it is intended to be a "consolidating," "non-contentious," and non-final measure. Perhaps a more final measure would be more "non-contentious" and more "consolidating," and also more consoling to the trade. The correspondence has been directed chiefly against Clause 3. There are (1) Those who are in doubt regarding its "consolidating" effects. (2) Those who hold that the title (?) M.P.S. belongs solely to "Major" chemists, and who object to share it with their lesser brethren, and (3) Those who are not so exclusive as Class 2, but in return for M.P.S. they want a distinguishing title such as a "Fellowship." Now, sir, I do not object to the Bill so much

for what is in it, as for what is not in it. Mr. Welborn's scheme in your issue of December 11 is very good, but it is too radical, and is not feasible. The conferring of the degree of "Fellowship" on pharmaceutical chemists is not desirable, at present at least. I regard "student-associate" as very befitting terms for a qualified apprentice. In the beginning of the next century we may hope that many of our "student-associates" will be able to distinguish themselves in science. The degrees of B.Sc. and F.I.C. may be taken quite as easily as the present title of pharmaceutical chemist, and their college certificates will open up the way for such attainments. These degrees are recognised by the professions and the general public as marks of scholarship. By all means let the pharmaceutical chemist retain his title, but let no more pharmaceutical chemists be made. The Preliminary has been abolished, let the Major examination be abolished also.

Some time ago I wrote in favour of dividing the Minor examination—in the interests of assistants and the trade generally. I would now suggest that the Minor examination be the qualifying examination, and let it be divided into two parts. First grade, to be taken at the age of nineteen and to be tacitly recognised as an assistant's qualification; second grade, to be taken at the age of twenty-one (but let there be one year at least between first and second grade examinations). The fee for each grade to be £5 5*s*., and the second grade to confer the title of pharmacist. This seems to be the most appropriate and the most popular designation. This title to confer all the privileges at present possessed by pharmaceutical chemists, chemists and druggists would then be designated pharmacists. The subjects of examination would include: First grade, elementary botany, inorganic chemistry and physics, pharmacy and dispensing; second grade would be a more advanced examination in these subjects, with the addition of organic chemistry. The Major examination is not liked. Those who pass it think it is not worth the time and money spent upon it. Pharmaceutical chemists are not rated by the public at their true—I had almost said intrinsic—value. The present is a favourable opportunity for bringing about a reform something on the lines above indicated, which would be as "non-contentious" as the present meagre attempt by the Council, and would at the same time be for "the safety of the public," the honour of the Society, and the good of all.

Edinburgh, January 25, 1898. W. S. Glass.

Sir,—Since most of the opinions in favour of the draft Pharmacy Bill seem to come from members who are in a position to ignore its commercial aspect, and from chemists and druggists who do not intend to seek the higher qualification, while the opposition is represented chiefly by pharmaceutical chemists who have an eye to the actual monetary value of their titles, and also from men seeking to pass the Major examination, perhaps the opinion of one of the latter may be of service. Is it fair to offer a man distinction in return for time and money spent, and then, to serve another doubtful purpose, to take it away? The whole question turns on the commercial value of "M.P.S., Pharmaceutical Chemist," and since few business men can afford to spend time and money on an empty honour, the extent of the opposition proves that it is matter of fact, and I think the Society should try to keep the distinction as clear as possible, instead of hopelessly muddling it. I am heartily in favour of the idea of consolidation, and I think the same end could be obtained by giving associates (or, still better, licentiates) reasonable representation on the Council, which would bring all into the Society who really cared for its welfare. The student-associate clause is not worthy of remark. Why not errand-boy associates? The position of members who are not Major men cannot be used as an argument in favour of the Bill, because the option of membership was given to them to meet a difficulty which no longer holds good.

Hulme, Manchester, January 25, 1898. A. Rhead.

Sir,—Your correspondent Mr. Schollar misrepresents my statements to such an extent, though he carefully avoids the points at issue, that I feel bound to answer him. In the first place my remark concerning the requirements of the Minor examination could not possibly be translated into a reflection on the acquirements of Minor men. I know too many capable Minor men to cast any such reflection on their abilities. That "the standard of scientific work required for the Minor" is low may be seen not by comparison with graduation examinations, but even with the requirements of the Science and Art Department in science, the intermediate stages of both chemistry and botany exceeding the Minor syllabus. On the other hand, I certainly believe the standard to be high enough for all present purposes. Your correspondent then states that the Pharmaceutical Society is not regarded as a learned Society. I contradict that. The Medical Council recognise it by inviting a representative to sit on the Pharmacopœia Revision Committee, the Royal Botanic Society by electing our President an honorary member of their Society, etc., etc. Again, I would refer my pedantic critic to the remarks made by the various eminent scientists who have delivered their inaugural addresses to the students of the Society's School. Such men are, in my humble opinion, quite "capable of expressing an opinion." With respect to the personal remark your correspondent makes concerning my "delusion" as to the value of the Ph.C. qualification, I venture to suggest that a man who possesses a title knows by experience the value other people attach to such title better than the man who has it not. Anyhow, I would remind your correspondent that the whole (M.P.S.) is greater than its part (A.P.S). Finally, he requests information as to where indications of success in opposing the Bill can be found. Universally, I refer him to your columns. Locally, I refer him to the meeting of the Manchester Pharmaceutical Association, and other chemists at the Victoria Hotel last week, where by their presence and communications twenty-one chemists and pharmacists gave their opinion against the Bill, they constituting a majority over the supporters of the Bill. Unfortunately circumstances prevented many from being present when the vote was taken. There are, however, other indications, concerning which I do not feel disposed to enlighten your correspondent just at present.

Manchester, January, 24, 1898. F. Pilkington Sargeant.

Sir,—I consider the Council is trying to attain its object in a most unsatisfactory manner, *i.e.*, at the Major man's expense by making his privileges common property after he has wasted time and money, which in these competitive times can be ill afforded. He certainly ought to be compensated by extra privileges. According to the Editor's remarks (*vide P. J.*, January 22, p. 85) there are now 3000, other than pharmaceutical chemists, who could enjoy the title M.P.S., yet they do not support the Society. This does not look promising to the new Pharmacy Bill (if passed). The future aspiring Minor will certainly not trouble to entertain the Major examination for an empty title. As the Act stands it will do more harm than good to the Society in my opinion.

Walthamstow, Jan. 25, 1898. Horace Southall, M.P.S., Ph.C.

Prescription Stamps.

Sir,—I dispensed a prescription to-day covered front and back with thirty-two stamps of chemists at whose establishments it had been prepared. The size of the paper was 6 by 4 inches. Query, what are future ones to do? In this instance, at all events, it would be a great advantage if the stamp was a single line of, say, two inches in length. Surely this must be a record case.

Stonehouse, Plymouth, January 22, 1898. Jas. Cocks.

On Re-Copying Prescriptions.

Sir,—The case against Mr. Julius Cæsar, reported in last week's Journal, p. 75, raises the question, what should be done when medicine containing a scheduled poison and ordered by a prescription is to be repeated? You suggest that "the prescriptions should be re-copied on every subsequent occasion that the medicines are dispensed," but in most cases only the bottle is sent to be re-filled, or the registered number in the prescription book is sent as an order. The prescription is not sent. Surely it would be a work of supererogation in such cases to copy the prescription from one part of the book to another. Tracing the poison, and the quantity of it sold, is the object of the poison clauses of the Pharmacy Act. Would not the entering of the patient's name in the prescription book with the words, Rep. Mist. No. 9999, and the initials of the dispenser attached, be considered to answer the requirements of the law? This would be carrying out the system of the old apothecary. His prescription book was his day book and prescription book combined. Would not this fulfil our obligations?

London, January 26, 1898. A. F. Goode, Ph.C.

OBITUARY.

MICHAEL CONROY.

By the death of Mr. Michael Conroy, of Liverpool, on Wednesday, the 19th inst., the English-speaking pharmaceutical world has lost one of the best known and most painstaking and conscientious workers, who by the exercise of rare qualities of mind and body had made a reputation such as falls to the lot of but few men to enjoy. From his earliest youth he had been connected with pharmacy, gaining his first experience in the manufacturing branch in the tincture room of Messrs. Clay, Dod and Case, Liverpool, some thirty years ago. After hard uphill work, he succeeded in gradually qualifying himself by dint of close study in his somewhat scanty leisure moments for the more scientific and important branches of laboratory work, finally accepting a position with Messrs. Evans, Sons, and Co., under Mr. Reginald Evans, whose right-hand man he soon became, and whom he succeeded as laboratory superintendent. His ability soon made itself conspicuous, and by degrees he brought the manufacturing departments of his firm to such a pitch of perfection that it is doubtful if there is at the present time to be found a better managed laboratory or one of such capabilities as regards quality and quantity of output. Though his experience was gained in manufacturing pharmacy, he was utterly unselfish in communicating his results to the retail trade by means of articles in the journals and by papers read at various times before the Liverpool Chemists' Association and at the Pharmaceutical Conferences. Perhaps the first of these papers was one read at a meeting of the Liverpool Chemists' Association in 1879, on an "Improved Formula for Fluid Extract of Yellow Bark." A most valuable, and at the same time, simple test for the purity of olive oil was elaborated in 1880, still known as "Conroy's Test." The method for the estimation of the morphine content of opium adopted by the 1885 Pharmacopœia was worked out by Mr. Conroy from that of the United States Dispensatory, and embodied in a communication to the Liverpool Chemists' Association in 1884. Other eminently practical and useful notes on "Sandal Wood Oil," "Adulterations of Lard," and "Castor Oil," "Determination of the Proportion of Alkaloid in the Stalks and Leaflets of Jaborandi," "Testing of Extracts of Malt," and "Adulteration of Copaiba," just to enumerate a few, were published from time to time, all of them bearing the imprint of that careful work and knack of turning all his knowledge to practical account so characteristic of their author. The Liverpool Chemists' Association, of which Mr. Conroy was a past President, owes not a little of the high reputation it has among provincial pharmaceutical bodies for the standard of its papers to the work he did for it during the last twenty years, and many of its younger members, with whom Mr. Conroy was a great favourite, will sadly miss his kindly encouragement and much-valued criticism. The illness which culminated in his death had been afflicting him for some time, and although he was well enough to make the journey down to Brighton last autumn, the change did him very little good, so that his death, though sudden, was not wholly unexpected. A large and representative gathering of pharmacists attended the funeral on Saturday afternoon, Jan. 22, at Wallasey Cemetery, Messrs. Evans, Sons, and Co. being represented by Messrs J. J. Evans, J.P., Edward Evans, jun., J.P., Wm. P. Evans, J. N. Evans, and Everett Evans, as well as Messrs. W. Willings, John E. Parker, J. Shacklady, and T. H. Wardleworth. The Liverpool Chemists' Association sent a deputation, including the President, Mr. John Bain, and Messrs. Edward Davies, F.C.S., F.I.C., A. C. Abraham, F.C.S., F.I.C., H. O. Dutton, J. J. Smith, and Dr. Symes. Mr. Conroy leaves a widow and daughter and two sons, one of whom, Dr. James T. Conroy, a technical chemist with Dr. Hurter, of the United Alkali Co., had a very successful and brilliant career at the University College, Liverpool, and in Germany.

Intimations of the following deaths have also been received :—

FERGUSON.—On January 8, John Ferguson, Chemist and Druggist, Belford. Aged 67.

KEER.—On January 14, Thomas Henry Keer, Pharmaceutical Chemist, London, W. Aged 46. Mr. Keer had been a member of the Pharmaceutical Society since 1876.

HART.—On January 19, George William Hart, Chemist and Druggist, Hull. Aged 69.

THORNTON.—On January 21, Edward Thornton, Pharmaceutical Chemist, Exmouth. Aged 88. Mr. Thornton carried on the business of a chemist at Lyme Regis, Dorset, for about fifty years, where he held the office of registrar of births and deaths. He was a member of the Pharmaceutical Society from 1853 to 1888, and was the Local Secretary of the Society for the district.

THORNTON.—On January 23, Eliza Thornton, widow of the late Mr. Edward Thornton, Pharmaceutical Chemist, Exmouth. Aged 85. Mrs. Thornton only survived her husband two days, and, owing to her own illness, was not aware of his death.

ANSWERS TO QUERIES.

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

NEW B.P.—Yes, it will be in force by the time you mention. Meanwhile, however, do not omit to study the existing work. [*Reply to* A. H. P.—3/33.]

FERN.—It may be a young frond of *Aspidium filix-mas*, but in the absence of sori and of scales on the rachis it is impossible to say with certainty. [*Reply to* ASSOCIATE.—3/30.]

PARSLEY BREAKSTONE.—This is *Alchemilla arvensis*, the Ladies' Mantle, sold by herbalists as "parsley piert" or "parsley pert." It is used in cases of gravel, and can be obtained of Messrs. Potter and Clarke, Artillery Lane, E. [*Reply to* C. E. S.—4/5.]

LECTURES ON THE TELEGRAPH.—They have not been reported in full, and we are unable to say whether they will be published in book form. Repeat your question in a few months. We are glad you find the "Students' Page" useful. [*Reply to* J. P. G.—3/28.]

FIRST EXAMINATION.—Having already passed the Society's First Examination, you will not be expected to pass it again, but it will do you no harm to study the extra subjects if you have not already done so. [*Reply to* ARVON.—4/4; F. P.—4/6; PRELIM.—4/10; QUERY.—4/14; POTASH.—4/11; RES.—4/12; RHEI.—4/16; F. H. R.—4/17.]

STRAMONIUM SQUILL.—Surely you could, without much waste of brain power, have arrived at the conclusion that the words "Stramonium Squill" in your copy of the syllabus only required separation by a comma to make the meaning plain. Thus—"Stramonium, Squill." [*Reply to* H. J.—3/32.]

TESTS FOR "OLEUM CETACEI."—We presume by this you mean sperm oil. The following are the characters of the pure oil. Sp. gr. 0·875 to ·883; commences to deposit spermaceti at 43° F. and stearin at 17° F. Koettstorfer's number 130 to 134. Unsaponifiable fatty matter, soluble in ether, 39 to 41 per cent. Compare the viscosity with that of a genuine sample of sperm oil, also the heat produced on mixing a definite quantity with sulphuric acid. African fish oil used as an adulterant gives a much higher temperature than pure sperm oil by this test. You will find full technical details for carrying out the above tests in Allen's 'Commercial Organic Analysis,' vol. ii. [*Reply to* S. P. S.—3/6.]

GLYCERIN SUPPOSITORIES.—You will see an answer to your query in the Journal for Jan. 8, page 44. The stearin soap basis there described is very good for suppositories which are not required to be kept for long. You ought to obtain a perfectly bright and clear basis by using good French gelatin for the B.P. formula. The brand "Gold Thread" gives very good results. You need not boil this with egg albumin. Other kinds of gelatin may require that treatment, but you certainly will not filter any gelatin well through paper. Flannel, wetted with boiling water and thoroughly squeezed out, is the best filtering material. [*Reply to* W. M.—3/14.

COMMUNICATIONS, LETTERS, etc., have been received from

Messrs. Allen, Bathurst, Bell, Bingley, Bostock, Branch, Branson, Chalmers, Cocks, Cooke, Diaper, Downing, Eberlin, Ellington, Ellis, Gair, Gardner, Gibson, Glass, Hetherington, Hill, Ingham, Jackson, Johnson, Kelly, Lee, Matthews, Murray, Peach, Pearce, Porter, Reed, Reynolds, Rhead, Sargeant, Shorthouse, Simpson, Southall, Summers, Tayler, Thompson, Watson, Wilkinson, Wokes.

Pharmacy and the Allied Sciences.

A REVIEW OF CURRENT WORK.

Preparation of Crystals.

W. Tassin has reviewed the several methods of preparing crystals for the determination of their geometrical and physical constants, and groups them under the three heads :—Solution, sublimation, and fusion. Solution.—In the first class, crystals of a substance are prepared from its solution in a liquid by evaporating and cooling the solution, by the reaction of soluble compounds, or by chemical changes in general. The general rules to be observed are that crystallisation must proceed as slowly as possible, the solution must be of the least viscosity possible, the crystallising substance must be present in the solution in the greatest quantity, removal of the crystals should preferably be effected when the solution is at its minimum temperature, and crystals desired for measurement must be quickly and completely dried in order to prevent corrosion or etch figures forming. Sublimation.—In this case crystals may be obtained direct, or a non-volatile compound may be obtained as a result of chemical action between two or more volatile substances, or from a volatile substance and a gas. Fusion.—Crystals in the third group are secured, either with or without pressure, by slowly cooling a homogeneous magma, or by a solution of the substance in a molten magma.—*Proc. Am. Chem. Soc.*, xx., 3.

Fixation of Nitrogen.

H. A. Weber has successfully produced root tubercles in water culture, and thus been able to observe what takes place during the process of nitrogen fixation better than when the roots are buried in soil or sand. The apparatus employed consists of an aspirator of four litres capacity, connected with which are two ordinary wide-mouth bottles of two litres capacity, to serve as culture jars. Both culture jars are open, and the second is connected with a small flask with a side tube, as used in fractional distillation, the end of the tube being allowed to project into the neck of a collecting bottle of four litres capacity. At the beginning of a vegetation experiment the flask, culture jars, and aspirator are filled with a nutrient solution, the aspirator having previously been raised above the level of the culture jars and its tubulure closed with a rubber stopper, through which passes a glass tube. On the latter is slipped a short piece of rubber tubing, with a Hoffman clamp to control the flow, and through this the liquid drops from the aspirator into a thistle funnel projecting from the first culture jar. By means of syphons the liquid then passes into the second culture jar and into the small flask, finally arriving at the collecting bottle, the contents of which must be transferred back to the aspirator about once in twenty-four hours. The seedlings are grown to maturity under identical conditions in the two culture jars, and the nutrient solution supplied to them is continually being aerated as it passes through the apparatus, a plentiful supply of free oxygen being thus provided. In the experiments described, two solutions were used. The complete nutrient solution contained 20 Gm. of bone ash dissolved in nitric acid, 11 Gm. of potassium nitrate, 7 Gm. of magnesium sulphate, 3 Gm. of potassium chloride, and a minute quantity of ferrous sulphate. These were dissolved in distilled water, neutralised with sodium carbonate, and diluted to 1 litre. In the second solution (without nitrogen) the bone ash was dissolved in 9 C.c. of sulphuric acid and the potassium nitrate was replaced by 9·5 Gm. of potassium sulphate, but it was otherwise identica with the first. One set of seedlings from dwarf peas germinated in sterilised sand moistened with distilled water was grown in the first solution, another in the second, and those in a third set were inoculated with tubercle germs prior to immersion in the second solution. The first set thrived from the outset and produced flowers and fruit, but the plants in the second set were weak and sickly and soon died. The inoculated specimens did not thrive at first and they began to show the effect of nitrogen starvation in about ten days. On the thirteenth day, however, they began to recuperate, tubercles were observed on the fifteenth day, and after that the plants thrived satisfactorily, producing flowers and fruit like those which had been grown in the complete nutrient solution, containing nitrogen.—*Journ. Am. Chem. Soc.*, xx., 9.

Magnetic Properties of Tempered Steel.

S. Curie gives the results of experiments in which bars and rings of steel were heated in an electric furnace, the spiral current of which at the same time furnished a magnetic field. It was found that steel does not take the temper unless heated to a temperature superior to that at which its magnetic properties change, and that steel containing 1·2 per cent. of carbon is best suited for the construction of permanent magnets, whilst the presence of tungsten or molybdenum is advantageous. The presence of other metals in steel does not usually modify the residual magnetisation, but it often considerably increases the field required to cause demagnetisation. The greater this field, the less do blows affect the stability of magnetisation in bars. As regards the effects of heating, a temperature of 100° or more is detrimental to good magnetic steel, while the best permanent magnets are obtained by heating the steel to 60° only, and partially demagnetising it after having magnetised it to the point of saturation.—*Bull. Soc. Indust. Nation.*, through *Nature*.

Discharger for Spark Spectra.

L. M. Dennis describes a new form of discharger for spark spectra of solutions, which is claimed to be free from the disadvantages that attach to most other forms. The lower terminal consists of a graphite conc bored at the base to receive the end of a platinum wire. The cone is enclosed in a glass tube—30 Mm. long—in which it fits rather loosely, and the apex of the cone is allowed to project slightly beyond the end of the tube, which is placed vertically. The platinum wire is enclosed in a slightly longer but narrower glass tube, the upper end of which is fused to the wire close by the base of the cone, whilst the lower extremity passes through and is held in position by a cork which fits the lower opening of the wider tube. Just above this cork the outer glass tube branches at right angles for 25 Mm., and it is then again bent at right angles upwards, so as to be parallel with the tube containing the graphite cone. This arm, which is 100 Mm. long, is expanded from the bend to about twice the original diameter of the tube, but near its free extremity it is again narrowed so that a piece of small rubber tubing can be slipped over it and firmly hold a narrower glass tube which slides through it and reaches nearly to the bottom of the arm. To fill the apparatus, the last-mentioned tube is removed, the discharger is inclined so as to elevate the part containing the cone, and the liquid is run into the long arm, after which the inner sliding tube is re-inserted and pushed nearly to the bottom of the arm. The apparatus is then brought into the upright position, when the liquid will rise in the short tube containing the cone until it is on a level with the lower end of the sliding tube, and the latter is then raised until the level of the liquid reaches the

top of the short tube, leaving the whole of the cone immersed except the extreme point. As the liquid is evaporated by the spark at the terminal formed by this point, it will be maintained at the same level by the entrance of air through the sliding-tube, and that will continue until the liquid in the long arm has fallen to about the same level. The graphite cone can be replaced by the platinum wire or by an electrode of any other material that may be desired. The upper terminal consists of an insulated platinum wire or a graphite cone around which the conducting wire is wrapped.—*Journ. Am. Chem. Soc.*, xx., 1.

Betaine in Althea Officinalis.

N. Orlow has isolated betaine as well as asparagine also from the root of *Althea officinalis*. Betaine, or trimethyl-glycocoll, is an acid, the aldehyde of which is represented by muscarine and the alcohol by choline. The roots were extracted several times with water, the extracts being finally evaporated, precipitated with basic lead acetate, and the excess of lead removed by sulphuretted hydrogen. The fluid was then evaporated to a small volume and set aside for some days to allow the asparagine to crystallise out. The solution was next drawn off, the crystals washed with weak alcohol, and the united fluids mixed with a solution of mercuric nitrate after the distillation of the alcohol. This precipitated the rest of the asparagine. The filtrate was then treated with sulphuretted hydrogen, evaporated, acidulated with nitric acid and, after adding a solution of sodium phospho-molybdate, set aside for two days. The precipitate was then collected on the filter, washed with very dilute sulphuric acid, mixed with aqueous barium hydrate solution, the solution filtered, freed from the excess of barium by carbonic acid, evaporated to dryness, and the residue extracted with alcohol. After extraction, a yellowish crystalline substance remained, which formed colourless crystals on being recrystallised from alcohol or water with animal charcoal. The substance thus obtained was soluble in water or alcohol, and precipitated by ether rom the alcohol solution. It contained nitrogen. The alcoholic solution of the free base, treated with alcoholic chloride of zinc solution, gave a precipitate, the volume of which increased on standing. The base gave all the characteristic reactions of betaine.—*Pharm. Zeit. f. Russl.*, xxxvi., 631.

Insect Powders.

Professor J. M. Francis comments approvingly on G. R. Durrant's paper on the insect powders of commerce (see *P. J.*, lviii., 505), but takes exception to the advice given therein relative to the kind of insect powder pharmacists should purchase, on the ground that some low-priced powders would be excluded by Mr. Durrant, "which will accomplish the same results and be just as satisfactory . . . . when used in the customary manner." There is no more reason, he asserts, for demanding insect powder made from closed flowers or half-open and open flowers than there would be in insisting on the use of strictly pure sodium chloride in making bread. To exclude stems and flowers in any particular stage of development, hand-picking will be necessary, and that, it is suggested, whether practicable or not, is certainly not worth while. Beyond that, it is stated that a powder made from flowers alone is not essential, as experiments with a powder containing ground flowers and stems in equal parts appeared to be quite as efficacious when sprinkled in the ordinary way, as powder consisting of ground flowers only. When extracted with ether the ground flowers yielded 6·07 per cent. of extract, the stems 2·25 per cent., and the mixed powder 3·82 per cent. The relative toxicity of the ether extracts was tested upon animals, the doses being in proportions relative to the yield of extract, and the powder from flowers proved to be about twice as powerful as that from stems, whilst the mixed powder occupied an intermediate position. In all cases the ether extract had a decided green colour, indicating the presence of chlorophyll, but that, it is suggested, is what may be expected in the case of most, if not all, insect powders. In conclusion, it is acknowledged that the greater the proportion of ground flowers in a powder, the more toxic it will be, but on the other hand, it is claimed that a powder consisting of one-third to one-half stems accomplishes the desired work quite as well from a practical point of view. It is argued, therefore, that it is not to the pharmacist's interest to pay a fancy price for insect powder if he can satisfy himself that a good, effective powder is procurable at a lower rate.—*Bulletin of Pharmacy*, xii., 5.

Death by Electric Shock.

Professor T. Oliver and Dr. R. A. Bolam have obtained evidence which suggests that failure of the respiratory centre is not the cause of death in fatal cases of electric shock. On the other hand, their experiments with alternating currents, admittedly the most dangerous, appear to afford ample demonstration of the fact that death in such a case results from sudden arrest of the heart's action. In some instances—in which there were very high voltages, with currents considerably above the potential usually required to kill the animal—there seemed to be contemporaneous cessation of the respiration and of the heart's action, but in most cases the heart was first affected. Primary cessation of the beat of that organ is, therefore, the general rule, and under no circumstances were the experimenters successful in causing primary arrest of respiration, followed by failure of the heart.—*British Medical Journal*, No. 1933, p. 132.

Röntgen Rays Transformed.

G. Sagnac finds that when Röntgen rays are incident on a metal surface, they are not perceptibly reflected, but the superficial layer transforms them into secondary rays which are capable of producing photographic impressions of exciting fluorescent screens, or of discharging electrification. A difference between these secondary rays and ordinary Röntgen rays is that they are freely absorbed by aluminium, whilst their absorption gives rise to yet a third kind of ray, which is still more readily absorbed by aluminium. It is suggested that the secondary and tertiary rays may be intermediate between true Röntgen rays and those discovered by Lénard.—*Bull. Soc. Franc. de Physique*, No. 16, through *Nature*.

Decalcifying and Desilicating Sponges.

Dr. E. Rousseau decalcifies sponges which contain much lime-salts, such as *Leuconia*, *Leucandra*, *Sycon*, etc., by first hardening and then imbedding in celloidin. The imbedded pieces (not more than 2 Cm. in length) are then immersed for from 12 to 24 hours in a mixture of 15-40 parts nitric acid of sp. gr. 1·4, and 100 parts of 85 per cent. alcohol, and are then transferred to 85 per cent. alcohol containing some precipitated calcium carbonate until every trace of acid is removed. Sections are then made in alcohol of the same strength. For desilification the sponge is treated with fluoric acid after imbedding in celloidin, as in the previous method. One of the small imbedded pieces is then placed in a caoutchouc capsule having a lid and containing at least 50 C.c. of alcohol. To this is added commercial hydrofluoric acid drop by drop up to 20 or 30 drops, according to the amount of silica in the sponge. The desilication takes from one to two days. The pieces are then placed in 85 per cent. alcohol containing some lithium carbonate. As a precaution all the vessels and instruments used must be covered with caoutchouc or paraffin. By this process very good sections may be obtained of *Tethyx*, *Suberites*, *Thenia*, *Glodia*, *Reniera*, etc.—*Zeits. für Angew. Mikros.*, through *Journ. Roy. Micros. Soc.*, 1897, p. 589.

PHILOSOPHICAL CHEMISTRY.

The Principles of Chemistry. By D. Mendeleeff. Translated from the Russian (sixth edition) by George Kamensky, A.K.S.M. Edited by T. A. Lawson, B.Sc., Ph D. In two volumes. Pp. i.-xviii., 1 to 621, and 1 to 518. Price 36s. London: Longmans and Co., 39, Paternoster Row, E.C. 1897.

In an age when everyone knows, or professes to know, something of chemistry, when skill in separating the constituents of mixtures is regarded by sadly too many as the be-all and end-all of the study of the science, when primers, manuals, and text-books dealing with the subject within more or less narrow limits crowd upon us, it is refreshing to turn to a record of a serious attempt to regard chemistry as a connected whole, and as a subject having intimate relations with other branches of science, even though, as in Professor Mendeléeff's case, the arguments employed are in great measure directed to the support of a particular generalisation. Not that the 'Principles of Chemistry' was written to support the hypothesis of a periodic law; the conception of that generalisation occurred whilst the author was preparing the first edition of his work, the object of which was to acquaint students "not only with the methods of observation, the experimental facts, and the laws of chemistry, but also with the insight given by this science into the unchangeable substratum underlying the varying forms of matter." In less than thirty years no fewer than six editions of the book have been called for in Russian, and the second English edition is adapted from the latest of these, the original being reproduced as faithfully as possible without amplification or modification of the author's statements.

The fifth edition, a translation of which was reviewed in the *Pharmaceutical Journal* some six years ago, was considerably enlarged, as compared with the preceding one, and the foundations of the periodic system of the elements were placed much more firmly. Such alterations as were then introduced are retained in the latest edition, but no essential features of the original work are altered. Many newly discovered facts are referred to, and although all aspects of the simplest chemical relations are as far as possible equally developed, the author acknowledges that he has given most attention to the so-called indefinite compounds, examples of which may be seen in solutions. He affiliates to these examples numerous instances of definite compounds, ranging from alloys and silicates to complex acids, and advances reasons to excuse the important part the study of solutions is made to occupy in the work. Mendeléeff's own view is that a solution is "a homogeneous liquid system of unstable dissociating compounds of the solvent with the substance dissolved," but he does not consider his opinion on the subject as proved, and it is therefore given with some reserve as one of several hypotheses. The personal element in the book is strongly marked throughout, and interest in the subject-matter is thus enhanced, the impression left being that what is presented is no mere bald statement of facts and speculations, but a faithful expression of the views of one who has made the subject entirely his own.

Chemistry like every other science, it is pointed out, is at once a means and an end. It is a means of attaining certain practical results, and so promoting the general welfare; whilst as an end there are many lofty aspirations associated with it, the contemplation of which serves to inspire its workers and adherents. That contemplation comprises not only the principal data of the science, but also generally accepted deductions and hypotheses which refer to phenomena as yet but imperfectly known. Scientific contemplation in the latter sense, Mendeléeff shows, varies much with times and persons; it bears the stamp of creative power, and embraces the highest forms of scientific progress. "In that pure enjoyment experienced on approaching to the ideal, in that eagerness to draw aside the veil from the hidden truth, and even in that discord which exists between the various workers, we ought to see the surest pledges of further scientific progress. Science thus advances, discovering new truths, and at the same time obtaining practical results. The edifice of science not only requires material, but also a plan, and necessitates the work of preparing the materials, putting them together, working out the plans and the symmetrical proportions of the various parts." This is the work Mendeléeff has set himself—combining creator, architect, and artisan in his own personality—and though all may not approve of his style of architecture, it cannot be denied that the finished structure faithfully records the ideas embodied in his original design.

The arrangement of the book is practically identical with that of the previous edition. The first volume is prefaced with a lengthy introduction in which attention is directed to the various classes of chemical transformations, whilst the law of the indestructibility of matter is explained, and the limits of chemical transformation are discussed. Experiments are described which illustrate the points the author seeks to elucidate, and in the succeeding chapters a knowledge is imparted of the particular facts of chemistry, with the view of ensuring a thorough grasp of the general and introductory chemical conceptions already referred to. Water, its compounds and constituents, form the subject-matter of four chapters, in the last of which we are gradually led up to the enunciation of Dalton's law of multiple proportions. In like manner, the consideration of nitrogen and its compounds introduces to notice the conception of molecules and atoms, Gay-Lussac's law of combining proportions, and Avogadro-Gerhardt's fundamental law. The properties of carbon and the hydrocarbons, and of the compounds of carbon with oxygen and nitrogen are next described, thus completing the study of the four organogens. The conception of the valency or atomiticity of the elements is then briefly referred to, after which a detailed account of sodium chloride and its properties introduces a very full explanation of Berthollet's laws, that in turn being followed by a comprehensive summary of the properties and relations of the halogens. Similar treatment of the alkali metals is supplemented by a description of the methods and objects of spectrum analysis, and the volume is concluded with a chapter on the valency and specific heat of the metals.

The grouping of the elements in accordance with the periodic law is deferred to the second volume, which is entirely occupied by statements of facts bearing on that hypothesis. A special appendix is devoted to argon, the discovery of which is described as one of the most remarkable chemical acquisitions of recent times. On the assumption that argon is an element, it is pointed out that its atomic weight of nearly 40 does not correspond to the existing data respecting the periodicity of the properties of the elements in dependence upon their atomic weights, for there is no reason on the basis of existing data for admitting any intermediate elements between chlorine (35·5), and potassium (39), whilst all the positions above potassium in the periodic system are occupied. "The hypothesis A=40 does not admit argon into the periodic system. If the molecule of argon be taken as A_2—*i.e.*, the atomic weight as A=20—argon apparently finds a place in Group VIII., between F=19 and Na=23; but such a position could only be justified by the consideration that elements of small atomic weight belong to the category of typical elements which offer many peculiarities in their properties, as is seen on comparing N with the

other elements of Group V., or O with those of Group VI." It is suggested, however, that it is simpler to assume that argon contains N_3, especially as argon is present in nitrogen and accompanies it, and it is claimed that none of the observed properties of argon are contradictory to this hypothesis.

In conclusion, it may be stated that, whilst the author has endeavourcd to concentrate in the main portion of his work all the fundamental, indispensable knowledge required by those who are beginning the study of chemistry, extensive footnotes are printed in small type, and in those certain details are discussed, which serve as further examples, as well as debatable questions on existing ideas, and historical and technical details which have been with advantage withdrawn from the body of the book. Personal views, suppositions, and arguments are similarly relegated to footnotes. It may also prove of interest to quote Mendeléeff's opinion as to what is requisite in order to become "actual chemists." Beginners, he observes, must be well and closely acquainted with three important branches of chemistry—analytical, organic, and theorctical—the part dealt with in the 'Principles' being only the foundation of the edifice. "For the learning and development of chemistry in its truest and fullest sense, beginners ought, in the first place, to turn their attention to the practical work of analytical chemistry; in the second place, to practical and theoretical acquaintance with some special chemical question, studying the original treatises of the investigators of the subject (at first, under the direction of experienced teachers), because in working out particular facts the faculty of judgment and of correct criticism becomes sharpened; in the third place, to a knowledge of current scientific questions through the special chemical journals and papers, and by intercourse with other chemists." An excellent programme, truly, and one the successful accomplishment of which will necessitate frequent reference to the excellent work of which so imperfect an account s hcre given.

SELECTED FORMULÆ.

Glycerin Lanolin Cream.

Glycerin, 12; lanolin, 3; vaseline, 9; otto or oil of ylang-ylang, *q.s.* Mix the lanolin and vaseline, then gradually incorporate the vaseline.—*Pharm. Zeit.*, 42., 340.

Cascara Pills.

Extract of cascara, 2 grammes; extract of rhamnus frangula, 1 gramme; powdered aloes, 4 grammes; powdered gentian, 4 grammes; medicinal soap, sufficient to make eighty pills.—*Pharm. Zeit.*, xlii., 228.

Anæsthetic Tents.

Lefour soaks laminaria tents for eight days before use in ether, 85; iodoform, 10; cocaine alkaloid, 5 parts.—*Practitioner*, liv., 111.

Application for Herpes.

Rcsorcin, 45 grs.; cocaine, 15 grs.; alcohol, 3 fl. ozs. To be applied by means of a swab to the herpetic spot.—*Therap. Gaz.* [3], xiii., 688.

Linimentum Terebinthinæ.

Schuabcl prepares this with potassium carbonate, 5 grammes; sapo mollis, 40 grammes; and oleum terebinth., 55 grammes. The addition of water or spirit of wine effects the decomposition of the liniment. The preparation preserves a uniform consistence for at least three months.—*Pharm. Centralh.*, xxxviii., 364.

FORMULÆ, METHODS, AND REACTIONS,
KNOWN BY THE NAMES OF THEIR AUTHORS.*
(SUPPLEMENTARY LIST.)

Adams (Fat in Milk Analysis).—Dry a known quantity of milk on a fat-free paper coil, which is then extracted by ether in a Soxhlet apparatus.

Alfraise (Iodine).—Water to which 1 per cent. each of starch and potassium nitrate have been added is boiled, and to 10 C.c. of this add 1 drop of hydrochloric acid. A blue colour appears on adding 1 drop of this reagent to a small quantity of the suspected liquid.

Alferow (Silver Staining).—An acid solution of silver picrate, lactate, acetate, or citrate, is prepared by adding to 800 C.c. of the solution 10 to 15 drops of a concentrated solution of the acid of the salt taken.

Allen (Fehling's Test, Modified).—Boil 7 to 8 C.c. of urine, add 5 C.c. of the cupric sulphate solution of Fehling's reagent, cool and add 1 or 2 C.c. of saturated sodium acetate solution with feebly acid reaction. Filter, and to the filtrate add 5 C.c. of the alkaline tartrate solution of Fehling's test, and boil.

Allen (Nitrogen in Urine).—In this modification of Knopp's method treat 25 C.c. of urine in a porcelain dish with 10 C.c. of strong sulphuric acid, and boil until the volume is reduced to about 10 C.c., and fumes of sulphuric acid begin to be evolved. The liquid is then transferred to a Kjeldahl flask and about 5 Gm. of potassium sulphate added, the flask being heated until the liquid is only a pale yellow. It is then cooled and neutralised with very strong caustic soda. The neutral liquid is made up to 100 C.c., 10 C.c. of it taken and treated with alkaline hypobromite reagent, as in the estimation of urea. Each 1 C.c. of nitrogen equals approximately 0·0012 Gm.

Allen (Phenol).—Mix 1 or 2 drops of the suspected liquid with a fow drops of hydrochloric acid, then add 1 drop of nitric acid. A purplish-crimson colour appears if phenol bc present.

Allen (Spirit of Nitrous Ether).—Fill an Allen's nitrometer with saturated brine solution, and introduce by means of the cup funnel 5 C.c. of the spirit to be tested. To this add 5 C.c. of strong solution of potassium iodide, followed by 5 C.c. of diluted sulphuric acid. Agitate well, and when the action has ceased adjust the surface of the liquid in the two limbs of the instrument to the same level; then read off the volume of nitric oxide, add 1·5 C.c. correction for the solubility of the gas in the solution. Multiply the volume by 0·0638 = parts of ethyl nitrite in 100 volumes. The product divided by the observed specified gravity of the spirit will give the weight of ethyl nitrite in 100 parts by weight of spirit.

Allen (Strychnine).—Extract with ether and concentrate the solution by allowing it to fall, drop by drop, into a warmed porcelain capsule. After cooling the residue, treat it with sulphuric acid and manganese peroxide, and if strychnine be present a violet colour will be produced.

Allessandri-Guaceni (Nitric Acid and Nitrates).—Dissolve a few drops of phenol in hydrochloric acid by heating for 12 hours on a water-bath. In the presence of nitric acid an intense violet coloration appears when the dry residue from a suspected solution is heated with 10 drops of this reagent on a water-bath. Ammonia changes the colour to green.

Almén (Albumin).—Urine containing albumin becomes cloudy on adding to 6 parts of it 1 part of a 2 per cent. solution of tannin in dilute alcohol. Another form of this test has been given previously (*P. J.* 4, iv., 491).

Almén (Phenol).—(1) Dissolve 1 part of mercury in 1 part of nitric acid (s.g. 1·4), and dilute with twice the quantity of water. On adding 5 to 10 drops of this solution to 20 C.c. of a liquid containing phenol, and heating to boiling, a yellow precipitate is formed, which dissolves in nitric acid with a red colour. (2) A blue colour appears on adding to phenol solution ammonia and a little chlorinated soda solution.

Altmann (Corrosion Method).—The tissue is injected with olive oil, then thin pieces are immersed for 24 hours in 1 per cent. osmic acid, after which they are treated with eau de Javelle for several hours until corrosion is completed, and finally dried with blotting paper and mounted in pure glycerin.

* After Wilder, Schneider, Altschul, Lee, Squire, Crookshank, and others.

Altmann (Fixing Solution).—A mixture of equal parts of 5 per cent. potassium bichromate solution and 2 per cent. osmic acid.

Altmann (Impregnation Methods).—(1) Small portions of fresh tissue are immersed for 5 to 8 days in a mixture of 2 volumes of olive oil and 1 volume each of ether and absolute alcohol, then thrown into water to precipitate the oil in the tissue, next hardened with osmic acid, corroded with eau de Javelle, and mounted in glycerin as described above. (2) Impregnate with a mixture of 2 volumes of castor oil and 1 volume of alcohol, then proceed as in 1.

Anderson (Papaverine).—A dark red colour appears on adding concentrated nitric acid to a solution of papaverine in dilute nitric acid, and yellow crystals separate.

André (Quinine).—Chlorine and ammonia produce a green colour which changes to blue on saturation with an acid. Excess of acid changes the colour to violet or bright red, but ammonia again turns it green.

Andreasch (Cysteïn).—On adding a few drops of dilute ferric chloride solution, followed by ammonia, to a solution of cysteïn acidulated with hydrochloric acid, a beautiful red colour appears in the liquid, and darkens on shaking after exposure to air.

Andreasch (Iron).—A dark purplish-red colour appears on adding a little ammonia and sulphoglycolic acid to a solution containing iron; the colour soon fades, but reappears on shaking after exposure to air.

Ashby (Mineral Acids in Vinegar).—An infusion of logwood (1 in 50) is made with boiling water. After standing a few hours a few drops are placed on porcclain, a drop of the suspected sample is added, and the mixture evaporated to dryness on a water bath. If mineral acids be present the residue has a red colour. Pure vinegar leaves a bright yellow stain.

Austen-Chamberlain (Nitric Acid).—A rose-red colour is produced with a mixture of 12 Gm. of ferrous sulphate, 6 Gm. of ammonium sulphate, 2 C.c. of sulphuric acid, and 100 C.c. of water.

Babes (Actinomycosis).—Stain sections in Babes' safranine solution (3) for 2 minutes, rinse in alcohol, and decolorise in Gram's solution.

Babes (Safranine Stains).—(1) A mixture of equal parts of concentrated alcoholic and aqueous solutions of safranine. (2) A concentrated or supersaturated solution made with the aid of heat. (3) Mix 100 parts of water, 2 parts of aniline oil, and an excess of safranine. Warm the mixture to 60°–80° C. and filter through a wet filter.

Bach (Solanine).—Treatment with equal volumes of sulphuric acid and alcohol produces a red colour.

Bachmeier (Alkalies).—Tannin solution produces a red to reddish-brown colour, which changes to dirty green.

Bachmeier (Organic Acids in Phenol).—An aqueous decoction of Brazil wood is permanently discoloured by organic acids, but not by phenol.

Bailey (Nitric Acid).—Crystals of the double compound of mercuric cyanide and potassium iodide turn black when introduced into nitric acid, but red in other acids.

Bailey (Sulphur).—A blood-red colour is produced on heating with sodium carbonate, dissolving in water and adding sodium nitro-prusside solution.

Bämes (Tannin).—A solution containing 1 Gm. of sodium tungstate and 2 Gm. of sodium acetate in each 10 C.c. throws down from acid or alkaline solutions of tannin a straw-yellow precipitate which is insoluble in water.

Barbier (Alcohol in Essential Oils).—A dense solution is formed on distilling off about one-tenth and adding to the distillate an excess of dry potassium acetate.

Barbsche (Glycerin).—No blue colour should be produced on adding one drop of ferric chloride solution to glycerin diluted with 20 volumes of water and to which one drop of carbolic acid has been added.

Barff (Preservative Medium).—A saturated solution of boric acid in glycerin (boroglyceride) is prepared by the application of moderate heat for 4 or 5 hours. When required for use 1 part of the solid product is dissolved in 40 parts by weight of water.

Barfoed (Hydrocyanic Acid).—On acidifying a solution with sulphuric or tartaric acid and shaking with ether, the latter will take up hydrocyanic acid, but not hydro-ferrocyanic acid.

Barfoed (Silicic Acid).—On cautiously heating a mixture of 1 part of the suspected substance, and 2 parts of cryolith with 4 to 6 parts of sulphuric acid, and holding near the surface of the mass a thin platinum wire loop containing a drop of water, a white pellicle of silicic hydrate will be formed on the water.

Barreswil (Glucose).—Reduction takes place on boiling a liquid containing glucose with the following solution:—Dissolve 60 Gm. of potassium hydroxide and 40 Gm. potassium tartrate in 200 C.c. of water; then dissolve 65 Gm. of copper sulphate in 560 C.c. of water and add the first solution.

Barreswil (Chromic Acid).—A blue colour appears on adding a few drops of chromic acid solution and a little ether to a very dilute, acidified solution of hydrogen peroxide.

Barry (Hydrocyanic Acid).—Acidify the liquid slightly, if necessary, with acetic acid, then put 2 or 3 drops in a watch-glass. Cover this with another watch-glass containing 2 or 3 drops of 1 per cent. silver nitrate solution, which should become cloudy if hydrocyanic acid be present.

Baumann-Goldman (Cystin).—On adding Baumann's reagent to a solution of cystin, a copious precipitate of benzoylcystin is thrown down.

Bäyer (Eosine).—On shaking with water and sodium amalgam, heating gently, then diluting with water and adding a drop of potassium permanganate solution, an opaque green colour appears in reflected light.

Bäyer (Glucose).—On heating the solution with excess of nitrophenyl-propiolic acid and soda, a blue colour appears in the presence of glucose, owing to the formation of indigo.

Bayrac (Uric Acid in Urine).—Evaporate 50 C.c. of urine to dryness on a water bath, treat the residue with hydrochloric acid (1-5), wash the residue with alcohol, then dissolve in 20 drops of sodium hydroxide solution heated to 90 or 100° on a water bath, and decompose with sodium hypobromite in the apparatus for determining urea. Each 1 C.c. of nitrogen at the ordinary temperature equals 0 00357 Gm. of uric acid.

Beale (Ammonia Carmine).—In addition to the formula previously given (*P. J.* [4], iv., 493), Beale published the following:—Carmine, 15 grains; strong solution of ammonia, 30 minims; glycerin, 2 fluid ounces; alcohol, 6 fluid drachms. This fluid was specially designed for the purpose of staining by means of injection. See also Beale's carmine glycerin injection (*P. J.* [4], iv., 531).

Bell, Carter (Alum in Flour or Bread).—A freshly prepared 5 per cent. tincture of logwood in methylated spirit is used. Ten grammes of the same is moistened with water, then 1 C.c. of the tincture and an equal quantity of saturated ammonium carbonate solution are added. The sample if pure, gives a pinkish colour which gradually fades to buff or brown. If alum be present a lavender or bluish tint is produced which becomes more marked on drying.

Betz (Ammonia Carmine).—A thick syrupy mass is made by rubbing up commercial carmine with water in a mortar, and ammonia is then added, with continual stirring, to effect solution. A large quantity of water is then added, after which the solution is filtered and exposed to the sun in an uncorked green glass bottle until a precipitate is deposited. Expose again and subsequently filter, and repeat the operations a third time. When no further precipitate is deposited the stain is ready for use.

Betz (Hardening Fluid).—A mixture of equal parts of sulphuric ether and alcohol. This is used for hardening the brain of insects prior to cutting sections.

Bird (Sulphur Compounds in Petroleum).—Prepare a solution of sodium plumbate by dissolving 1·5 dr. of caustic soda in sufficient distilled water to make 10 fl. drs., then heat to boiling point, and whilst boiling add litharge to saturation. Decant the clear liquid from undissolved litharge. Place in a test-tube 1 fl. dr. of the white petroleum oil to be examined, add 0·5 dr. of absolute alcohol, and shake well. Then add 2 drops of the test solution, shake again for a few seconds, and allow to stand for half an hour. According to the amount of sulphur present, the mixture assumes a tint varying from deep orange with much sulphur, through orange and yellow to very pale yellow with traces only. See *Pharm. Journ.* August 14, 1897, p. 153, for further details.

(*To be continued.*)

PHARMACEUTICAL SOCIETY.

MEETING OF THE COUNCIL.

WEDNESDAY, FEBRUARY 2, 1898.

Present:

Mr. Walter Hills, President.

Mr. G. T. W. Newsholme, Vice-President.

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

The minutes of the last meeting were read and confirmed.

Deaths.

The President said he had to refer with regret to the death since the last meeting of two gentlemen whose names were well known. The first was Mr. Lea, of Worcester, a life member, a pharmaceutical chemist, and who some few years ago made a donation to the Benevolent Fund of £50. The other gentleman, whose loss they would all deplore, though he was not connected with the Society, was Mr. Michael Conroy. He was well known to many who were in the habit of attending the meetings of the Pharmaceutical Conference, and he did much for the advancement of pharmaceutical knowledge by the work he did and the papers he published. All would agree that pharmacy had lost an excellent and distinguished man.

The Lot for the Next Council.

The lot having been taken in the usual way to determine the seven members of the Council who shall retire in May next, the following names were drawn:—Messrs. Allen, Atkins, Corder, Grose, Martindale, Savory, and Warren.

The following, who remained in by lot last year, now retire by rotation:—Messrs. Bateson, Cross, Hills, Johnston, Newsholme, Storrar, and Symes.

The following seven remain in office another year:—Messrs. Bottle, Carteighe, Hampson, Harrison, Park, Southall, and Young.

Election of Members.

Pharmaceutical Chemists.

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

Hill, Philip Robert; Weymouth. | Holmes, John; Bradford.
Kerruish, Thomas Maltby; Douglas.

Election of Associates in Business.

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

Ballard, William; Limehouse.
Freeman, William M.; Birmingham.
Gili, Gerardo; Malta.
Hardy, Robert; Edinburgh.
Henderson, John; Edinburgh.
Jepson, Ewart; Darwen.
Jones, Joseph; Pwllheli.
Lee, George; Barnstaple.

Election of Associates.

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

Blackmore, Frank; Weston-super-Mare.
Bowell, Horace James W.; Ilfracombe.
Bowman, Edward; Bunker's Hill.
Cannon, Frederick Wm.; Aylesbury.
Clarkson, James Selfe; Whitby.
Davies, David Arthur; Llandovery.
Exelby, George Henry; York.
Fairbairn, James Hume; Edinburgh.
Ireson, Ernest E.; Newport (Mon.).
James, John Earl; Birmingham.
Jarvis, John; London.
Lindsey, Robert William; London.
Lowe, James Tasker; Wigan.
McCutcheon, Alexander; Glasgow.
Macrae, David; Edinburgh.
Martin, Frederick John; Belfast
Martindale, William H.; London.
Mason, Hugh; Bexley Heath.
Mollison, William Whyte; Aberdeen.
Pick, Frank Phillips; Barnsley.
Reid, John Loudon; S. Shields.
Rhead, Alfred; Milton.
Seaborne, Lionel Dunsford; Wombwell.
Stowart, Alexander M.; Lochee.
Stewart, Jeanie; Dumbarton.
Trebilco, Arthur James; Bristol.
Wells, Louis John; Shipley.
Wilson, John Lochhead; Irvine.
Wise, Guy William; Watford.

Election of Students.

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

Andrews, Ralph Cecil; Winchester.
Archer, William Taylor; Cambridge.
Benson, John; Kendal.
Benton, Alfred; London.
Betts, George Hornbuckle; Stamford.
Bishop, John Henry; Norwich.
Bolus, George; Berwick-on-Tweed.
Brunyee, Nathaniel; Thorne.
Burnell-Jones, Harold S.: London.
Cawkwell, George Adama; Old Basford.
Clunas, John; Nairn.
Cushing, Thomas E., junr.; London.
Duncan, William B.; Portobello.
Dutton, Charles Cecil; St. Helen's.
Finnigan, George; Hove.
Flitcroft, Thomas E; Hiudley Greeu.
Freke, Alice; London.
Grimshaw, Percy George; Hull.
Hazelby, Thomas Weaver; Swaythling.
Hellyer, William W.; Plymouth.
Hicks, Joseph; Ediuburgh.
Hodgson, Alfred; Leicester.
Ingram, Frederick James; Wakefield.
Jenkin, Charles; St. Austell.
Jesson, Albert Robert; Leicester.
Jones, John; Aberystwith.
Laverack, Clyve Cordukes; Malton.
McCallum, William; Edinburgh.
Martin, John; Crieff.
Millidge, Philip; Newport, I.W.
Murdoch, John Gloag; Edinburgh.
Panchaud, Frederick; Cambridge.
Reynolds, Edward; Stow-on-the-Wold.
Royce, Septimus; Oakham.
Saint, Thomas; Derby.
Sayers, Stephen Percy; Ardingley.
Stokoe, John Calvert; Sunderland.
Swan, William; Dumfries.
Traub, Leonard B.; Kinross.
Walton, Ralph, Jun.; Maidenhead.
White, Charles Edwin; Bournemouth.
Williams, William Robert; Cardiff.
Wilson, Alexander W.; Edinburgh.

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

Report of the Finance Committee.

The report of this Committee, which was read by the Secretary, was of the usual character, and included a recommendation that several accounts be paid.

The President moved the adoption of the report and recommendations, which, he said, called for no comment, the receipts and expenditure both being of the usual character.

The motion was at once carried unanimously.

The Registrar's Report.

The Registrar's report on the numerical strength of the Society was laid on the table. It was resolved that the report be entered on the minutes and published in the Journal. It is printed at page 122.

Report of the Benevolent Fund Committee.

The report of this Committee included a recommendation of grants to the amount of £48 in the following cases:—

A registered chemist and druggist (73), formerly in business for thirty years. (Surbiton.)

The widow (72) of a pharmaceutical chemist Member (1851—1868), who has only an annuity of £20 to live upon. (London.)

The widow (68) of a pharmaceutical chemist Member (1853—1860) and subscriber. She has had several previous grants. (Doncaster.)

The widow (66) of a chemist and druggist whose application had been deferred for further reference. (Sheffield)

One case was not entertained.

The Secretary reported the death on January 29, of Ann Parsons, Belfast (aged 87), who was elected an annuitant in December, 1877.

The Vice-President moved the adoption of the report and recommendations of the Committee which was at once agreed to.

Library, Museum, School, and House Committee.

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

Attendance.		Total.	Highest.	Lowest.	Average
December	Day	362	27	2	14
	Evening	126	14	1	7
Year 1897	**Day**	**3843**	**28**	**0**	**13**
	Evening	**1122**	**18**	**0**	**6**

Circulation of Books.	Total.	Town.	Country.	Carriage paid.
December	173	88	85	18s. 4½d.
Year 1897	**2219**	**1045**	**1174**	**£13 2s. 3d.**

Several donations had been received (*Ph. J.*, January 22, p. 76), and the Committee had directed that the usual letters of thanks be sent to the respective donors.

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

For the Library in London :—

Lüpke, 'Elements of Electro-Chemistry,' 1897.
Roscoe and Schorlemmer, 'Treatise on Chemistry,' new edition, vol. 2.
Cambridge University Calendar, 1898.
Oxford University Calendar, 1898.

For the Library in Edinburgh :—

Sadtler and Trimble, 'Pharmaceutical and Medical Chemistry.'

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

	Attendance.	Total.	Highest.	Lowest.	Average.
December	Day	523	39	2	21
	Evening	52	9	1	2

Several donations had been received (*Ph. J.*, January 22, p. 76), and the Committee directed that the usual letters of thanks be sent to the respective donors.

The President said the Committee had spent a good deal of time over various details connected with the work of the Society, but nothing arose to which he need specially refer. He had simply to move that the report and recommendations be received and adopted.

The motion was carried unanimously.

Report of Examinations.
January, 1898.

	Candidates.		
	Examined.	Passed.	Failed.
First Examination	324	164	160

Thirteen certificates by approved examining bodies were received in lieu of the Society's examination.

Correspondence.

The President said he had received a letter from the Hon. Secretary of the Midland Chemists' Assistants' Association, enclosing the following resolution passed unanimously at a meeting held on January 19 :—

> That this meeting hereby expresses its unqualified approval of the Draft Pharmacy Acts Amendment Bill proposed by the Pharmaceutical Society of Great Britain, and pledges its members to give the measure every possible support.

The Royal Botanic Society.

The President said a letter had been received from the Secretary of the Royal Botanic Society announcing that the time of admission for pharmaceutical students had been extended to 3 p.m. The regulations for the future would be as follow :—Students will be admitted to the Gardens daily from 9 o'clock, except Sundays, Wednesdays, and Saturdays, in May, June, and July, and are required to leave before 3 p.m.

Mr. Symes said this extension of time would be a great advantage to students. The time for leaving used to be 1 o'clock, and he remembered how difficult it was for him to make use of the Gardens.

Mr. Martindale said it was scarcely possible for students who were attending lectures at the School to attend the Gardens and leave by one o'clock, and upon his bringing the matter before the Council of the Royal Botanic Society, the alteration was very kindly agreed to. He should have been glad if the privilege could have been extended to Saturdays as well, but that was a shilling day, when a great number of the public visited the Gardens, and the Council could not see its way at present to admitting students on that day.

Mr. Southall suggested that the Royal Botanic Society should be thanked for this courtesy.

The President said this should certainly be done if it had not been done already.

Carbolic Acid.

The President said he had received a letter from Mr. Coxwell, Coroner for the City and County of Southampton, enclosing the following recommendation of the jury at an inquest held on January 25 :—

> It is considered advisable by the jury that greater caution should be used in the sale of carbolic acid, and that this notice be forwarded to the Pharmaceutical Society of Great Britain, and it ought to be in special bottles.

The Examinations in Scotland.

The President said he had received a rather lengthy but very valuable report from the Examiners for Scotland, with a suggestion that it should be published. It was sent by the Assistant Secretary with a covering letter, saying that it dealt only with the Minor examination, there being so few candidates for the Major and the chief points calling for comment occurring in the former examination. He might add that in consequence of the large proportion of failures, the Scottish Board some time ago suggested that a report should be sent up by them periodically, and after consultation with the Board in London, a reply was sent recommending that one such report should be sent up first as an example of what was intended. That report was now sent in consequence of that suggestion, and he thought it would be very desirable that the report should be published.

The report was as follows :—

Report on the Minor Examination for the Year 1897.

"The Board of Examiners for Scotland has now to submit to the Council the following report on the Minor examinations conducted by them during the year 1897.

"During the year 577 candidatos were examined, of whom 190, = 33 per cent., passed, and 387, = 67 per cent., failed :—

64	failed in	both Practical Chemistry and Practical Pharmacy.
109	,,	Practical Chemistry only.
73	,,	Practical Pharmacy only.
64	,,	Botany.
33	,,	Oral Chemistry.
6	,,	Materia Medica.
5	,,	Prescription Reading.
7	,,	Oral Pharmacy.
26	,,	to obtain the pass aggregate of marks.

"In the case of the Practical Examination the foregoing figures accurately indicate the subjects in which the candidates were deficient. In the case of the oral examinations, the practice of stopping a candidate whenever he fails in any subject introduces a disturbing element into the calculation, and therefore the figures are not sufficient to indicate so accurately the relative deficiencies of the candidates in the different subjects.

"*The Practical Examination.*—It is very noteworthy that a large proportion of the candidates who fail do so in the practical portion of the examination. Of the total number of students who failed, 16·53 per cent. failed in both practical subjects, 28·17 per cent. failed in practical chemistry only, and 18·87 per cent. failed in practical pharmacy only. The two practical subjects therefore accouut for 63·5 per cent. of the total failures. Though practical chemistry accounts for the larger proportion, it is to be noted as far from satisfactory that a very considerable proportion fail in practical pharmacy.

Practical Chemistry.—Of the 577 candidates who presented themselves, 30 per cent. failed in this subject.

"There can be no doubt that an undue proportion of the candidates who appear for this examination are insufficiently prepared, but it is still more to be regretted that they so frequently give evidence that the training which they have received has obviously been from the outset altogether faulty in conception, and that the energy, often very considerable, which the candidates have expended in preparation for this examination, has been to so great an extent misdirected.

"The scientific side of the Minor examination is chiefly of use in so far as it leads to a development of the powers of observation and of accurate reasoning on that which has been observed. An unsystematic and superficial acquaintance with a large number of special tests and special reagents is frequently shown by candidates. A really sound knowledge of the general behaviour and use of the common reagents and of the simplest analytical methods is too frequently altogether wanting. It is a matter of common occurrence to see a candidate almost exhausting the resources of the laboratory in the unthinking application of numerous special reagents, in order to settle a question perfectly simple and capable of easy and rapid solution by the careful application of, it may be, a single test of an elementary character. It is of the greatest importance that a good working knowledge of a small number of the more important reagents and methods should be acquired in the first instance. If this be wanting the energy spent in getting up less general tests is worse than thrown away, as it generally leads to mental confusion and to an incapacity to reason correctly on any single observation. The cure for this state of matters can only come as the result of better and more systematic teaching. During the last three years there has not been wanting evidence that such teaching is on the increase, but the progress is slow, and it may be doubted if it can ever be sufficient to meet the wants of the case in the absence of a proper curriculum.

"Much improvement might, however, result if students and their teachers realised that in the purely scientific subjects the examinations are principally directed towards ascertaining whether the candidates have or have not a sound practical but elementary knowledge, and that in their qualitative work they will be expected to give clear and systematic proofs of simple problems, rather than guesses, more or less happy, based upon a number of special tests unsystematically applied. Without entering into details the following may be mentioned as frequently-occurring causes of failure in qualitative analysis :—

"*a.* Inability to make a rapid but reasoned and careful Preliminary examination, chiefly by means of dry way tests.

"*b.* The practice of delaying the writing out of reports until after a conclusion has been come to instead of noting down each observation as soon as it is made.

"*c.* The neglect of a final summing-up of all the evidence which has been accumulated so as to make sure that it all points one way, and that none of it is directly contrary to the conclusion which has been arrived at.

"These defects can only be remedied by constant practice throughout the course of training for the examination.

"*Practical Pharmacy and Dispensing.*—Of the 577 candidates who presented themselves, 24 per cent. failed in this subject. The examiners in this department concur in the view that the failures in this subject are in a great measure due to want of experience, and the absence of a proper training during apprenticeship. Though there has been a manifest improvement generally in the work done, notably in the making of the galenical preparations of the Pharmacopœia,

REGISTRAR'S REPORT.

MEMBERS, ASSOCIATES, AND STUDENTS OF THE SOCIETY FOR THE YEAR 1897.

	Life Compounders.			Annual Subscribers.				
	Members.		Associates in Business.	Members.		Associates in Business.	Associates not in Business.	Students.
	Pharm. Chemists.	Chem. and Druggists.		Pharm. Chemists.	Chem. and Druggists.			
Number in 1896	250	6	31	1334	569	1651	...	...
,, restored, 1897	...	...	...	9	3	17	...	...
,, elected, 1897	14	1	3	49	9	133	...	...
	264	7	34	1392	581	1801	...	...
Deaths, Secessions, etc.	8	...	...	96*	32*	114*	...	...
Total Strength of the Society ...	256	7	34	1296	549	1687	946	873
Summary :—								
1896...	250	6	31	1334	569	1651	984	846
1897...	256	7	34	1296	549	1687	946	873
Increase ...	6	1	3	...	...	36	...	27
Decrease ...	...	...	...	38	20	..	38	...

COMPARATIVE STATEMENT OF THE NUMERICAL STRENGTH OF THE SOCIETY FOR 5 YEARS: 1893-97.

MEMBERS.—PHARMACEUTICAL CHEMISTS.

	1893	1894	1895	1896	1897
Restored to Membership	12	6	10	7	9
Elected ,, ...	62	62	51	53	49
(Total additions)	74	68	61	60	58
Deaths, Secessions, etc.	89*	76*	102*	83*	96*
Increase ...	...	...	...	...	...
Decrease	15	8	41	23	38
Total Number of Annual Members	1406	1398	1357	1334	1296

MEMBERS.—CHEMISTS AND DRUGGISTS.

	1893	1894	1895	1896	1897
Restored to Membership	1	6	3	5	3
Elected ,, ...	37	21	15	17	9
(Total additions)	38	27	18	22	12
Deaths, Secessions, etc.	35	30	39	35*	32*
Increase ...	3	...	...	...	...
Decrease ..	...	3	21	13	20
Total Number of Annual Members	606	603	582	569	549

ASSOCIATES IN BUSINESS.

	1893	1894	1895	1896	1897
Restored	19	11	14	11	17
Elected	182	165	159	127	133
(Total additions)	201	176	173	138	150
Deaths, Secessions, etc.	100*	126*	115	139*	114*
Increase	101	50	58	...	36
Decrease	...	...	...	1	...
Total Number of Annual Associates in Business ...	1544	1594	1652	1651	1687

ASSOCIATES NOT IN BUSINESS.

	1893	1894	1895	1896	1897
Increase	..	...	...	23	...
Decrease	24	15	19	...	38
Total Number of Associates not in Business	995	980	961	984	946

STUDENTS.

	1893	1894	1895	1896	1897
Increase	14	8	...	44	27
Decrease	...	...	17	...	...
Total Number of Students	811	819	802	846	873

LIFE COMPOUNDERS.

	1893.	1894.	1895.	1896.	1897.
Members :—Pharmaceutical Chemists	232	241	247	250	256
Increase	10	9	6	3	6
Members :—Chemists and Druggists	6	7	7	6	7
Increase	...	1	...	...	1
Decrease...	...	...	...	1	...
Associates in Business	23	25	27	31	34
Increase	9	2	2	4	3

* Some of these have paid the life composition fee and have been transferred to the table of Life Compounders.

ANALYSIS OF EXAMINATIONS FOR THE YEAR 1897.

FIRST EXAMINATION.

Number of Candidates during the Year.	Number of successful Candidates during the Year.	Number of Rejections during the Year.	Number of Examinations during the Year.	Average number of Candidates at each Examination.	Average number of Rejections at each Examination.	Percentage of Rejections.
1414	678	736	4	353·50	184·00	52·05

Number of Certificates received in lieu of the First Examination 135

MAJOR, MINOR, AND MODIFIED EXAMINATIONS.

ENGLAND AND WALES.

Examinations.	Number of Candidates during the Year.	Number of Successful Candidates during the Year.	Number of Rejections during the Year.	Number of Examinations during the Year.	Average Number of Candidates at each Meeting.	Average Number of Rejections at each Meeting.	Percentage of Rejections.
Major.....	96	51	45	4	24·00	11·25	46·87
Minor.....	863	270	593	4	215·75	148·25	68·71

SCOTLAND.

Examinations.	Number of Candidates during the Year.	Number of successful Candidates during the Year.	Number of Rejections during the Year.	Number of Examinations during the Year.	Average Number of Candidates at each Meeting.	Average Number of Rejections at each Meeting.	Percentage of Rejections.
Major.....	10	1	9	4	2·50	2·25	90·00
Minor.....	578	190	388	4	144·50	97·00	67·12

THE REGISTERS OF PHARMACEUTICAL CHEMISTS AND CHEMISTS AND DRUGGISTS, 1897.

Additions during the year:—

Number of persons who have passed the—

Minor	„	460
Major	„	52*
Number of persons restored to the Register on payment of a fine.....		19
		479

Erasures during the year:—

Deaths	285
Erased at the request of registered persons themselves	8
Erased by the Registrar in pursuance of the provision set forth in Section 10 of the Pharmacy Act, 1868, after sending two registered letters, to which no answer has been received.	137
Increase of numbers on the Register	49
	479

* These having already been included in the number who passed the Minor, do not increase the numbers on the Register.

Number of Pharmaceutical Chemists on the Register, December 31st, 1897 2,251

Chemists and Druggists 12,964

15,215

there is still too frequently evident a want of familiarity with the utensils and methods of working required to turn out well-made products, and the candidates give the impression that they are making their first attempt to compound the preparation in the examination-room. In weighing and measuring there is often much carelessness and want of cleanliness; the products being contaminated by the use of mortars or spatulas not properly cleaned after some previous operation. The following typical examples will serve to illustrate the foregoing points. Many candidates show ignorance of the difference between avoirdupois and troy weights, and there is much confusion as to the difference between a minim and a grain measure. Many candidates are unable to work out a simple percentage calculation. A candidate attempts to prepare two ounces of iodide of sulphur ointment in a glass mortar not more than two and a half inches in diameter. Another candidate puts the ingredients for an infusion in an earthenware infusion pot and sets it on a naked Bunsen flame. Many candidates cannot make a suitable pill mass, and it is here more than anywhere else that the inexperienced man breaks down. One candidate makes a pill mass by kneading the ingredients between his fingers and thumbs on the pill machine, and then divides the mass by weighing each pill separately. A candidate who may otherwise do good work, puts what should be an eight-ounce mixture into a six-ounce bottle, or dispenses six such powders instead of dividing the quantity specified into six powders, or labels a mixture 'a tablespoonful' instead of a 'teaspoonful' for a dose, or dispenses twelve doses of a mixture in a six-ounce bottle, and instead of labelling it 'a twelfth part to be taken,' directs the whole bottleful, twelve doses to be taken, perhaps three times a day. There is also an indiscriminate use of sugar of milk in dividing an active drug. One candidate, for instance, uses it to obtain the fraction of a grain of perchloride of mercury for an eyewash, and others do the same in making small quantities of solutions of arsenic or of strychnine. The examiners believe that this condition of things could be greatly remedied were employers to devote greater attention to the systematic practical training of apprentices during their period of pupilage.

"*Oral Chemistry and Physics.*—Of the 278 candidates who were examined in Oral Chemistry and Physics, 245, = 88·73 per cent., passed, and 33, = 11·87 per cent., failed.

"At the oral examination in chemistry and physics candidates commonly show that they have endeavoured to cover the whole ground laid down in the syllabus without taking care, in the first instance, to master elementary principles. It cannot be too clearly understood that these elementary principles may be mastered by a thorough study of a comparatively small number of typical examples. It is worse than useless to endeavour to make up for the want of a proper understanding of elementary facts and principles by burdening the memory with a further number of facts necessarily undigested.

"As specially significant of defective training it should be mentioned that many candidates admit that they have neither performed themselves, nor even seen performed, the simplest and most important experiments, unless, indeed, these necessarily form part of the ordinary qualitative testing. Such experiments as, for instance, the heating of sulphur, they endeavour to describe, in the words of the text, by an effort of purely verbal memory.

"On the other hand candidates frequently exhibit undue apprehension of the result of a failure of memory in respect of particular facts, and seem unable to realise that it is a lack of understanding of the most elementary part of the subject which prevents them from giving the examiners sufficient evidence of knowledge to justify their passing.

"Here again it is to a want of proper teaching that a very large proportion of the failures must be ascribed. Very many candidates fail not because they have been idle, but because their study has been entirely misdirected.

"*Botany.*—Of the 295 candidates who were examined in botany, 231, = 78 3 per cent., passed, and 64, = 21·7 per cent., failed.

"The chief impression the Examiner in this subject has received during the past year is that far too large a proportion of the candidates come up for examination inadequately prepared and wanting a practical knowledge of elementary fundamental facts.

"There has not perhaps been exhibited an absence of intelligence and perception greater than might fairly be expected, but with few exceptions candidates have failed to show that in their study of botany and in the training they have undergone they have either acquired sound knowledge or have used the science as an educative instrument of their perceptive faculties.

"To the practical recognition of the organs of plants and an acquaintance with the functions severally performed by these the Examiner has attached primary importance in conformity with the terms of the syllabus. In respect of the former the candidates have frequently shown startling ignorance, whilst the knowledge of the latter displayed by them has been in a great many instances not merely deficient but quite wrong and out of date. It is not intended by this last expression to suggest that candidates should know the most recent discoveries in this branch of the subject, but it is expected that physiological information, now part of the common stock of botanical knowledge and which any competent teacher could supply and explain, should be in possession of anyone who desires to pass the examination.

"In considering the cause or causes to which the ignorance and want of training above mentioned may be assigned, a clue is found through the examination itself. If a question be framed in such a way as to allow of a sequential historical reply being given, an answer is usually readily forthcoming, and the candidate will glibly recount, in the most minute detail, events as they are given in some text-book, provided he be allowed to start at some definite point, less glibly if the point of departure in the story be fixed by the Examiner. If now either before or after such a question the objects to which they refer be shown to the candidate, there is great probability he will know nothing about them. The certain conclusion to be drawn from this experience is that candidates absorb information from text-books without digesting it, and without reference to the plants themselves. The whole thing becomes in this way a mere matter of memory, and were the strengthening of this the object of the examination, the learning of a chapter in a classical author would be equally serviceable.

"Of like character as an index is the fact that candidates may know a name for a phenomenon—the more likely if it be some long, high-sounding one—but can neither recognise an instance of it when shown to them, nor give any explanation of its essentials. Acquaintance with the name in this instance does duty for knowledge of the thing. These features are not, indeed, distinctive of this examination and of its candidates only; they are to be found as well in examinations of other boards; but their occurrence here as elsewhere is attributable primarily to faults in the teaching system through which the candidates pass.

"The conditions under which most of the candidates have to study the subjects of examination are anything but favourable; yet still, even amongst those who fail, many appear to have genuinely worked according to their lights, for the examination. But it is neither in the time and other difficulties which the candidates have to overcome, nor yet in the idleness of the individual, that a chief reason for the breakdown that takes place in the examination hall is to be sought. The Board is satisfied that to defective teaching is to be traced the greater part of the failures that occur. Candidates come up crammed. They have not studied. Time after time candidates have told the examiner that they have not had an opportunity, through their teachers, of examining practically the simplest flowers that an examiner can put in their hands, and that their acquaintance with the subject has been derived entirely from the perusal—with such help as the crammer could give—of the subject in one or other of the text-books in vogue.

"It is clear that the weak point that must be reached, if the candidates are to come up decently qualified for examination, is the means and methods of study available to them, and that improvement cannot be expected until the teachers realise that sound practical knowledge is wanted, not the smattering acquired by learning by rote from books. Meanwhile, if any machinery exists at the disposal of the Society through which it can be conveyed to the teachers that the serious deficiences indicated above are a blemish in their work, militating against the success of their students, and which the teachers ought to remove, the Board is of opinion that it should be put in operation.

"*Materia Medica.*—The most important part of this branch of the examination is undoubtedly the recognition of drugs and their adulterations. Accurate knowledge is here essential, and, as a rule, candidates are fairly well prepared. Occasionally one is met with who persists in telling the Examiner that Spanish cantharides is Chinese blistering fly, and *vice versâ*, even although he is shown the specimens side by side. A mistake like this can only be attributed to sheer ignorance, and as an indication of the mental habit of the candidate it is sufficiently serious.

"The purely memory work is fairly well done, and the botanical sources of drugs, the natural orders, and habitats are usually given with readiness and accuracy. The active principles of the more important drugs are also familiar by name to most of the candidates, but relatively few carry their reading sufficiently far to enable them to form more than a hazy idea as to how these principles are extracted. The moment the Examiner leaves the beaten track the average candidate flounders hopelessly. For example: A candidate describes *Digitalis purpurea*, but has not the faintest idea of the meaning of the word '*purpurea*.' Numerous instances of this kind occur. Another candidate recognises or 'spots' a specimen of *Hyoscyamus niger*, but on being shown a second specimen of the same he fails to identify it. A candidate is asked, 'How is scammony obtained?' and glibly replies, 'By means of mussel shells'; but he has no idea of the *modus operandi*. The mention of the habitat of a plant frequently leads to the innocent question, 'Where is that?' and it is a remarkable fact that not one candidate in twenty can answer correctly two consecutive questions in geography. Facts familiarly known to every educated man are apparently unknown to the candidates. For example: To take a few answers given in one morning alone, Sumatra was located repeatedly in South America, North Africa, India and 'China way'; Malabar in North Africa and East Africa; Barbadoes in the Pacific Ocean, South America, and the East Indies; Socotra in the Pacific, the West Indies and East Indies; Senegal in East Africa and North America; Jamaica in the East Indies; Ceylon, off China; Siam on the 'west coast of China'; and so on *ad libitum*.

"Candidates excuse themselves by saying that there is no mention of geography in the syllabus, but obviously it is not too much to expect a man to know what he is talking about. A candidate who says that Ceylon is situated off the coast of China, *ipso dicto*, stamps himself as an uneducated man. While it would be too much to expect an intimate knowledge of geography, it must be confessed that answers such as those given above are distinctly disappointing. To sum up, the general impression is that purely memory work is got up with care by the average candidate, but beyond that there is really little attempted.

"*Prescriptions.*—There are no special observations to be made on this subject, Though candidates generally can read prescriptions fairly well, there is frequently an astonishing ignorance of Latin grammar and terminology considering that they have already passed the First or Preliminary examination in that subject. This ignorance is chiefly apparent in the translation of prescriptions from English into Latin. Many candidates seem to be unfamiliar with ordinary directions written in Latin, and the translation of such directions into accurate and appropriate English is often badly done.

"Failure to detect excessive doses in prescriptions is also very frequent. The chief cause of the comparatively few failures in this subject, however, is ignorance of posology, which seems to be got up by rote from the Pharmacopœia rather than as the result of actual experience and observation in the pharmacy.

"*Oral Pharmacy.*—There are comparatively few failures in this subject, probably because those who are weak have already been sifted out on the practical day. The failures are due to an insufficient knowledge of the Pharmacopœia. Many seem not to know that book practically, but cram up a few strengths of active ingredients, which in the excitement of the moment they often forget. They cannot give an intelligent account of the processes for such preparations as spirit of nitrous ether, aromatic spirit of ammonia, the scale compounds and syrup of phosphate of iron; nor do they show an intelligent understanding of the various steps in the estimation of such drugs as opium and cinchona bark. Many persist in saying ipecacuanha wine is made by dissolving an extract of the root in sherry wine, but they have no idea how the extract is made; others say the wine is made by macerating the root in sherry wine. Many again have no definite idea of the strength of the most active preparations which they are called upon to dispense every day. This condition of things again brings out the fact of defective training during apprenticeship. Many pharmacists seem to take apprentices merely for the services they can get out of them, and without any idea of giving them an intelligent and reasonable knowledge of their business.

"In conclusion, the Board respectfully direct the attention of the Council to the evidence of the great lack of a definite, systematic, and thoroughly practical course of training pursued for a sufficient period under competent teachers as a dominant note of their report. The Board entirely concur in the oft-repeated and now generally recognised necessity for an adequate curriculum. They gladly recognise evidences of improvement, but are unanimously of opinion that the only sufficient security for the adoption of such a curriculum is its compulsory enforcement. Meantime it appears to the Board very desirable that students and teachers alike should be made aware of the main facts embodied in this report."

James L. Ewing, Chairman.

The President said this report would be of great value both to teachers and pupils, and he hoped it would have some effect in hastening what they all desired—an enforced curriculum. In the meantime, however, it would be of great service by showing that it was not, after all, so much a question of the number of facts and figures which a man could commit to memory, which was important, as the attainment of an intelligent knowledge of the principles underlying the subjects in which he was to be examined.

Mr. Symes said the report was very elaborate, and they were much indebted to the Examiners in Scotland for sending it. He hoped every candidate would peruse it and take it to heart. Of course, the best results could only be obtained when the curriculum was in force, but he looked forward to a considerable improvement when the new Bye-laws came into operation.

Mr. Carteighe, by way of emphasising the remarks of the chemical examiner, said he might give an illustration of the want of experimental illustration in teaching. He should be afraid to say how many thousand candidates who had passed through his hands had never seen phosphorus burned in oxygen, even within recent years. A large number of teachers drilled their pupils through the practical subjects and made them perform what they would have to do before the examiner, but did not explain the principles of either botany or chemistry by practical experiment and illustration. As he got older he felt more and more pity for many of the young men who thought that they had been taught the subject in which they were to be examined.

Mr. Bateson thought the principal source of weakness was that students did not avail themselves of the opportunities they had at their own doors. If they did, such a thing as Mr. Carteighe had referred to would not occur. His experience showed him that those who did avail themselves of their own opportunities at home fared far better in the examination than those who came from schools of pharmacy. He could scarcely call to mind the case of a young man who had done his best to study on his own account who had failed.

The President, whilst agreeing with what had been said by Mr. Bateson, pointed out that it was the duty, not only of the pupil to study, but of the master to encourage study, and where there were classes and lectures available, to give facilities for attending them. Even in country districts, where there were few opportunities, there were many ways in which those who took pupils might encourage habits of study and practical observation on the part of those they professed to teach.

Mr. Bateson said many young men relied far too much on their ability to attend a school of pharmacy after their period of apprenticeship was over.

Mr. Allen thought Mr. Bateson had given the gist of the whole matter. He did not understand him to wish to discredit schools of pharmacy, but simply to show that a young man who availed himself of the opportunities he had during his apprenticeship, and did his best to study, had a great advantage over one who relied simply on his pecuniary ability to attend a school, and went there without previous study.

The Vice-President said he noticed at the last examination that a larger proportion of candidates passed the first time than usual. He spoke to several of them and congratulated them, and he generally found that they were men who had worked well during their apprenticeship. One of them, he found, had attended the local classes of the Science and Art Department, and no doubt many others did the same.

Mr. Atkins, after referring to the great importance and value of this report, said there never was a period when young men had so many advantages in the way of study as they had to-day, owing to the efforts of county councils and technical education committees. He knew a village about twelve miles from Salisbury in which a very able and cultured man was located, and a group of five or six villages were supplied with a fair amount of elementary knowledge of botany, physics, and allied sciences. Again and again he had called the attention of young men to the importance of going through a voluntary curriculum of this sort. The great difficulty to be confronted everywhere was the rarity of thinking. Most people, both young and old, took their thinking ready-made, and thus did not understand the fundamental principles of anything.

Mr. Martindale suggested that, in addition to classes which could often be taken advantage of, there were two other helps which were even more valuable—self-help and fellowship, by which he meant the help which an elder apprentice could give to a junior, The great point was to cultivate habits of study during apprenticeship instead of waiting until it was over and then cramming, as that never could yield atisfactory results.

Mr. Johnston regretted that this report should have come from Scotland, and said he should like to know how many of the rejected candidates came from south of the Border. He believed a great many came from England, for he could speak with some knowledge of the candidates from the east of Scotland, and felt quite certain that amongst them, in chemistry at any rate, there was not such a large percentage of failures as was here recorded. It would be far better for both England and Scotland if there were more centres where the education necessary for passing the examinations could be acquired, and if there were, they might hope to see more Major men on the Register. Unless some such course were adopted, he feared they would become fewer and fewer as time went on. He agreed that a compulsory curriculum was the great remedy for the evils complained of. He did not believe any Scotchman would ever make such stupid blunders as some of those mentioned in the report.

The President said they could only take the figures as they stood, and until he knew the contrary he must assume that the majority of the candidates referred to were Scotchmen. With regard to educational centres, he might point out that those already existing were not utilised to anything like the extent they might be. Last week he was at Manchester, and spent some time at Owens College, where every facility was afforded for the study of chemistry and physics, but the complaint was that so few availed themselves of the opportunities offered.

The British Pharmaceutical Conference.

Mr. Symes reminded the Council that the British Pharmaceutical Conference would meet at Belfast on August 9, and hoped members would bear this in mind in arranging for their holidays.

Report of the General Purposes Committee.

The report of this Committee, which dealt only with legal matters, was read and considered in Committee.

On resuming, the report and recommendations of the Committee were adopted, and special resolutions passed authorising the Registrar to take proceedings against the parties named therein.

"FIRST" EXAMINATION RESULTS.

A meeting of the Board of Examiners for England and Wales was held on Wednesday, February 2.

Certificates by approved examining bodies were received from the undermentioned in lieu of the Society's examination :—

Bingham, William Arthur ; Balham.
Birkett, George N. M. ; Manchester.
Burnell-Jones, Harold S. ; London.
Flynn, John P. ; London.
Hughes, Richard Osborne ; Liverpool.
Machin, Harold ; South Tottenham.
Miller, Alfred Edward ; Bath.
Nield, Thomas ; London.
Paynter, Alfred John ; Torquay.
Reeson, Herbert S. ; Rotherhithe.
Smith, Kenneth ; Leigh.
Turnbull, Edward ; London.
Williams, Thomas Hugh ; Barmouth.

The report of the College of Preceptors on the examination held on January 11 was received. 324 candidates had presented themselves for examination, of whom 160 had failed.

The following 164 passed, and the Registrar was authorised to place their names upon the Register of Apprentices and Students :—

Ackerley, Archibald ; Birkenhead.
Aikman, John ; Leith.
Appleyard, Herbert ; Leith.
Backler, Charles L. E. ; Peterborough.
Barrett, Walter Ernest ; Ilkley.
Barrie, Walter ; Tweedmouth.
Bate, Joseph William ; Walsall.
Baxter, Henry Cowan ; Dunfermline.
Bayley, Charles Wesley ; Brighton.
Beacher, Ralph Edward O. ; Sheffield.
Beale, Percy Arthur ; Northampton.
Bell, Edgar Thomas ; Cardiff.
Bell, Ivie Hair ; Glasgow.
Bell, James Thomson ; Dumfries.
Bird, Albert Edward ; Rugby.
Blechynden, A. ; Newcastle-on-Tyne.
Blyth, Charlotte P. P. ; Edinburgh.
Booth, William ; London.

Borrowman, Agnes Thomson ; Melrose
Bott, Graham Ewart ; Lewisham.
Brice, Albert Victor ; Bristol.
Brims, Donald ; Liverpool.
Brooke, Frank ; Doncaster.
Brown, George Steel ; Broughty Ferry.
Bryant, John ; St. Leonards-on-Sea.
Buchanan, Lizzie ; Kirriemuir.
Bullock, James ; Leicester.
Campbell, Robert ; Lancaster.
Cassidy, John Patrick ; Gateshead.
Christie, Benjamin ; Aberdeen.
Christie, James Daniel ; Old Meldrum.
Clark, Frederick H. ; Cockermouth.
Clark, James ; Glasgow.
Clarkson, Joseph Montague ; Edinburgh
Cluett, Charles Preston ; Chester.
Cockrill, Thomas Wilkinson ; Hull.
Cooper, Astley ; Leeds.
Cooper, George Roland ; Southport.
Corson, George Stewart ; Callander.
Corson, Robert Stewart ; Callander.
Craske, Bernard Ivan ; Holt.
Crowden, Samuel Pascoe ; Edinburgh.
Cuthbert, Thomas H. ; Lancaster.
Dainty, E. J. ; Barrow-in-Furness.
Daniel, Arthur W. ; Stoke-on-Trent.
Davies, Edward John ; Llanelly.
Davies, John James ; Llandyssul.
Dewhurst, Harry Edward ; Accrington.
Dobson, Joseph H. ; Great Harwood.
Duncan, George Walton ; St. Andrews.
Dunn, W. H. S. ; Clifton-on-Dunsmore.
Elford, Thomas Mitchell ; Plymouth.
Evans, William ; Llanelly.
Fell, William Henry ; Spilsby.
Fergusson, James ; Edinburgh.
Finch, Jacob ; Norwich.
Finegan, Richard Joseph ; Liverpool.
Firman, Frederick W. C. ; St. Heliers.
Fleming, Arthur Irwin ; York.
Geenty, Owen Charles ; Leeds.
Gibson, Henry ; Lancaster.
Gillett, Francis H. ; Moreton-in-Marsh.
Glass, Julia ; Edinburgh.
Goss, John Osborne ; Plymouth.
Graham, John ; Inverness.
Grainger, George W. H. P. ; Edinburgh.
Gray, Herbert Charles ; Oxford.
Gray, Percy ; Cambridge.
Gray, Sydney Bunting ; Rugby.
Green, Ernest William ; Northampton.
Hands, Harold Frank ; Cheltenham.
Harley, John ; Edinburgh.
Harper, George ; York.
Harris, Thomas ; Seven Sisters.
Hastings, William Ferguson ; Forfar.
Hill, David ; Arbroath.
Hockey, John Aplin ; Trowbridge.
Hollingsworth, A. ; Newcastle-on-Tyne.
Hopkins, Frank Goulding ; Broad Oak.
Hughes, John Henry ; Birkenhead.
Hurn, William Henry ; Norwich.
Hutt, John Bartlett ; Witney.
Jamieson, George Frederick ; Falkirk.
Jessop, John ; Birmingham.
Johnson, William P. S. ; Alnwick.
Jones, Arthur Owain ; Bangor.
Jones, Thomas A. ; Llandrindod Wells.
Kearney, William John ; Duns.
Kent, Joseph Henry ; Mountain Ash.
Kitchen, Clement ; Nantwich.
Knight, Leonard Holder ; Totnes.
Lambshead, Samuel H. ; Paignton.
Lavcrack, Ernest Wilson ; Malton.
Lawrence, Harold ; Penrith.
Leedale, Robert William ; Leeds.
Leese, Elisha Morley ; Alrewas.
Lochran, John ; Motherwell.
MacDonald, James ; Edinburgh.
McDonald, Robert ; Paisley.
Macintyre, John ; Oban.
McLaren, William Berry ; Newport.
McMillan, Hugh ; Kilmaurs.
McMyn, Richard Howarth ; Blackburn.
Maltby, Frank ; Lincoln.
Mannell, William C. ; Okehampton.
Mannox, Margaret M. ; Birmingham.
Mansbridge, Charles S P. ; Cheltenham.
Matthew, Georgina ; Aberdeen.
Mayson, Wilfrid Leslie ; Blackpool.
Milne, Herbert G. ; Aberdeen.
Overton, James Leonard ; Banbury.
Pain, Frederick John ; Folkestone.
Parrott, Jasper William S. ; Watford.
Paterson, Hugh ; Wishaw.
Paterson, Robert ; Leslie.
Peebles, Frederick Charles ; Hamilton.
Peel, Wilfrid ; Elland.
Phillips, John ; Trawsfynydd.
Philpin, William ; Milford Haven.
Pickles, Walter Howard ; Liscard.
Plummer, Frank ; Luton.
Powell, Edward Thomas ; London.
Preston, Ernest ; Eccles.
Quarry, John ; St. Boswells.
Quinn, James Francis ; Douglas.
Rae, David Paterson ; Galloway.
Reid, John ; Port Gordon.
Revill, Douglas Charles ; Romford.
Rixen, Ernest Alfred ; Teddington.
Roberts, Walter Charles ; Broadway.
Robinson, James Edward ; Birkenhead.
Robinson, John Leolin ; New Brighton.
Robinson, William Arnold ; Harden.
Rowland, Ernest O. ; Matlock Bath.
Rutherford, Robert John ; Cambo.
Sanderson, William ; Edinburgh.
Skinner, Duncan David ; Oban.
Smith, Albert Woodall ; Scarborough.
Smith, Alfred ; London.
Souter, James Cooper ; Aberdeen.
Spencer, Rosa K. ; High Wycombe.
Sprott, Charles Edward ; Maryport.
Stephenson, William ; Jarrow-on-Tyne.
Sturrock, John Jarron ; Arbroath.
Swinton, Alice ; Dunfermline.
Symes, May ; Highgate.
Thom, William B. P. ; Linlithgow.
Thomas, John Herbert ; Cellan.
Thomsett, Sidney E. ; Matlock Bath.
Thomson, Arthur ; Grantham.
Tippetts, John William ; Leicester.
Tonkin, John Bassett ; Penzance.
Unsworth, George ; Bury.
Wade, Alfred ; Leeds.
Walker, Francis John B. ; St. Leonards.
Weavers, Horace Percy ; Colchester.
Welton, Ernest ; Attleborough.
Weston, Walter ; Todmorden.
Wilde, Albert Edward ; Denton.
Wilkie, Peter Marshall ; Giffnock.
Wood, Robert ; Carnoustie.
Woolf, Francis William ; Redruth.
Youngson, John ; Aberdeen.
Yoxall, Alfred Newboult ; Belfast.

The questions set at this examination were published in the *Pharmaceutical Journal* for January 15, p. 53.

The following is a list of the centres at which the examination was held, showing the number of candidates at each centre, and the result :—

	Candidates.				Candidates.		
	Examined.	Passed.	Failed.		Examined.	Passed.	Failed.
Aberdeen	10	7	3	Lancaster	8	4	4
Birmingham	13	4	9	Leeds	15	7	8
Brighton	3	3	0	Lincoln	5	2	3
Bristol	6	3	3	Liverpool	20	10	10
Cambridge	3	1	2	London	30	10	20
Canterbury	2	1	1	Manchester	22	11	11
Cardiff	6	2	4	Newcastle-on-Tyne	12	6	6
Carlisle	10	5	5	Northampton	7	5	2
Carmarthen	8	6	2	Norwich	5	4	1
Carnarvon	6	1	5	Nottingham	11	4	7
Cheltenham	5	4	1	Oxford	7	4	3
Darlington	2	0	2	Penzance	3	2	1
Dundee	12	8	4	Peterborough	1	1	0
Edinburgh	29	18	11	Plymouth	5	2	3
Exeter	5	3	2	Sheffield	6	3	3
Glasgow	26	15	11	Shrewsbury	6	2	4
Hull	5	1	4	Southampton	2	0	2
Inverness	3	1	2	York	5	4	1

ANALYTICAL NOTES.

Detection of Turmeric in Rhubarb Powder.—Jaworowsky recommends the following method for detecting turmeric in rhubarb. Shake about 1 gramme of finely-powdered rhubarb for some minutes with 10 C.c. of chloroform and filter through a small filter. Add to the filtrate 15 times its volume of petroleum ether, and shake. The fluid separates into two parts. Shake one part once or twice with 2 to 3 C.c. of pure strong sulphuric acid and the other part with 1 to 1·5 Cm. of a saturated borax solution. If the rhubarb powder is pure, the chloroform solution will be of a light straw colour, which disappears on mixing with the petroleum ether. Shaken with sulphuric acid the latter turns light brown and the mixture remains clear. The second part shaken with borax solution is not altered. If turmeric is present the following reactions are obtained. The chloroform extract is yellow-brownish and with greenish fluoresence, the addition of 15 times its volume of petroleum ether produces a yellow flaky precipitate, the fluid losing neither its yellow colour nor its fluoresence. The petroleum ether chloroform solution shaken with sulphuric acid of sp. gr. 1·04 is coloured violet, the sulphuric acid taking a fushine-red colour, changing quickly to reddish-brown and then slowly to yellowish-brown. On the mixture being shaken with a borax solution, the latter is coloured violet, the top layer remaining unchanged. The reactions are very delicate.—*Zeit. d. oest. allg. Apoth. Ver.*, li., 727.

Phenol as a Reagent for Copper.—Jaworowsky states that an ammoniacal solution of phenol is a most delicate reagent for copper. A solution containing 1 part sulphate of copper in 10,000 parts of water gave light blue coloration with this reagent in 20 minutes, dirty blue after an hour, dark violet blue after 3 hours. 1:100,000 solution was distinctly blue in 20 minutes, greenish, when seen from above, in an hour, brownish-blue in 3 hours, dark green in 18 hours ; 1:1,000,000, light blue after 18 hours. Even in a solution of 1:100,000,000 a coloration was distinctly visible after 24 hours. Ferrocyanide of potassium does not produce any coloration in the last-named dilution.—*Chemik. Ztg.*, xxi., 254.

Testing Lard by its Oleic Acid.—An important clue to the purity of lard is the iodine number of the oleic acid. Mansfield gives the following method of applying the test :—Dissolve 10 grammes of the separated fatty acids in 100 C.c. of ether, and shake with 3 grammes of oxide of zinc until the fluid thickens. The resulting oleate of zinc remains in solution while the non-soluble palmitate and stearate are separated. After the filtration of the mixture and distillation of the ether, the residual soap is decomposed with diluted hydrochloric acid, and the separated oil acid again washed and dried. 0·2 gramme is used for the determination of the iodine number.—*Pharm. Centralh.*, xxxviii., 353.

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THE COUNCIL MEETING.

After confirmation of the minutes of the previous meeting the President referred to the death of Mr. Lea, of Worcester, who was a life member and had been a liberal contributor to the Benevolent Fund. The death of Mr. Conroy was also mentioned as a loss to pharmacy.

On taking the lot as to the retirement of members of Council, the names drawn were those of Messrs. Allen, Atkins, Corder, Grose, Martindale, Savory, and Warren. The members retiring by rotation are Messrs. Bateson, Cross, Hills, Johnston, Newsholme, Storrar, and Symes.

The additions to the ranks of the Society comprise 3 members, 37 associates, and 43 students.

The report of the Finance Committee called for no comments, both receipts and payments recommended being of the usual character.

The Registrar's report was presented and ordered to be printed, see page 122. It shows that the additions to the numbers of pharmaceutical chemist and chemist and druggist members have been somewhat less than in the previous five years, and that they have been more than counterbalanced by the deaths, secession, etc., and that while the additions of associates in business have been considerable, the number of associates not in business has decreased.

The number of entries for the qualifying examination were nearly equal to those last year, and the number of successful candidates was smaller. The number of entries for the Major examination was considerably smaller, but the proportion of successful candidates was larger than in the previous year. The increase in the number of registered persons was only forty-nine.

On the recommendation of the Benevolent Fund Committee four grants, amounting in the aggregate to forty eight pounds, were ordered to be paid. The Secretary reported the death, at the age of 87, of Mr. Parsons, who was elected an annuitant in 1877.

The report of the Library, etc., Committee stated that a communication from the Decimal Association has been under consideration, and that the President purposes attending a meeting of the Association to which it referred.

The President mentioned the receipt of a letter from the Honorary Secretary of the Midland Chemists' Association, enclosing a resolution expressing unqualified approval of the draft Pharmacy Bill. A letter from the Secretary of the Royal Botanic Society announced the extension of the time for admission of students to 3 p.m. This is a concession which will afford greater opportunity for study, and it has been obtained in consequence of Mr. Martindale's bringing the matter before the Council.

A letter from the Coroner for Southampton contained a recommendation of a jury that greater caution should be observed in the sale of carbolic acid, and that it should be supplied in special bottles.

The President then drew attention to a report of the Board of Examiners for Scotland, offering explanations of the fact that there are so many failures in the examination. It pointed out that most of the failures are due to deficiency in the practical portions, and in pharmacy as well as chemistry, showing that there is a want of systematic teaching rather than a want of industry on the part of candidates. The report suggested that chemists should give greater attention to directing or facilitating their apprentices' studies, and that the great want was a compulsory curriculum as a remedy for misdirected study. Dr. Symes remarked that some improvement might be expected when the new Bye laws come into operation, and in the course of a discussion which followed the reading of the report, which is published at page 121, Mr. Bateson and Mr. Atkins suggested that greater advantage might be taken of local opportunities for study, which are now so generally provided. In connection with this view the President spoke of the great facilities for the study of chemistry and physics to be obtained at the Owens College, Manchester, and of the very slight extent to which they are utilised.

Dr. Symes mentioned that the meeting of the British Pharmaceutical Conference would take place at Belfast next August, and expressed a hope that the fact would be remembered when arrangements are made for holidays.

On the recommendation of the General Purposes Committee resolutions were passed authorising the Registrar to take proceedings in several cases which have been reported and considered.

THE METRIC SYSTEM.

The use of the metric system of weights and mea ures is now general in scientific work, the result of recent legislation is that its use in British commerce is permitted, and the time appears to have come when the lead taken by science workers should be followed by pharmacists in their daily business as far as possible. The mischief of a permissive system is that what is permitted is often, as a matter of convenience, ignored, and there is little doubt that the mere permission to use metric weights and measures in trade will prove futile in encouraging the general adoption of the system. The suggestion is offered, therefore, that pharmacists should neglect no opportunity of familiarising themselves, and those with whom they come in contact in the course of their business, with the more rational weights and measures that are now legal, the more especially as they appear destined, sooner or later, to supplant the older weights and measures entirely. With the view of encouraging and assisting the reform indicated, it is proposed in future to give all quantities in these pages in accordance with the metric system, and the change will be effected in its entirety at as early a period as may prove convenient. After the new Pharmacopœia is published there will be no excuse for British pharmacists to plead unfamiliarity with the metric system, and contributors and correspondents are requested henceforth to state all quantities in terms of that system, unless the necessity for doing otherwise should be unavoidable.

ANNOTATIONS.

A University Degree in Science is most certainly not gained as easily as the title "Pharmaceutical Chemist," nor is the Fellowship of the Institute of Chemistry so readily obtained as Mr. Glass seems to imagine, judging from his letter in last week's Journal. In the first place, those who desire to matriculate at, say, London University, or to be registered as students of the Institute of Chemistry, must show proof of having attained a much higher standard of general education than is necessary in the case of pharmaceutical students. Then the courses of study required are much longer, and the intermediate and final examinations to be passed are more severe and necessitate more sustained application than is the rule in pharmacy. In fact, no real comparison can be made between such dissimilar requirements. The new Bye-laws will do something towards improving the pharmaceutical position, but the omission of scientific subjects from the new syllabus of the Preliminary examination will prevent it taking equal rank with the London University Matriculation Examination. Again, the requirement that a candidate presenting himself for the Minor examination must present a certified declaration that for three years he has been employed as an apprentice, or has otherwise for three years been practically engaged in the translation and dispensing of prescriptions, is not for a moment to be compared with that of the Institute of Chemistry, the regulations of which stipulate that every candidate for the associateship must have "passed satisfactorily through a systematic course of at least three years' study in the subjects of theoretical and practical chemistry, physics, and elementary mathematics." And these do not, by any means, exhaust the very great differences that exist at all stages of the respective courses.

A Degree in Pharmacy, to be of any real value and receive proper recognition in this country, must be conferred by a university, preferably after a recognised course of study. The proposal to establish a teaching university in London seems to indicate a favourable opportunity for giving serious attention to the demand for some better recognition of advanced work in pharmacy than can at present be obtained, and there is good reason to believe that the authorities of the Victoria University would not be unwilling to entertain suggestions on this point, whatever may be the position of London University in the matter. Of course, in the event of a degree being granted, the requirements would almost certainly be greatly in excess of those that now prevail in connection with the Major examination of the Pharmaceutical Society. Matriculation, on the present London and Victoria University lines, may be expected to be a necessity, and candidates will probably be expected to devote a year at least to higher scientific studies, after attaining the standard of the existing Major examination, an equivalent of which might be regarded as an intermediate examination for the degree. But, in any case, it is well for pharmaceutical chemists to comprehend that their present standing is not in itself sufficient to justify them in asking for such higher recognition as would be indicated by holding a degree in pharmacy.

In that Land of Freedom from Tradition, the United States of America, the titles of "Pharmaceutical Chemist" and "Graduate in Pharmacy" have long been the highest recognition of advanced studies in pharmacy, but of late the further step has been taken of conferring a degree—that of "Doctor in Pharmacy." In one instance, at least, the degree will be granted by a university, but in others independent colleges are taking upon themselves to assume a function that is, by common consent in this country, reserved for universities only. A typical case is that of the Philadelphia College of Pharmacy, and a brief summary of the conditions on which the "degree" is conferred by that institution should be of special interest to our readers at the present time. In the first place, all students matriculating at the College are required to attend two preliminary examinations, one held four weeks, and the other eight weeks, after the opening of a term. Those examinations are based upon the subject-matter of the lectures and laboratory exercises covered by the students prior to the dates of the examinations, whilst with the first is combined an examination in the usual rudimentary branches of English education, unless candidates can present evidence of having already satisfied some similar test. Until these preliminary requirements are met, students are not allowed to proceed further in the special pharmaceutical course.

The Three Years' Curriculum which is compulsory in the case of candidates for the title of "P.D." comprises courses in the theory and practice of pharmacy, chemistry, materia medica, botany, field work in botany, operative pharmacy, analytical chemistry, and laboratory instruction in botany and pharmacognosy. Examinations are held at the end of the first and second years, and any student failing to satisfy the examiners in a majority of the subjects he has studied is required to repeat his year's work. Failure in one or two branches, however, may be compensated for by subsequently satisfying the examiners in those subjects only. At the end of the third year the student must again present himself for examination. If successful he is then permitted to assume the title of "Pharmaceutical Chemist," on condition that he is of good moral character and has produced an original dissertation or thesis on some subject of pharmaceutical interest. To become a "Doctor in Pharmacy" he must, in addition, have served a four years' apprenticeship "with a person or persons engaged in and qualified to conduct the drug business," and he may then be admitted to the final examination and receive the diploma of the College if successful. Another title, that of "Master in Pharmacy," may be conferred on graduates of the College of not less than five years' standing, who have been engaged in the practice of pharmacy during that length of time and are of good moral character and professional repute. An original dissertation is again required in this case.

The Communications on the Pharmacy Bill, published in the Journal this week, deal with the matter in question from many different standpoints, but apparently finality in the arguments is still as far off as ever. Mr. Routley assumes indifference on the part of the general public, in regard to the rank any individual holds in the Pharmaceutical Society, and perhaps he is not far wrong in so doing. It is even thought by some that "chemist and druggist" is a better title, from a business point of view, than "pharmaceutical chemist," because it is more intelligible to the public. The proposition advanced with regard to the Major examination and the imposition of an annual registration fee embodies ideas that may be realised some day, though not exactly in the rough-and-ready manner he suggests, and the time is certainly not yet ripe for such an important change. In Mr. Dunlop's letter the Bill is boldly referred to as a "Reform Bill," and that fact is sufficient to reveal his attitude with regard to the measure. It will be observed, by the way, that he explains the confusion in the official report of the Edinburgh meeting held a fortnight ago, by attributing the remarks of one speaker to another and *vice versâ*. Such an instance of reversion or trans-

position is distinctly curious. Turning to Mr. Woolley's letter we find a definite denial of Mr. Pilkington Sargeant's "facts," but, nevertheless, the Manchester and district chemists are still far from being unanimous in their position with regard to the Bill. Time, however, may work a change even in that part of the country. Mr. Schollar confirms Mr. Woolley's statements, and in other ways combats the arguments that have been put forward by Mr. Sargeant. Mr. Barrass doubtless speaks for many readers when he hints that it was hardly worth while to make so much fuss about so slight a measure, as the limited number of its opponents have done. This is a practical, sensible sort of letter, and it introduces a sense of freshness into the air of the controversial arena, that has been badly needed for some weeks past. As will be seen by the footnote to his letter, all hope of converting Mr. Cook on the point of the value of membership of the Society has been given up, but we have the satisfaction of knowing that he for one fully appreciates the advantages of membership, and that he is not to be classed as an opponent of the Bill. His claim for something more for Major men is not likely to be overlooked in the future, but a suitable opportunity must offer itself before that question can be seriously entertained.

The Registrar's Report (see p. 122) confirms the figures published last week regarding the strength of the Pharmaceutical Society at the end of the year 1897. That is to say, the total number of subscribers at that time was 23 less than at the end of 1896. The elections for January and February this year, however, have been more numerous than for the corresponding months of last year, and there have also been a number of restorations, so that at the present moment the deficiency is practically made up. But the fact remains that the Society is less representative of registered chemists—who have increased in number—than it was twelve months ago, and that fact should be taken into serious consideration by members who have any thought of opposing obstacles to the passing of the Pharmacy Bill. Members go and associates come, the balance between the two classes varying from year to year, but always and steadily in the same direction. If, therefore, the class which is entitled to the full privileges of membership is to be maintained, it seems essential that all registered chemists should be eligible to enjoy those privileges. It may be noted, by the way, that Mr. Makepeace Lock exaggerates somewhat (see p. 133) in speaking of chemists and druggists who were in business before the passing of the Pharmacy Act, 1868, as a "small" class. As a matter of fact the class referred to is far from small, for out of the 15,215 chemists on the Register, more than 3900 have been registered in virtue of having been in business before August 1, 1868.

The London Members of Council are again all on the retiring list, with one exception. As it is, there are but six of them altogether, a much smaller number than seems desirable when the work of the numerous committees is taken into consideration, and in the event of the number being further reduced at the coming election, the inconvenience so caused by the difficulty of obtaining a quorum at times will be considerable, to say nothing of the extra trouble involved in bringing country members of Council up to town more frequently than they care for or than would be at all necessary if there were as many London members as there ought to be. But that, of course, is a matter for the electors to decide in due course, and the only object in referring to the matter now is to show that there are two sides to the question sometimes raised with regard to the relative proportions of metropolitan and provincial members of Council, whilst sight should not be lost of the fact that each individual member represents the whole of Great Britain and not any particular district only.

"Bacteriology for Pharmacists" will be Mr. Leo Atkinson's subject at the evening meeting in London of the Pharmaceutical Society, on Tuesday next, February 8. That it is a subject of great interest it is needless to say, but it may be permitted to point out that Mr. Atkinson's work in bacteriology entitles him in great measure to be regarded as an expert. He has also proved to his own satisfaction the advantage that may accrue to the pharmacist who fits himself to be what may be termed a popular scientific adviser and instructor, and from that point of view his experience should be of value to his fellow-pharmacists. The lecture will be fully illustrated by practical demonstrations of methods of cultivation and staining, as well as by photo-micrographs, and readers are reminded that it is customary at such meetings for the President to take the chair and at once proceed with the business at eight o'clock sharp.

The Period of Balls has almost passed in pharmaceutical circles, but compensation of a sort is provided by the opening of the period of pharmacy dinners. The Cambridge Pharmaceutical Association holds its annual dinner on Thursday next, February 10, and the President of the Pharmaceutical Society will be the guest of the evening; the School of Pharmacy dinner takes place the following week, when the Dean, Professor Greenish, will occupy the chair; and the Chemists' Assistants' Association is to celebrate the termination of another year in its career at a similar festive gathering on March 3, when the President, Mr. T. Morley Taylor, expects to be supported by the Presidents of the Pharmaceutical Society and of the British Pharmaceutical Conference, Sir Dyce Duckworth, Mr. Michael Carteighe, and a host of other friends. Before many weeks are past the annual dinner of the members of the Pharmaceutical Society and their friends will also be announced, indicating what is practically the end of a winter session that seems, as yet, to have but recently commenced.

Sir George King, K.C.I.E., better known as Dr. George King, on whom a mark of distinction was conferred as one of the New Year's honours, well merits his advancement, which at the same time reflects honour on the Pharmaceutical Society, of which he is an honorary member, having been elected in 1892. Sir George King's tenure of office as Superintendent of the Royal Botanic Gardens, Calcutta, has been marked by an immense amount of active and excellent work, and his name will always stand an in association with those of his predecessors, such as Wallich, Roxburgh, and Griffith, historic names in the early records of Indian botany. Previous to his recently conferred honour of knighthood, Sir George King was the possessor of a long list of distinctions, being an M.B., LL.D., F.R.S., and C.I.E. His 'Manual of Cinchona Cultivation in India' is a very complete work on the subject, from the collection of the seeds in South America, introduction and cultivation in India, chemistry of the bark crop, and the local manufacture of cinchona febrifuge. A large number of scientific papers are the work of his pen, the most important, however, are the 'Annals of the Royal Botanic Garden, Calcutta,' and 'Materials for a Flora of the Malayan Peninsula.' On his retirement from the position of Superintendent of the Calcutta Garden, Sir George King will carry with him the best wishes of every botanist and pharmacist.

The British Pharmaceutical Conference arrangements for this year are progressing, the latest information being that the President of Queen's College, Belfast, has kindly consented to place the whole of the Queen's College Buildings at the service of the Ulster Executive Committee for the purposes of the Conference in August next.

THE WORLD OF PHARMACY.

CHEMISTS' ASSISTANTS' ASSOCIATION.

Mr. T. MORLEY-TAYLOR, President, occupied the chair at a meeting of this Association on Thursday, January 27, when Mr. E. W. RICHARDSON, of the *St. James's Budget*, delivered a most interesting lecture on

How an Evening Paper is Produced.

Commencing with the editorial staff, he briefly sketched an outline of the work done in the various departments connected with an evening paper. The work of the news agencies, the tape machine, Mono- and Lino-type machines, and the method of casting stereotype plates were then graphically described, and a very vivid account given of the actual work of printing, and of the extraordinary rapidity with which the machines print and fold the papers, each revolution of the machine printing two papers simultaneously. The listeners were then let into the secret of how it is that within a few minutes of the Oxford and Cambridge boat race, papers can be bought in the streets of London giving a description of the race from the start until the winning post is passed. Briefly told, the secret is that wires are laid along the entire course, these are tapped at various points so that a description of the position of the boats and other little incidents of the race are despatched to the newspaper offices as it proceeds. This is at once put in type, stereotyped, and put on the machines waiting for the result to be flashed along the wires. Space is left in the stereo for a fudge box containing this important item, set in ordinary type, to be inserted. Two boxes are in readiness, so that whichever crew passes the winning post first, as soon as the news reaches the office the box in which its name appears first is inserted, a lever pulled, and the machines are at work turning out copies of the paper at the rate of something like 26,000 per hour. The same secret also applies to horse-racing results. The publishing department was next dealt with, and particular stress was laid upon the routine, precision and discipline required on the part of all concerned in the production of a newspaper, and in placing it in the hands of the public.—At the conclusion of the lecture, numerous questions were asked, and Mr. Richardson briefly replied to them.—In answer to a question by Mr. PEARSON, with respect to the promptness with which a *résumé* of the life of any great man is published almost before the body is cold in death, he explained that in the case of all great personages a record or history of their life is kept in type, strictly up-to-date, together with illustrations of their place of birth, marriage, etc., so that, especially if their death is expected by reason of serious illness, within a short time after the news is announced a life-history is issued to the public.—A vote of thanks, moved by Mr. GAMBLE, and seconded by Mr. E. W. HILL, was then put to the meeting, and carried with acclamation.

LIVERPOOL PHARMACEUTICAL STUDENTS' SOCIETY.

The usual meeting of this Society took place on Thursday evening, the 27th ult., at University College, Mr. PIERSON, the President, in the chair.—The preliminary business having been finished, Mr. T. S. WOKES mentioned that he had had to dispense succinate of iron once or twice of late, and would like to know if it was commonly met with in prescriptions and in what form it was generally ordered.—The PRESIDENT, Mr. Pierson, in reply, stated that it was not exactly of daily occurrence, but he had had it ordered in cachets and also suspended with mucilage in a mixture. The cachets should be moistened on their edges with gum instead of with water to make the two halves adhere, as the use of water has a tendency to cause the iron salt to deliquesce and stain the envelope.—Mr. MARSDEN drew the attention of the meeting to a method in use in the physiological laboratory of the Medical School for dividing albumin when used in pepsin testing. There they drew the liquid albumin up in tubes of small calibre, which were then sealed and exposed to heat to cause coagulation of the contained albumin, which was subsequently blown out in thin pipes like fine vermicelli, very convenient for pepsin examinations.—The HON. SECRETARY, Mr. J. Harris Burns, then read a paper on

The Structure and Functions of the Human Eye.

The lecturer, who was evidently fully master of his subject, the knowledge of which he had gained whilst connected with an eye hospital, proceeded, by means of diagrammatic drawings shown by the electric lantern, to describe the structure and general anatomy of the eye with the wonderful arrangements Nature has provided for ensuring the adaptation of the sight to various distances and the different degrees of illumination. After contrasting the work of Nature with the highest attempt of man—the photographic camera—the lecturer went on to consider the faults to which the eyesight is subject and the artificial means of correcting them at our disposal, in the shape of specially-contrived lenses or glasses. The final portion of the lecture was devoted to an extremely lucid and interesting exposition of the commoner surgical operations on the eye, which were made much more easy of comprehension by demonstration from a magnified model of the organ capable of being readily dissected into its component parts. A good discussion followed, and expressions of satisfaction were general at the clearness with which the various points had been explained, and at the manner in which a difficult subject had been handled by the lecturer.

LIVERPOOL CHEMISTS' ASSOCIATION.

The annual general meeting of this organisation took place at the Royal Institution, Colquitt Street, on Thursday evening, the 27th ult., the PRESIDENT, Mr. J. Bain, occupying the chair. After the usual votes of thanks had been passed to the retiring President, Mr. A. C. Abraham, F.C.S., F.I.C., and the other officers, the TREASURER and SECRETARIES presented very satisfactory reports, which were adopted, and which will be in due course printed and posted to each member. The following gentlemen were elected to the Council: Messrs. A. C. Abraham, Day, Dutton, Hornblower, J. Smith, J. J. Smith, and Pearson.—The PRESIDENT, after mentioning that he had attended, as representative of the Association, a banquet given to the Lord Mayor of Manchester, Alderman R. Gibson, by the Manchester Pharmaceutical Association, proceeded to deliver a short address.

The President's Address.

Mr. Bain said: My first duty is to thank you for the honour you have been pleased to confer upon me in electing me to this chair, a position which, during past years, has been so ably filled by men whose names are distinguished not only in pharmacy, but in the higher realms of science. For one who, like myself, has found his vocation rather on the commercial side of our calling than on the more congenial and inspiring scientific side, it is a somewhat serious matter to be called upon to occupy the presidency of an association such as ours, the members of which have been accustomed to associate more distinguished names than mine with this important office.

We now enter upon the forty-ninth session, and if our Association is not actually adorned with the halo of antiquity, it has acquired during its long career a reputation as a provincial association second to none. It is therefore with a considerable amount of misgiving that I enter upon this office, a feeling that is only assuaged by the kindly words of encouragement I have received from past-presidents and members and the kindly promises of loyal assistance from our honorary secretaries.

I shall be grieved if the Association does not keep up its high reputation during the ensuing session, or if my year of office should cause any dimness on the lustre of its history.

Since its foundation the composition of the Association has changed, and as time has passed over it, the ideas, pursuits, and necessities of its members have altered. In one respect, however, we of this session are at one with those who inaugurated this Association half a century ago—we are still seeking for knowledge, and with good reason; we pursue it more intensely and more eagerly than did ever those who have gone before us. The application of science to the production of medicaments has undoubtedly been the chief feature of the period I refer to, and entails a high state of culture on the part of those who desire to avail themselves of its enormous possibilities. Our success in business depends to a great extent upon our capability of appropriating and utilising the scientific discoveries which have been unearthed. To enable us to do this we must continue, by every available means, the education which, beginning in our apprenticeship, cannot be said to be completed even after a lifetime spent in the attempt to acquire an efficient knowledge of our art, the difficulties of which are only partially surmounted by the oldest and most zealous of its votaries.

I consider it a good sign of the times that local associations

are increasing in numbers, and, let us hope, in usefulness as well organised institutions, with active committees and officers, they stand out all over the country as bulwarks against unfair interference with our rights. They are pioneers in all important pharmaceutical movements, and are ever at hand for counsel or defence in time of need. The support of local associations such as ours is a duty incumbent on every chemist, and he who fulfils this duty reaps a rich reward, not only by participating in the advantages just mentioned, but by assisting in the intellectual improvement of his fellow members, and thereby developing his own knowledge, intelligence, and experience; and last, and by no means least, by forming the acquaintanceship of his fellow townsmen and fellow craftsmen, and gaining respect for and confidence in those whom, under other circumstances, he would only regard as competitors, and perhaps as enemies, who now become his sympathetic and confidential friends.

It is quite conceivable that all those associations scattered over the length and breadth of the land might be doing a very good work locally but yet be capable of doing a great work nationally only. They are like the cells of a great battery, each one perfect in itself, but requiring a connecting wire to be of really potent influence. The Federation of Local Pharmaceutical Associations is this connecting wire which will bind all these associations together, which will collect and focus their force, and bring it to bear effectually on any necessary object or subject. Every association joining this Federation, and I am glad ours is of the number, increases enormously its influence and power for good.

I cannot close these remarks without referring to the loss this Association and pharmacy generally has sustained in the death of Mr. Michael Conroy. He truly adorned chemistry and pharmacy, and his now vacant place at our meetings will long remain painfully conspicuous. As a gentleman he was respected and beloved by all his numerous acquaintances and friends, and as a scientific chemist his name is of world-wide fame. Only two years ago he occupied this chair, and everyone here knows and feels, better than my words can convey, the loss our Association has sustained.—A miscellaneous communication was contributed by Mr. T. H. Wardleworth in the form of a specimen of maize oil, which he shortly described as probably fit for use in pharmaceutical operations from its freedom from taste and unpleasant odour.—Mr. Cockshott was elected a member of the Association.—It was decided to hold a special meeting on the proposition of Mr. T. H. Wardleworth, seconded by Mr. Wellings, and feelingly supported by Mr. A. C. Abraham, in order to appropriately express the loss which they as an Association and individually had recently experienced by the lamented demise of Mr. Michael Conroy, F.C.S., and it was unanimously resolved that Mr. Edward Davies, F.C.S., F.I.C., should be asked to deliver an "In Memoriam" address.—Before the reading of the paper of the evening, Mr. A. C. Abraham said he thought it due to the authors to explain that it should have been read at the December meeting, but in consequence of the amount of business to be transacted that night and the lateness of the hour when their turn came, it was postponed until the present occasion. In the meantime a paper by Messrs. Farr and Wright had appeared in the *Pharmaceutical Journal*, which covered most of the ground Mr. Cowley had gone over, so that he (Mr. Abraham) had thought it as well, in order to protect the *bonâ fides* of Mr. Cowley, and at his request, to hold the paper in his keeping until the present occasion.—The following paper, by Messrs. R. C. Cowley and T. P. Catford was then communicated:—

The Solvent Action of Proof Spirit and Acetic Acid on Colchicum Seeds.

Mr. Cowley said: The subject of this paper is a continuation of the work on colchicum corm undertaken by one of us last winter, and on which a paper was read before this Association last April. It was then the unanimous desire of the meeting that further investigations should be continued on the seed. The result of our work has further proved that acetic acid does not possess advantage over weak spirit as a solvent of the alkaloid of the drug. Two preparations were made from portions of a commercial specimen of powdered colchicum seeds:—

1. A tincture by the pharmacopœial process.

2. An acetum by maceration and percolation with diluted acetic acid until 8 parts of the percolate were obtained from 1 part of the seeds.

The spirituous preparation contained a considerable quantity of a fatty oil, some of which spontaneously separates in cold weather in the form of oily globules and as solid white flakes. The acetic preparation, on the other hand, was found to contain no oily matter, but the dilute acid had the effect of dissolving out a large proportion of mucilaginous matter, thus necessitating a special preliminary treatment in each case.

Several methods were employed to determine the alkaloidal strength of these preparations. Precipitation by the usual alkaloid precipitants proved unsatisfactory, the results in all cases coming out too low to warrant our proceeding with them.

As tannin is one of the most efficient precipitants for the alkaloid, we devoted special attention to it. A very bulky precipitate was obtained, which at first sight led us to believe this method was going to be successful, but the precipitate consisted mainly of the colouring matter of the drug, and when subsequently warmed with lead acetate to decompose the tannate of the alkaloid a resinous matter separates, apparently from the decomposition of the alkaloid, even though the operation was conducted at as low a temperature as possible on a water bath. The result of several attempts gave us low results. It would appear that owing to the tendency of colchicine to decompose, the simplest method for extracting it is the best one.

The alkaloid from our assays was obtained in the form of a pale yellow transparent varnish with, in several instances, a distinct tendency to crystallise. A pecularity of the alkaloid from the acetic preparations and also of that from the B.P. extracts is that it is accompanied by something of a fluorescent character. We do not find that this has ever been noticed before. We found removal of the oil by petroleum ether, as described by Messrs. Farr and Wright, rather troublesome owing to the tendency to form emulsions due to traces of mucilaginous matter so little as to cause only slight turbidity if treated with alcohol as hereafter described. Instead of petroleum ether we have adopted a simpler method, which proves quite effectual.

From 100 C.c. of the tincture in a small flask distil off the greater part of the spirit, evaporate the remainder in a capsule on a water bath to about 10 C.c. The oil will be found floating on the surface of the liquid in globules. Acidulate with acetic acid, and stir in a little kaolin which has been previously washed with acid and water; pour on a moistened filter paper. Allow this to pass through and preserve. Wash the contents of the filter paper with distilled water until no longer acid. Concentrate the washings and transfer, with the first filtrate, to a separator. Add excess of caustic soda and 20 C.c. of chloroform. After well shaking, the chloroform layer is drawn off into a tared flask and distilled on a water bath. The distillate can thus be repeatedly returned to the separator until all the alkaloid is exhausted, about three washings being generally sufficient. The flask with alkaloid is then dried in a water oven until of constant weight. As $CHCl_3$ forms a compound with colchicine, prolonged heating is necessary to drive off the last of it.

We have found by experiment that after the kaolin treatment petroleum ether does not extract even a trace of oil. The average yield of alkaloid from the tincture was ·087 gramme from 100 C.c., equivalent to ·75 per cent. of alkaloid in the seed.

To obtain a good result from the "acetum" we found it absolutely necessary to remove the mucilaginous matter, which we did as follows: 100 C.c. was evaporated on a water bath to a syrupy consistency and poured gradually into several times its bulk of strong alcohol, set aside to completely precipitate the mucilage, etc., which comes out in the form of granular white flakes, easy to filter off. The filtrate was received in a small flask fitted with a perforated cork, through which passes the stem of the funnel. The whole was placed on a water bath. The vapour of the spirit passes through and around the filter, and is condensed on the bottom of a capsule or flask containing cold water, fitting inside the mouth of the funnel, from which the condensed spirit drops back again through the filter into the flask. Complete exhaustion is thus ensured, as shown by the drops becoming colourless. The funnel is then removed, the spirit is distilled off and the residue exhausted as described under the tincture. The average yield of 100 C.c. acetum was ·081 gramme alkaloid, corresponding to ·7280 in the seed.

Assay of Commercial Samples of Extracts of Colchicum.

One specimen each of the acetic and ordinary extracts were dealt with. The chief difficulty in estimating the alkaloidal strength of these consists in removing the large proportion of mucilaginous matter, etc., which makes it quite impossible to exhaust by direct treatment. We removed these by dissolving the extract in a small quantity of water, and then poured it drop by drop into alcohol contained in a bottle, shaking after each addition. The granular precipitate aggregates eventually, but not before the

spirit has had time to thoroughly penetrate it. We proceeded afterwards as in the cases of the acetum. The percentage of alkaloid in the acetic extract was 1·27, corresponding to 1·62, in the extract dried at 100° C., and the percentage in the ordinary extract was 1·23, corresponding to 1·55 in the extract dried at 100° C.

Messrs. Hornblower and Marsden, during the subsequent discussion, asked in what state the colchicum seeds were, and the latter gentleman suggested that as the active principles were said to exist only in the seed-coat, powdering would seem to him unnecessary.—Replying to these and other questions, Mr. Cowley said that why acetic acid was used as a menstruum for colchicum he could not understand, particularly after his experiments. The seed he used had been procured for him in fine powder by Mr. Wardleworth, so that he could answer for its quality, and his reason for using it powdered instead of whole was that, though the active principles were said to reside in the seed-coat alone, it had been proved some time since—by Cripps he believed—that it was absolutely necessary to the proper extraction of these active principles that the sced should be in a fine state of comminution.

NEWPORT AND MONMOUTHSHIRE CHEMISTS' ASSOCIATION.

The annual dinner of the above Association was held on Thursday the 27th ult., at the Westgate Hotel, Newport, and was a complete success.—Alderman Bear (the Mayor) presided over the gathering, and was supported by Dr. Basset, Dr. Garrod Thomas, Dr. Howard Jones, Dr. Gratte, Dr. Hamilton, Mr. Benson Harris, Mr. R. R. Groome, Mr. G. R. Thompson, Mr. H. C. Lewis, Mr. F. G. Young, Mr. J. Lloyd Jones, Mr. A. Gratte, Mr. C. Paine and others.—The loyal toasts having been honoured, Dr. Basset (Secretary of the Medical Society), in proposing the toast of the Newport and Monmouthshire Chemists' Association, expressed great satisfaction at the objects of the Association, which was the first formed in the county. He was very pleased to find that amongst other things they intended arranging for courses of lectures to be delivered on various subjects bearing affinity to their profession, such as chemistry, pharmacy, etc. The advancement of pharmaceutical science was taking place at such a rate that it was essential for them to hear everything that may be said on the subject. These would also be of material service to those who had yet to face their examinations. As far as the Medical Society was concerned, they would be very pleased to work in harmony with their Association, for the chemist and the doctor had many things in common.—In response, Mr. Paine, the Vice-President of the Chemists' Association, referred to the practice of doctors dispensing for themselves. He would be glad to see a change in this respect. With reference to the intended courses of lectures, they would be looking to the doctors for a helping hand, two or three of whom had already promised them a few evenings.—Mr. B. Harris having also made a few remarks, Mr. Smith then proposed "The Town and Trade of Newport," to which the Chairman responded, and remarked on the long hours chemists had to work, and also the competition which they had to contend with. Even the drapers and grocers vended their commodities. He considered the profession one of the most honourable in the kingdom.—Dr. Garrod Thomas also spoke in response to this toast, remarking in the course of his speech that he had come there at great inconvenience to himself in order to show by his presence how high an opinion he entertained for the chemists of Newport, and expressed his gratification at the formation of the Association. It was only by their combining together they would be enabled to do anything in furthering the interests of the profession.—Mr. Collis then proposed "The Medical Profession of Newport," and ventured to express a hope that the doctors would hand over the dispensing to the pharmacists, to whom it legitimately belonged. The sooner this was done the better. He also wished to draw their attention to the subject matter of a letter which he had that day received from the Secretary of the British Pharmaceutical Conference, in which the Secretary asked him and others to use what influence they could to get members to join that Conference, as their ranks had been considerably thinned during the last year by death.—Dr. Howard Jones, in responding, wished the Chemists' Association every success, but was afraid that as matters now stood it would be impracticable to hand over the dispensing to the chemists. He and his brother professionals would only be too glad to do so were it possible.—Mr. Lloyd-Jones having proposed "The Visitors," which, having been responded to by Mr. Thompson, the county analyst, the toast of "The Mayor" was drunk, and "For He's a Jolly Good Fellow" sung heartily. Thus an exceedingly enjoyable evening was spent, and everything augurs well for the future of the Newport and Monmouthshire Chemists' Association, which, by the way, owes a great deal of its vitality and even its existence to its indefatigable Hon. Secretary and Treasurer, Mr. Benson Harris, who fully deserves the praise bestowed upon him.

IRISH PHARMACISTS' ASSISTANTS' ASSOCIATION.

At Dublin on January 26 the second annual ball of this Association was held in the Pillar Room of the Rotunda. Upwards of ninety couples were present. Dancing commenced at 9 p.m., the President, Mr. William J. Hardy, M.P.S.I., leading off in the first of twenty-four up-to-date dances. The music was supplied by Oscar May's string band. The room was prettily decorated for the occasion by Messrs. Ramsay and Co., florists, Ball's Bridge, and Messrs. Millar and Beatty, Grafton Street. The catering arrangements were entrusted to Messrs. Kelly and Co., Lower Baggot Street. Messrs. W. Vincent Johnston, M.P.S.I., and W. J. Dunwoody, M.P.S.I., acted as Masters of Ceremonies, and left nothing undone to secure the comfort of the visitors. Dancing was kept up until 4 o'clock, when the company separated to the refrain of "Auld Lang Syne." The Association is to be congratulated on the success which has attended its second annual re-union, and to Mr. J. Tyrie Turner, M.P.S.I., the Hon. Treasurer of the Association, and the Committee of management are due the best thanks of the members and of all who attended the function.

PHARMACEUTICAL SOCIETY OF IRELAND.

At Dublin on Monday last the usual evening meeting of this Society for the discussion of scientific subjects was held in the Examination Hall, 67, Lower Mount Street, when an interesting lecture on

Insects; and how to Catch, Preserve, and Classify them,

was delivered by Mr. George H. Carpenter, B.Sc., to an appreciative audience, amongst whom were a considerable number of ladies. The President, Mr. P. J. Downes, occupied the chair, and the lecture was illustrated by limelight views.—The President, in introducing Mr. Carpenter, humorously alluded to the not infrequent calls on the chemist for bottles as a means of exterminating insects. He was indebted to a mosquito, which he found in his pharmacy, and which he showed to Mr. Carpenter, for to-night's entertainment. That mosquito was the means of him capturing the learned lecturer.—Mr. Carpenter, whose rising was greeted with applause, proceeded at once to his subject, on which he spoke fluently and without notes for upwards of two hours, holding the interest of all present to the very end. The lecture embraced the life and habits of flying and creeping insects, ranging from the familar cockroach of the kitchen to the denizens of Central Africa, India, and other remote places. The various processes of securing specimens, and the subsequent preservation of the captives alive and dead, formed an important feature in the lecture. Some beautiful reproductions of insect cabinets in museums were shown. The "praying" insect from Madagascar, so-called from its devotional attitude, was spoken of, but, added the lecturer humorously, its instinct was not "praying" but "preying" when so postured. Centipedes and other members of the Arthropoda world, including the familiar prawn or Norway lobster, and the collembola from Mitchelstown cave, came in for due attention. The cuckoo's "spit" was shown to consist of a small insect underneath the froth-like substance. Cochineal insects and cantharides and Spanish fly and their relation to pharmacy were alluded to, as were also plant lice or green fly. Water-bugs and their musical accomplishments caused some amusement. Black beetles from Germany were at present paying a visit to this country, and, like other things made in the Fatherland, were very hard to get rid of once they got a footing. Locusts, grasshoppers, and dragon-flies were dissected verbally, and the adaptation of insects to their surroundings as a means of concealment was strikingly illustrated. The habits, etc., of butterflies, ladybirds, gnats, and stylox, or bee parasites, were described *seriatim*, and an excellent specimen of the tongue of a common blow-fly was thrown on the screen. The lecture concluded by Mr. Carpenter showing that insects were not unlike the *genus homo* in their instincts. They were slave-makers,

like the warlike ants, thieves in their desire to appropriate what was not their own, and charitable one to another in protecting their weaker or smaller kind.—Mr. W. F. Wells, ex-president of the Society, in proposing a very hearty vote of thanks to Mr. Carpenter for his able and instructive lecture, referred in happy terms to the treat they had all enjoyed. He drew an appropriate trade analogy from the predatory instincts of the creatures described and compared them to the larger men in trade whose instinct seemed to lead them to the absorption or swallowing up of their smaller brethren. He believed with Proctor in the survival of the fittest.—Mr. J. Tyrie Turner, M.P.S.I., seconded the vote of thanks, which was carried by acclamation.—Mr. Downes conveyed the vote of thanks to Mr. Carpenter, and hoped they would soon again have the privilege and pleasure of hearing that gentleman.—Mr. Carpenter suitably responded.—The President having announced that Dr. McWalter would read a paper on "Emulsions" on the second Monday in February, and that Professor C. R. C. Tichborne, LL.D , would give a lecture on "The Liquefaction of Gases" on the last Monday in the same month, the proceedings terminated.

LEEDS CHEMISTS' ASSOCIATION.

The adjourned meeting was held in the Café Monaco, Boar Lane, Leeds, on January 27, at 8.30 p.m. The President, Mr. E. Yewdall, in the chair, introduced the subject of

The Early Closing Bill,

and remarked that there was a class of people who put off to the last hour when shops are open the purchase of articles which might easily have been bought earlier in the day, and he thought that if some legislation similar to that of Sir John Lubbock's Bill came into force, it would tend to strengthen the retail shopkeepers who wished to close earlier.—In the discussion which followed Messrs. Hardman, Fourness, Worfolk, and Bowman expressed themselves favourable to the Bill, though it was pointed out by Mr. W. Johnson that if chemists only adopted the arrangement it might prove, commercially, a mistake, as the grocer, having the licence, could sell proprietary articles after the chemist was closed; but eventually it was agreed that the Committee support the Bill when it was opportune to do so.—A discussion was then introduced on

Metric Weights and Measures,

in which Messrs. Bowman, Fourness, Hardman, Pollitt, Beacock, and Worfolk took part, and it was agreed that the Committee should communicate with the Members of Parliament for the city and ask them to give their support to measures tending to encourage the use of metric weights and measures.—Mr. J. H. Fourness thought Leeds was much behind many other cities and towns in not having a yearly convivial meeting of the trade, and suggested an annual Ball. Unless the local Association was better supported, the President did not think they could entertain the suggestion; he should like to see the list of members much increased; but if the proposer would take the initiative he would be glad to join. A committee was then formed with this object, and the meeting terminated.

EDINBURGH CHEMISTS', ASSISTANTS', AND APPRENTICES' ASSOCIATION.

The fifth meeting of the twentieth session was held in the Pharmaceutical Society's House, 36, York Place, Edinburgh, on Friday, January 28, at 9.15. Mr. George Sinclair, President, in the chair. The minutes of last meeting were read and approved. The following paper, by Mr. W. Makepeace Lock, was read:—

The Profession of Pharmacy from the Point of View of an Employer.

In former papers the author had discussed the subject from an apprentice's standpoint and from an assistant's point of view. On this occasion he reviewed it from the aspect of an employer. He classed employers under two distinct heads, those who are "pharmaceutical chemists" and those who are not. Those who are not pharmaceutical chemists, again, he sub-divided into two classes, those who were in business before the Pharmacy Act and those who have since become qualified as "chemists and druggists." Regarding such as were in business before the Act the essayist had nothing to say, for, he remarked, "the class being small, they might deem my few remarks personal. Suffice it to say that their calling is no profession." Generally speaking, he continued, the business of a chemist and druggist is chiefly concerned with the selling of medicines, and also, to some extent, with the preparation of them from substances which are procured from the animal, vegetable, and mineral kingdoms. But this latter part of the vocation is not by any means extensively practised by those who sell drugs and style themselves chemists and druggists; as a rule, they purchase their wares from the wholesale manufacturer. Although the chemist and druggist may perchance possess as much knowledge as, and mayhap more brains than, some pharmaceutical chemists, yet he shows no indication of any evidence in support of that idea; and unless he procures for himself the Major certificate, he hardly merits the position of a professional man. The case of the pharmaceutical chemist seems more hopeful. He is at the top of the tree of pharmacy; his education has been prosecuted to the utmost limits required by the regulations, and he holds that diploma which should, but does not, make pharmacy a profession. But even the pharmaceutical chemist, well versed in science as he is, has not reached the goal of professionalism, for, excluding the fact that he is not required to undergo a University training, his business, as at present conducted, effectually debars him from being ranked as a professional man. His perfumery goods, his shaving and other brushes, his patent and proprietary articles, his unmedicated lozenges, his varied assortment of ordinary soaps, his grease paints, his large collection of bath sponges, and a host of other articles too numerous to mention, all should be handed over to the proper vendors. His aërated water trade, too, might, with profit to himself, be confined exclusively to syphons of medicated waters. But in order that such a state of affairs should be brought about it would first be necessary for all chemists to enter into a grand combination, and that they should all be of one mind on the point at issue. This would be essential to the success of the scheme; and the speaker suggested that the Pharmaceutical Society should be empowered to compel all chemists and druggists and pharmaceutical chemists in Great Britain to belong to it. That point gained, a special law should be obtained to enact that all such articles as previously referred to be expunged from the trade, for the purpose of conferring upon it much undoubted good; the registered chemist would then take his stand permanently as a professional man, a position which, by reason of his scientific attainments, he ought certainly to fill. But it was not possible to inoculate the Pharmaceutical Society with those beneficent ideas, and pharmacy would probably continue not to be a profession. Turning to the business aspect of the question, it was pointed out that in pharmacy, as in every other department of human activity, a watchful eye must be kept on one's neighbours, for even here the weakest go to the wall, and the conscienceless business man who holds fast by the great central principle must of necessity see that it is his neighbour who takes that position, and not himself. He takes every opportunity to belittle his "friend" who has an establishment at the next corner or across the street, as the case may be, and hopes that he may be swallowed up in the wild rush for a competency. The higher up in the scale his so-called "friend" may be, the keener the sport to hunt him down, and this is just what he tries to do. As an apprentice the average successful druggist will have had his little trials, but those are past. As an assistant he was kept continually at the wheel, and ground down with excessive work; that, too, is past. He has now, from being a raw, uncultivated, ill-clad, lazy boy, blossomed out into the mature, polished, busy man of the world. Such is the chemist and druggist when he dies—a successful business man. Thus, though no profession, pharmacy is anything but a failure; for, pursued intelligently, it has vast capabilities and an infinitude of resource not to be found in any other occupation. While it undoubtedly suffices to provide one's daily bread, there are many cases in which it has led on to fortune and fame, and that, too, in a comparatively short space of time, so that there is, therefore, hope for the druggist as a business man. But, as in all other occupations, he must needs have a clear head, a seeing eye, and a mind quick to grasp detail. Strict attention to the minor aspects of his business is absolutely essential, both as regards those in the back shop and those in the front; this ensures profit. And the work which he is called upon to perform, not requiring any special physical strength or exhaustive brain power, is healthy; his health, therefore, being practically assured, happiness and pleasure follow as a matter of course, and profit and pleasure are the chief ends of his life. Finally, though there is really very little connection between scientific chemistry and the chemistry of the chemist and druggist, let the pharmacist deserve the title

"chemist" when he has it; let him become a scientific chemist, for it will tend to raise him above the mere vendor of medicines; it will guide him in his wholesale purchases, and will enable him to test the purity of all the articles about him, and to prepare many compounds which he must otherwise buy. Let him summarily eject all articles which savour of other vocations; this he can do with ease, since the profits on most of them are *nil;* and, finally, let him secure the Major qualification. It is much to be desired, also, that pharmacists would join hand in hand with each other and banish for ever that inordinate selfishness which at present is so characteristic of the calling. Why descend to a low standard of business morals and try to crush another? Why not live and let live? Pharmacy is a noble calling, one requiring much self-denial, and pharmacists, who have immense responsibilities and obligations to fulfil, should see to it that, ere long, their vocation be recognised on all hands as the "profession of pharmacy."

The reading of the paper was followed by an interesting discussion, taken part in by Messrs. Currie, Hill, Kidd, McBain, McDiarmid, Mackenzie, Rowland, and Sinclair. The speakers generally agreed with the author, though it was pointed out that so long as doctors did their own dispensing—a practice especially common in the West of Scotland and in England—there was a very serious obstacle to the pharmacist attaining his true position as a professional man. The necessity of earning a living compelled him to add to his stock many things that it would add to his dignity to avoid. The sale of quack medicines was particularly condemned. Another tendency that militated against his professional standing was the extent to which many pharmacists relied entirely on the wholesale manufacturer for ordinary galenical preparations which could easily and more economically be made in any pharmacy. By making his own galencials the pharmacist could not only guarantee what he dispensed, but it had been found that he saved 10 per cent. of the cost. Instances were given of pharmacists who purchased such things as tinctura chloroformi co. and spiritus chloroformi. It was mentioned as a deplorable circumstance that a practice seemed to be growing among medical men of prescribing proprietary secret remedies of the composition of which they had no knowledge.—On the motion of the Chairman a vote of thanks was awarded to the author, and the meeting then closed.

BRIGHTON JUNIOR ASSOCIATION OF PHARMACY.

A discussion on "Should the Contagious Diseases Act be brought into force in England?" was the order for the evening on Wednesday, January 26, when the above Association held their usual weekly meeting. The President, Mr. C. A. Blamey, was in the chair. The subject evoked some good speeches, and an interesting evening was the result.

MIDLAND CHEMISTS' ASSISTANTS' ASSOCIATION.

A meeting was held on Wednesday, January 19, in the Exchange Rooms, Mr. H. Jessop, President, in the chair.—Mr. H. S. Lawton read a paper on

Pharmacy Law,

in which he dealt with the Apothecaries Act, Pharmacy Acts, Poisons Law, etc. There was some considerable discussion, which was joined in by Messrs. Walton, Jessop, Selby, and Osborne. Finally, Mr. Lawton proposed the following resolution, which was seconded by Mr. Walton and carried unanimously:—

> That this meeting of the Midland Chemists' Assistants' Association hereby expresses its unqualified approval of the draft Pharmacy Acts Amendment Bill proposed by the Pharmaceutical Society of Great Britain, and pledges its members to give the measure every possible support.

Test for Beeswax.—Henriques publishes the following modification of Weinworm's test. Three or four drops of melted wax are boiled in a test-tube for several minutes with 5 C.c. of alkaline glycerin. The wax at first dissolves, and then gradually becomes turbid. After three or four minutes' boiling, however, the oily particles run together, and the lower liquid is quite clear. The boiling is then stopped and the fluid decanted into another tube, then cautiously diluted with an equal volume of hot water, and again boiled and set aside to cool. When the wax is pure this sets to a clear transparent jelly, or so slightly turbid that large type can be read through it. The presence of 5 per cent. of foreign hydrocarbons renders the jelly quite opaque. The test is not sufficiently delicate to detect 3 per cent. of added cerasine.—*Pharm. Woch.*, xiv., 524.

ROYAL INSTITUTION.

At a meeting held on Friday, January 28, a lecture was given by Professor C. Lloyd Morgan on

Instinct and Intelligence in Animals.

At the outset he wished it to be understood that biology is a science not only of the dead but of the living, and not only the structure of organisms but their behaviour depend on heredity. Heredity provides fixed stereotyped characters, but these are capable of yielding, and while these fixed characters are referred to instinct, to intelligence belongs the capability of becoming accommodated to circumstances. As examples of the former we have the spinning of its cocoon by the silkworm, and the action of the newly mated bird that builds its nest and brings up its young without any previous training or experience. Instinct may be regarded as congenital, while intelligence is that by which the animal learns the lessons of life, and gains what are called acquired characters. In the study of these, one is concerned not only with biological but with psychological matters, and many difficulties both practical and theoretical are involved. Insects and invertebrates which are most suited for experiment are just those animals in forming conclusions concerning the mental states of which psychologists must exercise great caution, while on the other hand, with the higher animals, observation is more difficult and it becomes hard to distinguish behaviour that is congenital from that which results from imitation. It is to be noticed that the term instinct as used by naturalists and psychologists respectively has different meanings. The naturalist applies it merely to outward behaviour, while the psychologist means it to express the influences behind. A compromise would be desirable by which the term would always be used in the same sense and comprise harmonious doctrine. For the purpose of his experiments the lecturer selected the group of birds in the early days of their lives. Parental influence was removed, the hatching being accomplished by incubators, and it was found that the young soon became ready to nestle in the hand and adopt it for a mother. From the earliest hours the effect of experience may be observed, especially in the case of those birds that are hatched in an active condition, and it becomes difficult to distinguish acquired knowledge from instinct. The two, in fact, work into each other, and it may be said that instinct is shaped more delicately by intelligence. The complete relations of the two it would be impossible to give in detail, and the lecturer therefore selected some of the more important observations and deductions. Those birds that are not active when hatched, such as the blackbird, jay, and thrush, open their beaks for the food to be thrust in. The stimulus to this action may be almost any sound or a shaking of the nest, and even such a mechanical action as this gaping ceases after the bird has been given anything distasteful to eat. They were being fed on raw beef at first, but they did not appear to thrive properly on it, and eventually it was found that if the thread of beef were dipped in sand or the powdered wing-cases of beetles it made a good food. At the point of satisfaction the gaping ceases, and is, therefore, the result of two things, a stimulus from without, and also a prompting or impulse from within, and takes place only when the two are combined. The action of swallowing is very closely connected with gaping; both cease after an experience with unsuitable food. Birds that are more active at hatching, such as the duckling and chick, cannot be induced to peck at anything for twelve hours or more. This is probably due to the shock they receive at the change in being hatched, and the promptings of hunger do not come upon them at once, as they have a supply of food-yolk from the egg. After this period they will peck at anything near them, though not with great accuracy at first. Here again the effect of experience is evident; if they are given pieces of orange peel, which they strongly dislike, they become afraid afterwards to touch any kind of food, and will almost die of starvation. For this reason it is hard to rear some birds, such as plovers, which cannot be provided with proper food in due variety. Pheasants and partridges learn to peck from the example of their mother, and those which are hatched artificially must be taught by imitating the action of pecking with a pencil. The moorhen comes between the types of pheasant and jay. Its young can be taught to peck, but only at an object held above it. Runkin Marshall had said that in a psychological sense instinct was not a definite thing, but the lecturer contended that for a given group of animals it was perfectly definite. Viewed physiologically it

is the result of discharges from the central nervous system, having its basis in congenital preformation. The brain, in fact, is so built as to give these discharges. Beyond this the naturalist does not seek, but the psychologist finds in instinct four things: (1) the internal prompting; (2) the external stimulus; (3) the outgoing discharge producing the movement; and (4) messages going in from the organs concerned in the movement. The outgoing discharge is itself unconscious; it is only when the results give rise to a series of messages that consciousness takes place. The actions of locomotion belong to the instinctive class. The chick that has not learnt to walk does so as soon as it has got over the shock of hatching. Ducklings swim the first time they are placed in water, while the moorhen will swim before it can walk, and even gracefully, with movements that are perfectly definite in character. It will dive also without practice. A young duck was in one case found to dive when only thirty-six hours old, but that is unusually early. Attempts to make a moorhen dive by frightening it with noises and blows altogether failed. The bird had never dived when six weeks old, yet, when frightened by the sudden appearance of a dog, it dived, swam away under water, and brought its head up by the river bank, keeping its body underneath while it waited for the danger to pass. Young swallows were found to be able to fly and balance themselves well, when for experiment they were taken from the nest before the proper time. One of the brood which was not taken out did not fly of its own accord until two days later. It is clear that the internal impulse and external stimulus are there but are not definite enough. It appears they suffer an itching to be active, and the stimulus comes, in the case of swimming by the feeling of the water; in flying, by the pressure of the wings. When placed on a japanned tea-tray, non-swimming birds behaved naturally, while some swimming birds tried to swim instead of walking. Passing from instinctive actions to those of intelligence, it is found that what young birds will peck at is not determined by heredity. Attempts are made to deal with shot, beads, and anything else that is small, but experience tells them what to peck at a second time and what to leave alone. Chickens would swallow pieces of worsted made to look like worms, and in fact were ready to eat up large quantities, but after being given one or two pieces soaked in solution of quinine or very dilute strychnine, they refused even real worms. It has been stated by an American scientist that they have no taste, but it is evident from this experiment that that is erroneous. Similarly, the warning colours of caterpillars are useful to the chick only after its experience has been gained, and when a fox-terrier was first brought to broods of partridges and pheasants they showed no fear, but would even peck impudently at his claws and nose and showed a disposition to nestle with him. They behaved in the same way with a cat, but their indifference was not in this case reciprocated. Thus there is very little evidence of inherited knowledge of this kind, but this does not mean that fear is not a part of the scheme. Several birds are struck with terror at a loud note on the violin; it is the unusual that causes alarm. Anything sudden or rapid frightens at once, while no alarm is caused by a stealthy approach, as of a cat, but after a spring has been made and one of them seized they are equally afraid of the quiet approach. Fear and anger have a close relation to the outward discharge spoken of, which is not evoked by the sight of the object itself. Disturbances taking place in the action of the heart, respiratory, vascular, and digestive organs make the emotional state, and the back stroke from these organs, which is very swift, must be included with the messages going in from the organs of movement. This view, which has been elaborated by Professor William James, affords a consistent scheme, but the exact way in which consciousness exerts its guiding influence is only conjecture. The older psychologists defined intelligence as the faculty by which past experience is brought to bear on present circumstances, but this has been criticised in the argument that present experiences are just as important as past, as when we read a paragraph we are guided by the earlier sentences in reading what follows, but even so, such present experiences must be characterised as past, although happening only five seconds before. It may be said that every experience leaving its impression on the retentive and plastic brain tends to make the being different from what it was before. The distinguishing features between instinct and intelligence are seen clearly in connection with stimuli and responses. Instinct would cause a response in the pheasant to the sight of a dog, but no such response takes place, and a case even more striking is found in the act of drinking. Curiously, the birds do not recognise still water as something to quench thirst. Not until they chance to peck at a bubble or a grain beneath it do they make any attempt to drink, but as soon as they taste the water in their beaks they drink eagerly. Why is there no response to the sight of water while there is to the taste? It appears to be this: The effect of natural selection is shielded by the protecting influence of the mother by whom they are taught to drink. If, on the other hand, some individuals were not to respond to the taste of water natural selection would hold, but here differentiation by natural selection ceases. Experiments have recently been performed with the dog in an endeavour to make it carry out actions involving logical thought, but as yet no definite conclusions have been formed.

LEGAL HINTS FOR CHEMISTS.

The Stamp Acts.

(*Continued from last volume, page 470.*)

Implied Recommendation.—The description of the medicine itself is not infrequently an implied recommendation. Thus, "The A1 Diarrhœa Mixture" conveys, in fact is intended to convey, a certain efficacy, and would not pass muster at Somerset House. Similarly, such names as "Effectual Bronchitis Lozenges," "Celebrated Liver Pills," Infallible Cough Linctus," "The Never-Fail Rheumatic Embrocation," "Speedy Neuralgic Mixture," and the like would be equally open to objection. But there is really no occasion to incur the slightest risk on this score, for ample margin is allowed for what may in no carping spirit be termed legitimate description. The Board of Inland Revenue has always recognised that various medicines must have distinguishing descriptions, and though it has the undoubted right to act otherwise, it does not interfere with the use of purely descriptive words embodying no recommendation. Thus "Diarrhœa Mixture," "Bronchitis Lozenges," "Cough Linctus," "Liver Pills," etc., do not involve liability. One can even go so far as to say "Sedative Cough Linctus" or "Expectorant Cough Pills," or even "Stimulative Influenza Mixture" or Anti-neuralgic Liniment" without inviting the attention of the Authorities. It is indefensible therefore, to use a dutiable description when with a little care an equally effective non-liable phrase is within reach. Who, for instance, would wilfully use "neuralgic cure" when "anti-neuralgic" (which certainly conveys prevention and may so far be considered superior to cure) is allowable? Corns being human ailments, as was pointed out (*ante* p. 479), care must be taken to give no synonym for cure in the description of preparations for those painful inconveniences. "Corn paint"—to "be applied to the corn until relief is obtained"—is permitted, but "corn eradicator," or any similar word conveying in itself the idea of removal, *i.e.*, cure, is deemed a recommendation. Curiously enough, however, "solvent," which indubitably points to the disappearance of the offending excrescence, is held to be quite legitimately descriptive.

Anodyne is another word which should be tabooed by those who do not desire to pay stamp duty. Sedative, astringent, antispasmodic, diaphoretic, alterative, are quite innocent as prefixes, but "anodyne mixture" is a dutiable title. This, perhaps, is because the Schedule to the Statute contains reference to several anodynes, and the Schedule must be regarded as the only authoritative index of the class of preparations intended by the Legislature to be subject to the tax. A curious incident is recorded in connection with a case relating to the sale unstamped of an anodyne mixture. The magistrate seemed to kick at the idea of the word conveying a recommendation. It was a Greek word, and he suggested that very few persons would understand the significance of a recommendation held out in that language. Nevertheless, he convicted, as, in fact, he was bound to do, but he expressed his sense of equity by imposing a reduced penalty. The point the magistrate raised is really a strong argument for the abandonment of the word. If it be "Greek" to the medicine-purchasing public, it possesses little commercial value.

Negative and Indirect Recommendations may, as a rule, be used if no ailment is specified. For instance—

> "Aperient Liver Mixture. Reliable and agreeable. May be used in all cases where an aperient is indicated. It does not cause griping, nor is its administration attended by any of the undesirable after-effects which so often follow the use of many quack remedies. It can be recommended with the greatest confidence."

This is quite a long description, and no complaint can be urged on the ground that it does not "puff" the article enough. It puts

forward the claim that the mixture is a very superior preparation, which is enough for an ordinary vendor, and has the merit of involving no charge for stamp duty.

But add the name of an ailment, and state, for example, that it may be "used without danger for constipation or sluggishness of the liver," and the question of liability would be at once raised.

Again, it is not a legal recommendation to employ inferential phrases, but considerable ingenuity must be exercised in concocting them. Thus—

> "Rheumatic Liniment—contains no poisonous ingredients, and is a safe and valuable household preparation. To be applied on flannel until relief is obtained."

If the liniment were not designed for the alleviation of rheumatic pains there could be no purpose served in using it, but the label in question leaves that obvious deduction to the intelligent public. It does not state that the stuff will be beneficial, and it therefore escapes duty. Very little variation, however, is necessary to bring liability. Substitute "remedy" for "preparation," or say that "when applied on flannel it acts like magic," and a dutiable interpretation is possible. Inference, too, must not be twisted so far as to appear in the questionable guise of a testimonial. There must be no statement that "Dr. Smith prescribes it with benefit to his patients." If an advertisement must be given to Dr. Smith, it will be better to say that "he speaks highly of the preparation." Such phrases as "when the cough is troublesome," "until the pain is relieved," "when the distressing symptoms come on," are examples of the recommendation indirect, but, as indicated above, sailing so close to the wind requires a good deal of circumspection. Our only object in dwelling on the point is to impress upon our readers that there is ample room for making known to the public the nature of medicinal preparations without using liable phraseology.

LETTERS TO THE EDITOR.

The New Pharmacy Bill.

Sir,—I must ask you to allow me to contradict the statement made in your last issue by Mr. F. Pilkington Sargeant, that at the meeting of the Manchester Pharmaceutical Association (to which 500 invitations had been sent out) held at the Victoria Hotel on the 19th inst., "by their presence and communications, twenty-one chemists and pharmacists gave their opinion against the Bill, they constituting a majority over the supporters of the Bill." The voting was eighteen for, and nine against. A few gentlemen left the room before the vote was taken, but the majority of those were in favour of the Bill. I had received seven letters from gentlemen, five of whom were against, and two partially against. One letter, however, did not come into my hands until too late to be used. The writer of that letter is the local secretary in a neighbouring town; he wrote strongly in favour, at the same time stating that the Major men he had seen in his town were also in favour of the Bill. Mr. Sargeant's statement is not in accordance with the facts.

Manchester, January 31, 1898. Geo. S. Woolley.
Chairman of the Meeting.

Sir,—Mr. F. Pilkington Sargeant has executed a wise and becoming retreat from the lofty position which he was claiming for Major men, and we now learn "that the whole (M.P.S.)," by which I suppose he means Ph.C., "is greater than its part (A.P.S.)." Such humility after the somewhat arrogant assumptions of his previous letters leads me to the belief that my communication was not without effect. Mr. Sargeant accuses me of misrepresenting his statements. This I deny. Moreover, I consulted several Minor men before writing, and found that they considered a reflection was cast on their abilities by your more learned and scientific correspondent, and the following letter, which I have received from a London chemist, confirms my arguments. The writer, I may add, is personally unknown to me (name and address enclosed, not for publication, as I have not written for permission):—

London, N.W., January 22, 1898.

Dear Sir,—I congratulate you on hitting a very necessary nail in the matter of pharmaceutical chemist qualification. To hear and read what these gentlemen say one would suppose they had attained considerable eminence in science, etc., whereas the senior or advanced examination of the Science and Art Department is a good bit stiffer than the Major. It appears to me that in the permanent interests of chemists it would be better to have only one qualification. So long as two qualifications exist there is always a certainty of a little extra conceit in one of the sections.

I am, dear sir, yours faithfully, ——

As for avoiding the points at issue, I surmised that as Mr. Sargeant persistently refused to pause and ponder over the substantial and logical arguments advanced in favour of the Bill by gentlemen who are recognised as leading lights in the world of pharmacy, he would never allow himself to be convinced by those adduced by one who at the outset of his communication admitted that his perceptive and comprehensive faculties were not so keen as those of his opponent. As it is not necessary to repeat what has already been refuted, I will confine myself to a remark or two which is to be found in Mr. Sargeant's letter, published on January 1. It reads as follows:—

> "There is a feeling prevalent amongst pharmaceutical chemists generally that this Bill has been suggested by a few interested Minor men who would like to obtain a higher position than at present posssible."
>
> "This seems the more likely since the younger and more highly educated chemists and druggists do not call for the proposed change."
>
> "All the enthusiasm in support of the Bill comes from Minor men of from twenty to thirty years' standing."

Now I took the trouble yesterday to call on five chemists who are in business in this district and who have all qualified within the last few years, and found they were all unanimous in their good expressions of the new Pharmacy Bill. Next I consulted several Minor students, and was gratified to find the same state of feeling existing. Regarding Mr. Pilkington Sargeant's contention that the majority at the recent meeting of Manchester chemists held at the Victoria Hotel gave their opinion against the Bill, I have it on very good authority that of those entitled to vote on the motion proposed, eighteen voted for and only nine against. Once again must I inquire where is the successful opposition to be found? Mr. Sargeant bases one of his claims of the Pharmaceutical Society to be regarded as a learned one upon the fact that the Royal Botanic Society has elected our President to the position of honorary membership. Mr. Sargeant sees in this the recognition of the Pharmaceutical Society as a learned one. On the same principle, if the Fishmongers' Company were to give (as is quite possible) a substantial subscription to the Royal Botanic Society and receive in return, as acknowledgment, the form of honorary membership for its official head, then that body would have to be recognised as one of the learned societies. Mr. Sargeant also advances the remarkable statement that a person who possesses a title knows the value other people attach to it better than one who does not possess it. Here is wisdom indeed! After all the philosophical enunciations of the last 2000 years, there still remains a man who declares that he is a better judge of what other people think about him than these very people themselves.

> "O wad some power the gift to gie us
> To see ourselves as ithers see us."

Finally, I notice on reference that Mr. Pilkington Sargeant has held the distinction of being Ph.C. for one whole year. I wish to be charitable, and therefore suppose that during that time Mr. Sergeant must have been embarrassed by the admiration and homage of multitudes of awestruck juniors, or he would certainly never write such nonsense.

N. Howard Schollar, A.P.S.
Higher Broughton, February 1, 1898.

Sir,—It seems to me that far too much importance is being attached by your correspondents to the proposed amendment of the Pharmacy Acts. The general public know little, and care less, about the difference in value of the designations A.P.S. and M.P.S. I venture to say that, if a hundred persons were stopped to-day in a London street and asked if they knew the difference between the two designations, and what they both mean, about ten per cent. having relations in the trade would know a little about it, while the remaining ninety would have to confess their inability to answer except by guessing, or else would demand to be asked another. While I do not think the change will do any good, it can surely do no harm. After all, what does it matter? It would be as unjust to refuse the ordinary Minor man the opportunity of styling himself M.P.S. without having worked for it, if he wished to do so, as it would be to refuse a thistle to a poor hungry donkey under like conditions. Why does not the Pharmaceutical Council take a decided step forward and make the Major examination the

qualifying one, and make an annual fee obligatory upon those in business? We should not then find the majority of chemists content themselves with securing what after all was only meant to be an assistant's qualification.

Beckenham, January 29, 1898. E. W. Routley, Ph.C.

Sir,—An outsider, glancing over the draft of the proposed Pharmacy Bill, would probably wonder what there was in it to give rise to any difference of opinion among chemists themselves; he might also wonder, and be excused for so doing, that the promoters thought it worth while to make an appeal to the Legislature for the objects aimed at therein. If, however, the Council really considers that the interests of chemists at large are likely to be advanced by this inoffensive measure, and that it is worth while putting such formidable machinery in motion for the purpose, it would seem a pity that any objection of rather a selfish nature on the part of a few Major men should detract from the unanimity which is necessary to force even a Bill so emasculated through the House of Commons. Speaking personally, as a pharmaceutical chemist and member of the Society, I should be very happy to relinquish not only our sole right to use the title of member, but also, if it were deemed advisable for the general welfare of our craft, that of pharmaceutical chemist also. Could pharmacists only be united into one solid body with the exclusive right of dispensing prescriptions, etc., and another class of druggists formed corresponding to that in Ireland, it would indeed be worth while making what might appear to some a little sacrifice. This, of course, is a dream which none of us are ever likely to see realised. I may say that there is no analogy, though such is sometimes averred, between the two classes of "pharmaciens" in France and our own; the former, as regards professional and pharmaceutical qualifications, are on a level. If any of my *confrères* pine for the title of Fellow, the difficulty of obtaining such from the Chemical Society or a similar body is not insuperable. I am afraid, sir, however, that we shall be very sanguine if we imagine that any large immediate accession of strength to the Society is likely to result from the proposed measure. Even should it become law, the inducements held out to those who obstinately stand aloof are too slight to avail much. Had it been possible to attach exemption from jury service to the membership of the Society, that would have been a potent spur to our laggard and suspicious brothers. Perhaps the acquisition of such a privilege for chemists generally, even without the condition of membership, might have induced some out of gratitude to connect themselves with the Society, though I acknowledge this is extremely dubious, gratitude being a broken reed to trust to. Still, notwithstanding these misgivings, I would venture to appeal to my fellow pharmacists to let loyalty to the Council and the Society outweigh any feeling of personal grievance, and though the proposed Bill may not be so complete as might be wished, and may seem to bear rather hardly on one particular section, to support the Council in the matter, hoping that in the future a more comprehensive and beneficial measure may reward the efforts of an enlarged and invigorated Society.

North Finchley, N., January 31, 1898. T. Edward Barrass.

Sir,—I thank you for your insertion of my letter in the Journal of January 22. To that you appended a note asking me to specifically state in what respects I consider the proposed Bill "unjust." What I consider the most unjust portion of the Bill (and which I protest against) is the surrender "unconditionally" of the control of the Society (should the Bill pass and the expectations of its supporters be realised) which pharmaceutical chemists, predecessors and present created, maintained, and very largely supported, and who have ever been most loyal and zealous for its welfare.

Hitchin, February 1, 1898. Richard R. Lewis, Ph C., M.P.S.

Sir,—It may be that I am very obtuse, but certainly your line of argument with regard to this question is incomprehensible to me. In the first place, you see no distinction between the registered M.P.S. and the examined M.P.S. To my mind there is an important difference; the one has the honour by courtesy, the other has fought for and won it. Of course in both cases the fees must be paid. In the second place, you hold that it is not a qualification or a degree. If it is not either, what is it? Nuttall says: "To qualify is to make capable of any employment or privilege." Does not the fact of a man passing the Major make him capable of the privilege of becoming M.P.S.? You quite mistake me if you think I see any harm in admitting chemists and druggists to membership. I only contend that the pharmaceutical chemists have earned a higher distinction, and they ought to be considered in any alteration of the privileges to Minors.

Faringdon, January 29, 1898. W. R. Cook, Ph.C., M.P.S.

*** Since it is still "incomprehensible" to Mr. Cook that we can see no distinction between one member of the Society and another member, *as members*, it appears hopeless to make any further attempt to convince him. With regard to his question as to what "M.P.S." indicates, if not a qualification or a degree, the reply is obviously "Membership of the Pharmaceutical Society," and nothing more. A member of the Society may be a pharmaceutical chemist in addition, but that fact does not in any way distinguish him *as a member*. [Ed. *P. J.*]

Sir,—Please note that in last week's Journal (p. 106, col. 2, line 44) the word "Major" should read "Minor." The word "Minor" really gives the emphasis to what I said about the good to be derived by chemists and druggists from connection with the Society. I am convinced that much of the misconception of the antagonism to the Society's constitution and administration arises from an unsympathetic and imperfect acquaintance with the difficult duties it has to discharge. The question "What has the Society done for the trade?" is frequently asked by outsiders who cannot answer the question "What has the trade done for the Society?" The passing of this Reform Bill would remove the standing grievance of many of the opponents to the Society, and the Council is to be congratulated in its effort to bring to its support for the consolidation of pharmacy the many who have made the M.P.S. question the *bête noir* of their opposition. The report of the Edinburgh meeting was, as you noted, "confused." I was astonished to find, even in Edinburgh, a man standing up at a meeting and exposing his ignorance of the status of different individuals. One of the speakers did not know the difference of the status of Mr. Harrison, of Sunderland, and Mr. J. L. Ewing, our Chairman. Mr. Hill said word for word what you said in your footnote, whilst he is credited with saying what the other man said. And even although Mr. Hill made as pointed a remark as you did, the individual would not be convinced that he was wrong.

Pollokshields, January 29, 1898. T. Dunlop.

*** The report was printed as sent to us officially by the Assistant-Secretary Mr. J Rutherford Hill. [Ed., *P. J.*]

On Re-Copying Prescriptions.

Sir,—I should like to say that your opinion as to the necessity of re-copying prescriptions containing scheduled poisons at every repetition is a little startling. Of course, to the average dispensing chemist, who sees, perhaps, half-a-dozen new prescriptions a week, it would not greatly matter, except that instead of one prescription book lasting for a lifetime, he may require two or three; but in large dispensing establishments the extra labour would be considerable, and surely superfluous. Without for a moment disputing your opinion (for are not Acts of Parliament constantly being interpreted in a manner that would astonish their authors?) I would suggest that, in any case, upon each repetition, an entry in the prescription book as follows:—Rep. Mist. 1468 (containing Liq. Morph. ℥i.) would meet the requirements.

North Finchley, N., January 31, 1898. T. Edward Barrass.

*** There is no need to interpret the words of the Section as to the ingredients of medicine dispensed being entered, whether ordered by a prescription or not. The question is whether one entry is sufficient, with a reference to it when the supply is repeated on a subsequent occasion, and our correspondent's opinion differs from that which we think the words of the Act suggest. [Ed., *P. J.*]

Sir,—I was somewhat surprised to find that in the issue of the *P. J.* for January 22 you gave the weight of your authority to the statement that prescriptions containing scheduled poisons should be re-copied on the second and every subsequent occasion on which they are dispensed, a statement endorsed by you in the current number. As Mr. Goode points out in his letter of the 26th inst., the chemist does not often see the original prescription after the first occasion on which he copies and dispenses it. When the original is subsequently produced with the order for repetition no doubt the re-copying would be a very advisable precaution. But I would strongly support Mr. Goode's contention that, in the absence of the original prescription, the recording of the repeat order in the manner pointed out by him should not only, as he indicates, be sufficient to satisfy legal requirements, but would also remove the quite possible danger of errors occurring in the

process of copying from a back page of the prescription book the previous copy of the original prescription.

Dublin, January 31, 1898. VINCENT T. COLE.

*** The question might arise whether, in such a case as that suggested, medicine containing a scheduled poison should be supplied without the production of the prescription. But in any case pharmacists should protect themselves by preserving a written record of every transaction, since that is the sole condition under which the provisions of Section 17 do not apply to "medicine dispensed." [ED., *P. J.*]

MR. HENRY'S UNUSUAL MIXTURE.

Sir,—I regret I was unable to attend the evening meeting of January 14, at which Mr. Henry brought forward the following as "An Unusual Mixture":—"The author was recently handed an order for a Winchester quart of a mixture which must contain certain proportions, equally distributed, of white wax, borax, and water, with the stipulation that no oil must be used in making it up." After trying many methods the author found it necessary to use turpentine and mucilage acacia. These additions are entirely unnecessary and against the intended use of the preparation. If Mr. Henry would melt the wax and pour it into a well-heated bottle, dissolve the borax in hot water, and add gradually the borax solution to the wax with agitation, he will find a fairly stable emulsion result, and the product required by his customer. The addition of turpentine deteriorates the preparation in every way, as it is more difficult to keep it in emulsification than it is the wax.

Edinburgh, January 29, 1898. APPRENTICE (124/36).

ANSWERS TO QUERIES.

WEIGHT SYMBOL.—The symbol ℥, used in a prescription, indicates the ounce (Apothecaries' weight) of 480 grains. [*Reply to* H. J.—4/8.]

BRITISH MEDICAL JOURNAL.—The address is 429, Strand, London, W.C. [*Reply to* S. H.—4/21.]

BOTANIC GARDENS, KEW.—Address your inquiry to the Director, Royal Gardens, Kew. [*Reply to* W. J. W.—4/13.]

POISONS IN GERMANY.—They may only be supplied when ordered in physicians' prescriptions. [*Reply to* GERMANICUS.—4/15.]

BOTANICAL.—Your specimen consists of the male catkins of *Garrya elliptica*, Dougl. (Cornaceæ), a native of the north-west of America. [*Reply to* W. H. B.—4/23].

TO REMOVE ACID STAINS.—Treat the paper stained yellow, with solution of ammonia; then wash with distilled water and dry, with pressure, by inserting sheets of filter or blotting paper between the pages. [*Reply to* MONA.—3/29.]

SCIENTIFIC BOOKSELLER.—Write to Henry Kimpton, 82, High Holborn, London, W.C., or to H. Grattan, Tabard Book Stores, High Street, Borough, S.E., for list of new and second-hand books on scientific subjects. [*Reply to* F. P.—4/7.]

EGG COLOURING FOR CONFECTIONERY.—This appears to be sugar coloured by the addition of "aniline" dyes. Tartrazine with a slight admixture of a tropæoline orange—probably β-naphthol orange. [*Reply to* A. J. H.—3/21.]

MAKING ELECTRICAL APPARATUS.—A practical work is 'Electrical Instrument Making for Amateurs,' by S. Bottone, electrician, Wallington, Surrey, and others are published by F. C. Allsop, 97, Queen Victoria Street, London, E.C., who is also the author of a series of useful articles on the subject that have appeared in the *English Mechanic*. [*Reply to* H. C. T. G.—4/1.]

LIQUOR SANTAL. C. CUBEB. ET BUCHU.—This is prepared by rendering the volatile oils soluble in a solution of resin soap, prepared from copaiba resin thus: Copaiba resin, 400 grains; caustic potash, 120 grains; fluid extract of cubebs, 2 fluid drachms; boiling distilled water, 2 fluid ounces; boil well, with constant stirring, until the resin is saponified and a soluble soap is formed, adding more water to replace that lost by evaporation. Cool, and add, sandalwood oil, 80 minims; spirit of nitrous ether, 1 fluid ounce; rectified spirit, 2 fluid ounces; concentrated infusion of buchu, *q.s.* to produce 10 fluid ounces. [*Reply to* J. H.—3/34.]

PICRIC ACID IN BEER.—Picric acid, it is said, used to be added to beer, not to increase its intoxicating properties, but as a "hop substitute," to give it a bitter flavour. As far as we know, it is never so used now in this country. The chief uses for picric acid are for dyeing silk and for the manufacture of explosives. You can obtain a small quantity of the acid from any wholesale house. [*Reply to* A. P. S.—4/22.]

HERBARIUM COMPETITION.—You will find full particulars in the last "Students' Number" of the Journal (September 11, 1897). The most useful books are Hayward's 'Botanist's Pocket Book' (London: G. Bell and Co.), Babington's 'British Botany' (London: Gurney and Jackson), Hooker's 'Student's Flora of the British Isles' (London: Macmillan and Co.), and Bentham's 'Handbook of the British Flora,' revised by Hooker (London: L. Reeve and Co.). One or more of these should be used for reference, but you should carry Hayward's book with you. [*Reply to* P. S.—4/20].

ACTION OF $K_2Mn_2O_8$ ON $Na_2S_2O_3$.—The following equation should explain what you want to know:—

$$\left.\begin{matrix}5Na_2S_2O_3\\4K_2Mn_2O_8\\7H_2SO_4\end{matrix}\right\} = \left\{\begin{matrix}5Na_2SO_4\\4K_2SO_4\\8MnSO_4\\7H_2O.\end{matrix}\right.$$

The reaction, however, does not take place exactly as this equation represents (it rarely does), and the result does not work very well quantitatively. [*Reply to* AJAX.—4/9.]

TO CALCULATE AMOUNT OF KCl IN A SAMPLE OF KI BY RESULTS OBTAINED ON TITRATING WITH DECINORMAL SILVER SOLUTION.—We can best explain this by an example:—Suppose 0·745 Grm. of the mixed salt takes 60 C.c. $AgNO_3$. 0·745 Grm. of KCl would take 100 C.c. 0·745 Grm. of KI would take 44·9 C.c. The influence of 100 per cent. of KCl causes an excess of (100 − 44·9) C.c. = 55·1 C.c. in excess. Actual result was 60 C.c. Therefore, 60 − 44·9 = 15·1 C.c. in excess. If 55·1 = 100 KCl, then $15{\cdot}1 = \frac{100 \times 15{\cdot}1}{55{\cdot}1} = 27{\cdot}4$ per cent. KCl. 100 − 27·4 = 72·6 per cent. KI. [*Reply to* AJAX.—4/9.]

STAMP DUTY ON MEDICINES.—Powdered rhubarb root, without admixture, would come within the exemption provided for "entire" drugs. Such drugs may be vended unstamped by chemists who have served a regular apprenticeship, and by persons holding a stamped medicines licence. The words "stomachic" and "aperient" are not in practice held to be dutiable descriptions, but before using your labels and advertisements, send them to the Inland Revenue authorities, Somerset House and make assurance doubly sure by obtaining official sanction. [*Reply to* SYSTEM.—4/3.]

PRACTICAL PHARMACY IN THE MINOR EXAMINATION.—No, you will find candidates are treated with the utmost consideration, and that it is not an examination in mnemonics. The case you give as an example—the preparation of Lin. tereb., B.P.—would be given to prove a candidate's manipulative skill, not the strength of his memory. You will find that copies of the B.P. are furnished for reference in the practical portion of the examination, and that they are available in the examination dispensary just as they are in the pharmacy at home. [*Reply to* H. J.—3/31.]

OBITUARY.

ADCOCK.—On January 26, Robert McIntosh Adcock, Chemist and Druggist, late of Wellingboro. Aged 32.

CHALLICE.—On January 27, Swann Ripsher Challice, Croydon. Aged 63.

PARSONS.—On January 29, Ann Parsons, Belfast. Aged 87. Mrs. Parsons was an annuitant on the Benevolent Fund, having been elected in 1877.

COMMUNICATIONS, LETTERS, etc., have been received from

Messrs. Allan, Atkinson, Barrass, Branch, Brown, Burrell, Campkin, Cole, Cook, Cox, Cragg, Craig, Dixon, Dudgeon, Dunlop, Ellwood, Fairley, Gair, Grenall, Hill, Hogg, Hornsby, Kirkby, Lewis, McKnight, Miller, Neville, Norris, Ord, Owen, Picken, Pollitt, Reynolds, Rheeder, Robins, Roc, Routley, Sleeman, Stephenson, Stiles, Vogelar, Wilkinson, Woolley, Wyatt.

Pharmacy and the Allied Sciences.

A REVIEW OF CURRENT WORK.

Sesame Oil in Olive Oil. A. J. Ferreira da Silva confirms the statement of E. Milliau that Baudoin and De Latil's test for the presence of sesame oil in olive oil is not trustworthy, as a similar reaction—the production of a rose coloration when the oil is treated with hydrochloric acid and sugar—may be obtained with olive oils that are known to be pure. If, however, pyrogallol be substituted for the sugar, as in Toches' reagent, more satisfactory results are obtained, whether the oil itself be operated upon or the separated fatty acids. The reagent consists of 2 Gm. of pyrogallol and 30 Gm. of hydrochloric acid. Equal weights of this mixture and the oil to be examined are shaken together, and after being allowed to stand awhile the acid layer is separated and heated for five minutes. If sesame oil be present, a reddish-purple colour appears.—*Bull. de la Soc. Chim.*, xix., 88.

Mechanism of Protoplasm. Professor A. L. Herrera has experimented with the object of explaining by mechanical principles some of the phenomena observed by Dr. Fol in the fertilisation of the eggs of Echinoderms. A thin layer of olive oil was allowed to float on the surface of water contained in a plate, and a little yolk of egg then dropped into the middle glided easily upon the oil. On the approach of any pointed body the yolk rose into a bubble, resembling the cone of attraction observed by Fol before the penetration of the spermatozoid into the vitellus. The emission of pseudopodia which fell back into the yolk as soon as the attractive force was removed, was noted in some cases, and with albumin the phenomenon was still more remarkable, a coin brought near the drop causing it to become slowly distorted as it was attracted by the metal, whilst subsequently it became pear-shaped. Again, when an exceedingly small artificial spermatozoid was floated on cork and brought within four or five millimetres of the yolk, it penetrated slowly and eventually reached the centre of the drop. The analogy with the natural phenomenon is described as being complete, the oil or less dense liquid representing the albumin, while the drop of yolk serves for the vitelline spherc.—*Natural Science*, xii., 74.

Ouabin. Continuing his researches on ouabin, the glucoside of *Strophanthus glaber*, which he regards as identical with strophanthin, M. Arnaud has prepared it in crystals of three different degrees of hydration, according to the temperature at which crystallisation takes place. At ordinary temperatures the compound $C_{30}H_{46}O_{12}9H_2O$ results. The optical rotation of a 1 per cent. aqueous solution is $[\alpha]_D - 30°$. Its solubility in water is 0·93 in 100 at 14·5° C. It is readily hydrolysed by heating with mineral acids, forming rhamnose and a red resinoid body. Ferments do not act upon ouabin.—*Comptes rendus*, cxxvi., 346.

Separation of Halogens. A. Carnot finds that when sulphuric acid, saturated with nitrous acid, is added in the cold to a mixture of haloid salts, only the iodides are decomposed, the chlorides and bromides being unaffected. The liberated iodine may be washed out with carbon disulphide, and titrated direct with thiosulphate. If a little chromic acid and sulphuric acid be now added to the aqueous residue, and the whole heated on the water bath to about 100° C. for an hour, the whole of the bromine is liberated in its turn. This also may be washed out with carbon disulphide, and allowed to act on potassium iodide, whereby its equivalent is liberated and titrated as before. In the residue from these determinations, the chloride may be precipitated in the usual way with silver nitrate. If the precipitated silver chloride is discoloured by adherent chromate, this may be removed by continuous treatment with nitric acid. The method has given very good quantitative results.—*Comp. rend.*, cxxvi., 187.

Action of Hydrogen on Sulphuric Acid. M. P. E. Berthelot finds that when hydrogen and sulphuric acid are exposed to a temperature of 253 C° in a sealed tube for six hours the whole of the hydrogen is absorbed, with the production of water and sulphurous acid. At ordinary temperatures a slow current of hydrogen passed over sulphuric acid does not form enough sulphurous acid in one hour to be determined. If, however, the contact be prolonged, as in a sealed tube, considerable reduction of the sulphuric acid by the hydrogen is brought about. Thus in two months 75 per cent. of the hydrogen contained in such a tube with sulphuric acid, kept at normal temperatures ranging from 19° to 27° C., was converted into water with a corresponding reduction of the acid. Light did not appear to influence the result, nor did the presence of oxygen, although a portion of that gas was used up in reoxidising the sulphurous acid formed. Dilute sulphuric acid, sulphurous, and nitric acids are not acted upon by hydrogen under similar conditions.—*Comptes rendus*, cxxv., 743.

Dehydration of Alcohol. P. Yvon proposes to employ calcium carbide for dehydrating alcohol. If ordinary strong spirit, over 90 per cent. of ethylic alcohol be heated with a little calcium carbide the whole of the water will be removed, acetylene being disengaged. On distilling the liquid, perfectly anhydrous alcohol may thus be obtained. The first portion of the distillate should be collected separately, as it contains a little dissolved acetylene. —*Comptes rend.*, cxxv., 1182.

Preparation of Carbides. H. Moissan finds that when calcium carbide in the state of fusion in the electric furnace is brought into contact with metallic oxides, either double decomposition results, carbides and oxides of the respective metals being formed, as is the case with aluminium, manganese, chromium, molybdenum, titanium, and silicon, or the salt is reduced and forms a button of pure metal, as is the case with lead, bismuth, and tin. It is remarked incidentally that the formation of silicon carbide or carborundum may have an important practical bearing. The crystals of this substance obtained were well formed, characteristic and colourless, or with a faint bluish tint.—*Comptes rendus*, cxxv., 839.

Effect of Rain on Plants. J. Wiesner has come to the conclusion, based on observations made in Java, that the injurious effects alleged to be produced on leaves and flowers, even by tropical rain, have been greatly exaggerated. He never observed any splitting or tearing of leaves or petals, even by the heaviest rain, unless accompanied by a strong wind. When flowers or leaves are bodily torn away by rain, it is only when their tissues have already undergone the change which makes them ready to fall. The immunity from the effects of heavy rain is due to the elasticity of the flower-stalk or leaf-stalk. If these organs are fixed so as to have no power of movement, the impact of a falling body of only one-thousandth of the weight of a heavy drop of rain will have a destructive effect on the leaves or petals. A moderately heavy rain has no effect on the leaves of the sensitive plant.—*Annales Jard. Bot. Buitenzorg*, 1897, p. 277.

Blepharis Capensis in Anthrax.

Dr. Blaine, of Kingwilliamstown Hospital, reports in the *South African Medical Journal* on a typical case of anthrax which was apparently cured by the administration of *Blepharis capensis* in the form of a tincture (1 of the dried plant in 8 of rectified spirit). This plant has a widespread reputation among the Kaffirs as a remedy in anthrax, and these natives are known to be remarkably successful in the treatment of the disease. In the case reported on, 16 minims of the tincture were given every three hours and continued for some days, the dose being gradually lessened as the patient improved. The drug is evidently a powerful one, and has a marked influence on the pulse rate. The natives always employ it with caution. The author does not hazard any theory as to the action of the drug.—*Cape Agricult. Journal*, xi., 696.

Stereum Hirsutum.

Professor H. M. Ward has cultivated the mycelium of *Stereum hirsutum*, Fr., obtained from spores, on sterilised wood, and after several months the cultures developed yellow bosses, which proved to be the hymenophores bearing the basidia. It is pointed out that this fungus has not hitherto been made to produce spores in cultures, and that Basidiomycetes generally have rarely been made to do so. The actions of the mycelium on the wood of *Æsculus*, *Pinus*, *Quercus*, and *Salix* have also been examined, for the first time, it is believed, with pure cultures, and anatomical and histological details with figures are given in the complete paper.—*Proc. Royal Society*, lxii., 286.

Food Material of Algæ and Fungi.

Dr. T. Bokomy gives the results of a series of experiments on the limits of dilution of substances which can be taken up by the lower plants. Among the more noteworthy are the following:—In a 1 : 100,000 solution of fuchsin, *Mesocarpus* and *Spirogyra* became strongly coloured and soon died; a solution of 1 : 1,000,000 produced no effect. In a 1 : 100,000 solution of potassium biniodide starch-grains assumed a violet tint in twenty-four hours; in a solution of 1 : 500,000 the starch-grains were not coloured, but the cells (*Spirogyra*) were killed. Caffeine produces the aggregation reaction in the protoplasm with a dilution of 1 : 10,000; ammonia gives the same result with a dilution of 1 : 100,000. A proportion of 1 : 100,000 of a mixture of potassium phosphate, magnesium sulphate, and calcium nitrate in water, is sufficient to afford the necessary supply of mineral ingredients of the food of Algæ.—*Biol. Cent.*, 1897, p. 417.

Digestion in Pitcher Plants.

Professor S. H. Vines, some years ago, showed an important analogy between the pitchers of *Nepenthes sp.* and the gastric mucous membrane of animals, by preparing from the secreting areas of the pitcher wall, a glycerin extract which had a distinct digestive action on fibrin. This appeared to indicate the formation of a zymogen in the cells and its subsequent decomposition by the action of acids. Later observers having denied the presence of an active ferment, whilst declaring that the disappearance of proteid matter placed in the pitchers is merely a putrefaction set up by bacteria, Professor Vines brings forward additional evidence which confirms his original conclusion, that an active digestive process is set up in the pitcher by a proteolytic ferment formed in the gland-cells of the walls. In one experiment digestion was set up by a glycerin extract of the pitcher in a solution containing 1 per cent. of prussic acid, and it is asked what organism can digest fibrin in such a solution or retain its digestive activity when kept for several weeks in pure glycerin, as must have happened in some of the experiments had any such organisms been actually present.—*Annals of Botany*, xi., 563.

Röntgen Rays and Plant Life.

G. Tolomei is of opinion that the action of Röntgen rays on vegetable life is identical with that of light. When branches of *Elodea canadensis* were immersed in water charged with carbon dioxide and exposed to the rays, evolution of bubbles took place as in the presence of sunshine, and in the same way the rays caused retardation in the absorption of oxygen by *Mycoderma aceti* and in the evolution of carbon dioxide by Saccharomyces, whilst *Bacillus anthracis* was destroyed by the action of the rays in only a less degree than by sunshine. Long exposures to the rays appear to be necessary, and the probable cause of failure in former experiments, by other workers, may have been the comparative shortness of the exposures.—*Atti dei Lincei*, through *Nature*, lvii., 323.

Cathodic Rays and Röntgen Rays.

Prof. A. Battelli concludes a paper on the analogy between the cathodic rays and those of Röntgen by stating that it cannot be asserted that the cathodic rays are reflected, as a whole, according to the laws of regular reflection, and that the rays thrown back from the reflector of a focus-tube may be confidently assumed to possess the same properties as the direct cathodic rays. Moreover, the rays emanating from the posterior part of a very thin sheet, the anterior part of which is struck by cathodic rays, also possess the same properties as the latter. A pencil of cathodic rays is said to appear as if made up of various rays of different natures. When they strike on a substance of very small thickness, they seem to possess the power of passing through it, but in the same way as if they passed through a filter, which would allow a passage more or less easy to some of them than to the others. In another paper, Prof. J. J. Thomson states that he has been led, from the consideration of the effects produced by the sudden stoppage of an electrified particle, to the result that the Röntgen effects are produced by a very thin pulse of intense electromagnetic disturbance. That conclusion is in agreement with the view expressed by Sir George Stokes, that the Röntgen rays are not waves of very short wave-length, but impulses. In a third paper, J. Trowbridge and J. E. Burbank suggest that the term electric rays, or, possibly, rays of polarisation, would appear to be more comprehensive than the terms cathode or cathodic rays, and Röntgen or x-rays. They also point out that a Crookes tube enclosing a continuous conductor is well suited, with the employment of high electromotive force, for the study of electric lines of induction. The direction of the Röntgen and cathodic rays can be changed by electric induction, and the so-called x-ray burn can be produced by an intense state of electrification. Finally, the cathodic and Röntgen rays are given off from every element of a continuous conductor at a high stage of the vacuum in a Crookes tube, both when that conductor constitutes the cathode and when it forms the anode of the electrical circuit.—*Phil. Mag.*, xlv., 163, 172, and 185.

Novel Dispensing Cabinet.

Dr. J. M. Worthington has patented an ingenious arrangement for economising space in dispensing establishments, in the form of a cabinet built on the lines of revolving bookshelves. There are two revolving portions in the upper part of the cabinet, and each of the four sides of these is fitted with shelves for bottles, with a sliding glass door in front. On top of each of the revolving portions is a fixed shelf, and below the wide base supporting them are two similar revolving portions, containing drawers. The cabinet is designed for use in pharmacies, hospitals, dispensaries, chemical laboratories, and other places where economy of time, space, labour, and material is of importance.—*Scientific American*, lxxviii., 68.

BACTERIOLOGY FOR PHARMACISTS.*

BY LEO ATKINSON.

It is my intention during the time at my disposal to convey some definite "information concerning bacteria," and I hope to make it evident that the pharmacist cannot afford to remain in ignorance of the leading facts of bacteriology. Micro-organisms, germs, or bacteria are virtually everywhere. They are in the water we drink, in the air we breathe, and the dust we inhale. They are naturally present either in or on living plants and animals, but let it be clearly understood that bacteria are never found either in the blood, tissues, or different organs of the viscera in the healthy human body.

The study of the life-history of germs, microbes, micro-organisms, or bacteria (as they are indifferently named) constitutes the science of bacteriology. Recent advances in this science enable us to understand the important part they fill in the great scheme of Nature, for exclusively by the agency of these minute organisms the soil is supplied with the requisite nutritive material for plant life. Referring to the diagram (Fig. I.) and commencing at the bottom of the circle, we see that wherever organic matter is present (*i.e.*, the dead and useless substances which are the refuse of life) such material is promptly seized upon by various "germs"—the surface of the earth being liberally supplied not only with

FIG. I.—Nature's Cycle.

"germs" but also with air and moisture, the process of decomposition is rapidly effected. Decomposition of this kind usually means that complex bodies are split up into simpler ones (the nitrogenous elements being converted into ammonia, nitrous and carbonic acid, and water), which supply nourishment for plants. The plant so nourished, and by the agency of the sun, transforms and fixes in its tissues starch, albumens, and fats. Plants form the staple food of animal life, and although a certain portion of this food is given directly back in the shape of carbonic acid gas and urea, the remainder goes to make up the complex framework, tissues, and organs of the body. When the animal dies the decomposition bacteria come into action, and rapidly split up the albumens, sugars, and fats into simpler products; these again are finally transformed by the action of nitrifying bacteria into simple nitrates and water ready for assimilation by a new generation of plants, thus making one continuous chain of plant and animal life. It is thus evident that but for bacterial agency life on this planet would absolutely cease.

In recent years Canadian agriculturists enrich the soil by ploughing down a catch-crop of clover. The bacteria developed on the roots of clover supply a quantity of nitrogen for the benefit of the next crop. In Germany and France attempts are being made to enrich the soil by inoculating it with bacteria which store up nitrogen in the root nodules of leguminous plants. The discovery of the two bacteria which convert different nitrogen compounds into food material for plants is the starting-point of a series of epoch-making researches. One of these bacteria decomposes ammonia, splitting it into nitrous acid and water, whilst the other carries the oxidation further, transforming it into nitric acid, which is assimilated by plants; this last microbe was found in soil imported from Quito. It is well known plants cannot live in soil destitute of nitrogen, but it has been proved that leguminous plants will thrive in pure quartz sand if cultures of bacteria from root nodules are introduced in the sand. These bacteria are supposed to belong to the species *B. radicicola*. The practical results are very promising, and pharmacists living in agricultural districts may find this worth attention, for these bacteria are now being cultivated on a large scale. Small bottles are sold under the name of "Nitragin" for 2*s.* 6*d.*, containing gelatin cultures of several species; this quantity is sufficient for half an acre. The contents of culture tube is dissolved in water and the seeds soaked in the solution previous to sowing.

Such is the progress of science that, looking back only a few years, the very existence of micro-organisms was generally

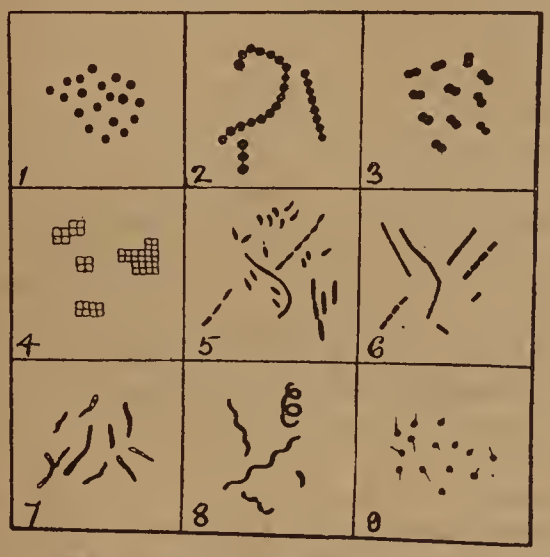

FIG. II.—TYPICAL MICRO-ORGANISMS.—1. Micrococcus; 2. Chains of cocci; 3. Diplococci; 4. Sarcina; 5. Bacilli; 6. Bacteria; 7. Diphtheria bacillus; 8. Spirillum of malarial fever; 9. Tetanus bacillus. All highly magnified.

ridiculed; recorded observations were attributed to defects in lenses or defects in the eye or brain of the observer. Now, however, the reality of germs and microbes has been proved and substantiated beyond all possibility of doubt. The various disease germs of typhoid, consumption, diphtheria, etc., are cultivated just as certainly as the farmer cultivates his cereals or the gardener his flowers.

Consequent on the infinitesimal minuteness of bacteria it has been difficult to determine whether they belong to the animal or vegetable kingdom. It is now definitely decided they are plants nearly allied to the algæ and moulds, familiar examples of which are always found if food is exposed to damp. There are bacteria which are useful and profitablo in various arts and industries, such as those producing bread, beer, wine, vinegar, etc. The flavour and character of cheese and butter is dependent on certain species. In some countries the cultivation of these bacteria is becoming an important business. Again, there are varieties necessary in the manufacture of linen, leather, tobacco, and all agricultural processes.

I am not proposing to say much in regard to the useful or commercial microbes, but rather confine my observations to those which are injurious and deadly, truly the invisible agents o

* Read at an Evening Meeting of the Pharmaceutical Society on Tuesday, February 8.

death. Since pharmacy is the handmaid of medicine, it is naturally the disease germs which claim the attention of the pharmacist.

The diagram (Fig. II.) represents the general features of the most important micro-organisms of disease, and enables one to explain the names commonly employed.

1. Detached round form is a micro-coccus; there are many species, some of which are always present on healthy suppurating surfaces.

2. Similar to the micrococcus, but connected by a fine line—often in long chains resembling beads on a string—typical of erysipelas and unhealthy suppurating surfaces.

3. Diplococcus, or cocci in pairs.

4. Sarcina; cocci in fours, appear like minute bundles of wool tied in two directions.

5. Types of bacilli; "bacillus" is applied to longer motionless rods, and "bacterium" to a shorter motile rod.

6. Rod-shaped square-ended bacterium, single or in chains.

7. Diphtheria bacillus.

8. Spirillum, found in the blood of persons suffering from malarial fever.

9. Tetanus bacillus, peculiar "drum-stick" shaped spore-bearing ends.

These names and others are used for purposes of classification, and roughly these are the appearances under the microscope. Fortunately for the establishment of biological-truth, we are not dependent on the microscope for proving the existence and identifying the various "germs" which so far have been classified.

Before going further, it will be necessary, for the proper comprehension of this subject, to broadly and briefly sketch the history which has gradually led up to our present knowledge of all the facts which constitute the science of bacteriology, or in other words a knowledge of the life-history and character of the microbes which mainly affect the health and prosperity of all civilised communities. The discovery of bacteria is almost coincident with the discovery of the microscope. In 1675, Lewenhoeck, of Delft, constructed a microscope which enabled him to see minute living objects in stagnant water and other putrifying fluids; from this time downwards for some 150 years little progress is recorded. Ehrenberg in 1830 studied bacteria with improved instruments, adding considerably to acquired information. In 1837, Schwan discovered the important fact that fermentation was due to something in the air which could be destroyed by heat. It remained, however, for the genius of Pasteur to elaborate these investigations and place on a solid foundation the modern methods of bacteriological research. The first practical outcome of his discoveries in relation to the silkworm disease has saved France not less than four million pounds sterling per annum.

It is especially interesting to know that Pasteur's earliest experiments were made with a view to disproving the theory of spontaneous generation; this controversy I will briefly explain, as on the issue the future of the germ theory in relation to preventive medicine depended.

Biologists were divided into two schools of thought. One side considered all bacteria or germs were by the process of putrefaction spontaneously generated. This theory was named "abiogenesis." The other side maintained that in all cases already living germs were present. This theory is "biogencsis," or "life for life." The discussion was carried on many years, and was conducted on both sides with conspicuous ability.

Whenever an infusion of meat or vegetable matter is left exposed for a short time, it is invariably found to be swarming with micro-organisms. It was found by boiling such infusions for fifteen to twenty minutes, and then hermetically sealing the containing vessel, it arrested all further development of living organisms. The question was considered settled in favour of the opponents of spontaneous generation, when an unexpected difficulty arose, for in 1872 Dr. Bastian published a research to prove that, notwithstanding all these precautions, living organisms were found in these boiled and sealed tubes. Decoctions of cheese and turnip were filtered, boiled, and hermetically sealed with every care. In five or six days micro-organisms were abundantly in evidence. The cause of this was not for some time explainable, until finally Tyndall found that if the boiling of these sealed tubes were repeated at twelve or twenty-four hour intervals for two or three days, the infusion was permanently sterilised, *i.e*, rendered entirely and perpetually free from any trace of a living organism so long as the containing vessel remains intact. The reason, as we now understand it, is that, although boiling in the first instance was sufficient to destroy any organism present, it was not sufficient to destroy the great resistance of the spores by which many bacteria are propagated. If the spores were not destroyed they would soon germinate, and develop into bacteria. The next boiling would kill this new generation, so that by a few repeated boilings the entire number would be destroyed. It was thus finally established that fermentation or putrefaction never takes place without the action of living organisms. The marvellous advances of antiseptic surgery, the comprehension and prevention of infective diseases, the preservation of food, and improvements in sanitation, have all resulted from knowledge obtained during the scientific battle waged over spontaneous generation.

With the object of affording some relative idea of the extreme minuteness of bacteria, I have photographed under the microscope a fly's tongue. The tongue, when flattened out, measures about 1/6th inch. As you see it on the screen the measurement will be about 75 inches, an enlargement of 450 diameters, or, estimated superficially, 250,000 times larger; this amplification, however, will not enable us to see a trace of most bacteria, many of them only measuring from the 1/25,000th to 1/30,000th of an inch. The power necessary to enlarge these to the size of ordinary type would, in the same ratio, enlarge the fly's tongue to nearly 600 feet, or 1½ times the height of St. Paul's Cathedral. By calculation it is estimated that a cube whose sides are 1/25th inch, about the capacity and size of the eye of an ordinary needle, will contain over a thousand millions.

Incredibly minute as these organisms are, the rapidity of their increase is still more astounding. There are two methods by which bacteria are reproduced: first, by fission, that is, simply splitting or dividing in half, each new half living and dividing in turn; the second method is by spore formation. I have already alluded to the remarkable power of resistance to heat and chemical agents those spores possess. It was this resistance which maintained for a time the fallacy of the spontaneous generation theory. Obviously by either of such modes of rapid reproduction the increase must be stupendous. Assume a germ divides into two within an hour, then again into eight in the third hour, and so on, the number in twenty-four hours would exceed sixteen and a half millions. Now forty thousand millions will only weigh about 1 grain, yet after twenty-four hours the descendants of one organism, assuming the necessary food and space could be supplied, would weigh 1/2260th of a grain, after two days 1 pound, and in three days 7·366 tons. Of course, these figures are theoretical, and could only be realised if there were no conditions to prevent this incomprehensible increase. Fortunately overcrowding is fatal to microbes as well as humanity.

Having given some idea of the size of disease germs and the rapidity with which they multiply, I will endeavour to demonstrate the methods adopted for their separation, cultivation, and examination. Here are some tubes of weak meat jelly which have been sterilised. The jelly is prepared from an infusion of meat with just sufficient gelatin to maintain it as a jelly at ordinary temperatures. The jelly is boiled for half an hour on several successive days and then filtered under suitable conditions into glass tubes which have been previously sterilised; the tubes are quickly plugged with sterilised wool, and can be kept ready for inoculation. Assume there is some suspected organism in this fluid, or it might be a piece of animal or other tissue. This piece of platinum wire is heated in the flame to white heat, clearly destroying anything living. Directly this is cool, the tip of the wire is just dipped into the fluid, rapidly withdraw, just touch the surface of the jelly, and immediately plug with sterilised wool. In the course of twenty-four hours, more or less, a minute speck will be visible, and this will rapidly spread until a large portion of the jelly is infected. It is quite possible several different organisms may have been present in the material from which this

Fig. III.—Plate culture, showing colonies.

culture is made, hence it will be necessary to separate them to obtain a pure culture. Several very ingenious methods have been devised by different workers, but I will follow the one most easily explained.

The contents of the inoculated tube are liquefied and shaken, a drop is then taken on the wire and introduced into a fresh sterile tube of jelly; obviously there can only be a small number of organisms in this. The number may be still further reduced by repeating the process. The jelly is now poured over a glass plate and allowed to set in a sterilised chamber. The few organisms present must necessarily be separated by a considerable space, and as all "germs" form distinct colonies of growth (Fig. III.), it will be easy to pick out any and inoculate a tube therewith, and so obtain a pure culture. A pure culture once obtained can be carried on in successive generations by inoculating from tube to tube (Fig. IV.). It is now possible to study the life-history of the particular germ we have isolated. Much information is gained by observing the form, colour, time of growth, etc. The living organism can be examined under the microscope; its method of development ascertained, as likewise its chemical reactions. We can ascertain the conditions most favourable for its propagation and the conditions under which it cannot exist.

I now show how specimens are stained and mounted for examination. A droplet of sterilised water is placed on centre of cover-glass. The platinum loop, after sterilisation, is made to just touch the culture and then rapidly spread over the cover-glass with the droplet of water. The cover-glass is now passed rapidly three times through the flame of spirit lamp to fix, and prevent organisms being washed away in subsequent operations. A few drops of the staining fluid (almost any of the anilines may be used) is next applied. The cover-glass is now dried over the lamp, and when dry the superfluous stain is washed off either under the tap or with the wash bottle. The preparation is ready for immediate examination. If desired as a permanent specimen it may be dried and mounted in zylol balsam.

Special methods, which, however, can be found in any text-book, must be used for staining tubercle, anthrax, leprosy, etc., the rationale of the process is that these organisms have such powerful affinity for fuchsine, strong acids, 25 per cent. sulphuric or nitric, which remove every trace of colour at once from the general tissue, will not bleach the stained organism. A section thus stained and decolorised may, after thorough washing, be treated with a different stain—violet or methyl green. After clearing and

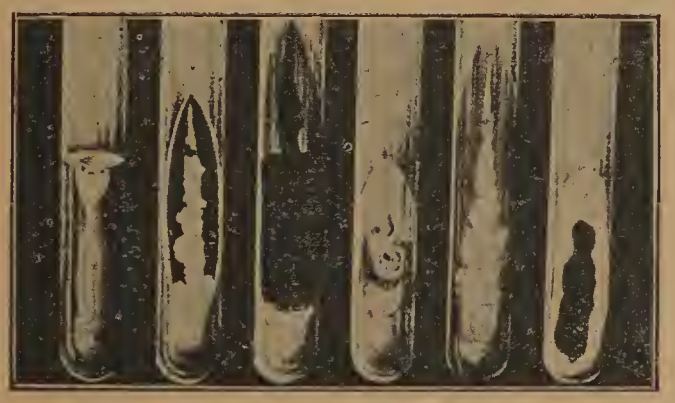

Fig. IV.—Pure cultures in tubes.

mounting the bacteria stand out brilliantly differentiated from the surrounding tissue.

The chemical reactions of anilines on disease germs is truly a marvellous scientific correlation. Our coal fields were probably deposited a million, more or less, years ago; coal we know to be in a great measure a resultant of bacterial agency. The destructive distillation of coal yields the aniline colours; the application of these colours has mainly led to the discovery and identification of the disease bacteria of the present age.

So far as "disease germs" are concerned, no evidence is considered definite until the following series of proofs (known as the postulates of Koch) have been established. This work can only be conducted in a properly-equipped laboratory and by a medical expert or under his direction.

1. Micro-organism must be found in blood or tissue of animal or man.

2. Must be inoculated from blood, tissue, etc., cultivated in a suitable medium, and the cultivation carried on in successive generations,

3. Pure culture so obtained must produce the disease in a healthy animal.

4. When introduced into the body must again be found in the blood, tissues, or organs.

The time necessary for these proofs varies considerably.

The principal methods of infection are—

1. Pulmonary infection ; the bacilli of spores being inspired.
2. Intestinal infection ; the organism being swallowed with food, water, or dust.
3. Inoculation ; through wounded skin or mucous surface.
4. Infection by contagion, in which the entrance of the virus into the body is not yet understood.

I propose to give a few particulars respecting the most prevalent germ diseases, and conclude with some observations on disinfection.

Tuberculosis.

Tuberculosis is found all over the globe, but is much more prevalent in cold and temperate climates than in the tropics. One-seventh of the deaths in England are due to tuberculous disease, mortality being highest in March and April and lowest in August and September. This disease is the most general of all germ diseases, nearly all animals, as well as man, being susceptible. Fifty per cent. of hospital patients have a tubercular history. The tubercle bacillus (Figs. V. and VI.) is most difficult to cultivate artificially, and will not grow outside the human body or animal tissues, except on specially prepared media and under very favourable conditions of temperature. Unfortunately, this organism forms spores

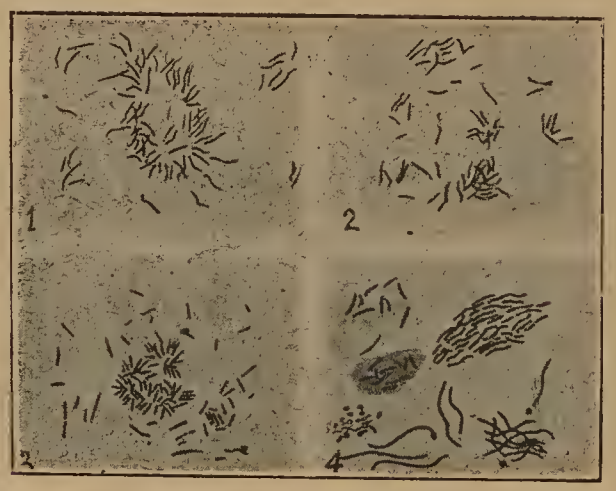

FIG. V.—BACILLUS TUBERCULOSIS.—1. Lung of horse ; 2. Lung of cat; 3. Liver of fowl ; 4. Cover-glass preparation.

whenever the conditions are unfavourable for its growth. It is the obstinate vitality of these spores which renders consumption the most fatal disease of northern climates. As an example of this vitality a portion of a pocket-handkerchief used by a consumptive patient was carefully dried and secured from air and moisture. At the end of eight months it was placed in boiling water and kept boiling for three or four hours. It was found the spores had not lost their vitality. A recently-issued Local Government Report states that the tubercle bacillus is not destroyed by the ordinary methods of cooking if in the centre of a joint of meat weighing over six pounds. The partial immunity of the Jews from consumption has always been considered remarkable, and no sufficient reason has been assigned. From recent research it is probably due to the care taken in their meat supply, and also that a large proportion of their food is cooked in oil. The temperature of boiling oil would be sufficient to destroy spores of bacteria where boiling water or the heat of an oven would fail.

It is now proved that consumptive patients exhale the bacilli. Mice can be infected by causing them to inhale an atmosphere impregnated with the germs.

Consumptive patients and their friends should be made acquainted with the dangers of infection and the best methods of reducing these dangers to a minimum.

In Germany and New York special regulations are enforced, and this disease is classed amongst those subject to notification. Since proper precautions have been enforced the death-rate from consumption has been reduced 7 per cent. If similar regulations were enforced in England it would mean a saving of at least 10,000 lives per annum.

It is asserted by a very competent medical observer that a perfectly healthy individual is never successfully attacked by tubercle bacillus. The active vigorous tissue cells of the body promptly destroy any bacilli that may find their way into the stomach or alimentary tract. Experimentally, tubercle bacilli have been introduced into the tail of a tadpole. Owing to its transparency, the battle between the tissue cells and the tubercle germs could be kept under observation under the microscope. If the bacilli were weak or few in number the cells were invariably the conquerors. On the other hand, if the tissue cells were badly nourished or in a state of low vitality the bacilli were the victors. The moral of this is, that if we wish to escape "germ diseases" we must keep up the general health.

Diphtheria.

First described by Klebs in 1875, but not generally regarded as

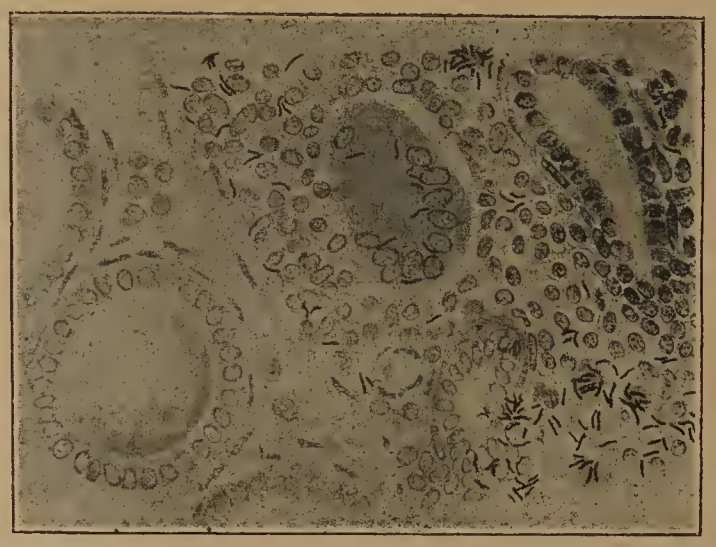

FIG. VI.—Tubercular mammitis.

the cause of the disease until Loeffler obtained pure cultures in 1884. This organism is not motile nor killed by drying ; dust containing the bacillus retains its virulence for months. Diphtheria is one of the few "germ diseases" in which there is a distinct increase. Twenty-five years ago it was much more prevalent in rural districts ; during the last few years it has decreased in the country but increased enormously in towns and cities. The organism has a tendency to reappear at intervals in particular places, pointing to its having a saprophytic existence. Transmission of the disease is by contact, inhaling the breath of patients, etc. ; if the organism finds its way into milk it multiplies with great rapidity. Dogs, cats, and cows suffer from a disease apparently identical with human diphtheria. One attack of diphtheria affords little or no protection against another.

It is not unusual to find the bacillus in the throat without any symptoms of the disease ; so long as the mucous lining of the throat is intact this organism will not flourish. The diphtheria germ is never found in the blood or organs of the body. It is found in the mouth and throat, and grows freely on the false membrane, elaborating a virulent poison which is rapidly absorbed, very frequently with fatal effect. Diphtheria is one of the germs most readily cultivated, hence a suspicious case can be accurately determined within twenty-four hours by anyone who has had training in bacteriology.

(To be continued.)

PHARMACEUTICAL SOCIETY.

EVENING MEETING IN LONDON.

An ordinary Evening Meeting of the Society was held on Tuesday, February 8, when the chair was taken by Mr. Walter Hills, President of the Society, at 8 o'clock.

The paper read was on

Bacteriology for Pharmacists,

by Mr. Leo Atkinson. The paper is printed at page 141, and gave rise to the following discussion.

The President said Mr. Atkinson had shown conclusively that pharmacists could not afford to be altogether ignorant of this very important subject, and at the close he had pointed out certain ways in which they might very usefully apply their knowledge. The paper would be read with great interest by those who had not heard it, but those who had had the opportunity of being present that evening had had the advantage of seeing the very excellent diagrams, for which also they were much indebted to the author. He was sure Mr. Atkinson would be pleased to answer any questions on this rather difficult subject.

Mr. Lomas asked if Mr. Atkinson considered carbolic acid the best disinfectant, as he seemed to lay stress upon it, though he mentioned others. Carbolic acid had the advantage of being readily obtainable, and any chemist would supply it, while he might not feel at liberty to supply some of the more poisonous preparations.

Mr. Stephens asked the author's opinion on formic aldehyde, which seemed coming to the front recently and, he understood, had been found to possess very great disinfecting properties, especially in the case of anthrax, while at the same time it was harmless to human life. He believed it was used largely for the preservation of milk also, though it was a matter of opinion whether that was allowable. He agreed with Mr. Atkinson as to the uselessness of the ordinary carbon filter in most cases, but it was very useful when dealing with a very soft water which passed through lead pipes, because animal charcoal always contained more or less phosphate of lime, which would retain the dissolved lead. He believed there were other filters which would really take out all organisms, and, in fact, all matter in suspension, with the valuable quality that when they got dirty they would allow no water to pass.

Mr. Smith asked if the serum which was injected to produce immunity, say from diphtheria, was obtained from an animal supposed to be immune to that disease.

Mr. Martindale said this paper was most interesting, and the author had certainly condensed the principal features of bacteriology so as to make it intelligible and interesting. He well remembered the battle over the question of spontaneous generation which was carried on by Pasteur, Huxley, and Lister, and which was followed by the researches which had proved of such marvellous benefit to surgery and to the cure of disease. He remembered partly some of Dr. Bastian's experiments, which took place at University College Hospital, the discussion being taken up vigorously by the students at the time, some of them saying that when they saw an elephant come out of a haystack they would believe in spontaneous generation, but until then they could not believe in the origination of life except from previous life. He should like to propose a vote of thanks to Mr. Atkinson for his paper.

Mr. Allen, in seconding the motion, said they were much indebted to Mr. Atkinson for the very clear way in which he had placed this somewhat difficult subject before them. Everyone present must know a great deal more about bacteriological research than he did before. The practical application to disinfection was of immense importance to pharmacists. He remembered very well on the publication of a book by Professor Tyndall, entitled 'Dust and Disease,' being much impressed by it, and undertaking a series of somewhat rough researches on the mode of sterilising vegetable infusions, a subject which had been before pharmacists for many years. He found it was perfectly easy, by taking ordinary precautions to exclude dust and so on, to keep all the vegetable infusions of the Pharmacopœia for a number of years, and he kept most of them for six or eight years. He should like to ask what precautions were taken for sterilising the wool used to stop the tubes.

Mr. Atkinson in reply, said the wool was sterilised in a hot oven, and then passed three or four times through a flame before it was put into the tubes. There were many precautions necessary which he had not particularised, his object being to give a general idea of the process rather than to carry it out perfectly, which would be impossible on such an occasion. He did not think any one special disinfectant could be specified as best for all purposes. Some had advantages for one purpose and some for another. There were certain disease organisms which grew better in a 1/500 carbolic acid solution than without it. His experience of formic aldehyde was very limited, but he was not sure that it was going to prove superior to other things now in use, and he doubted very much whether medical men would look with favour on its use internally. In reply to Mr. Smith, he might say that horses were inoculated with the diphtheria bacillus in order to produce the antitoxin serum. It would not answer the purpose to inoculate an animal which was immune, but this subject was far too large to go into in detail. With regard to filters he was particularly careful to say that they were useless unless they were properly and chemically cleansed at intervals. Some careful experiments had recently been carried out on filters at the Institution of Preventive Medicine, and the results were recorded in a pamphlet published a few weeks ago. It was shown there that with the very best modern filters, the Berkefeld, and others, after being used five or six days without any proper cleansing, disease germs came through. The results were all tabulated, and it was perhaps the ablest work yet done by that Society, and threw a great deal of light on the subject of water filtration.

The President, in putting the vote of thanks, said it was thoroughly deserved. Pharmacists, especially in country districts where there were no medical specialists, might certainly cultivate this subject with advantage; it would bring them into closer contact with medical men, whilst it could not be said to be trenching on their domain.

The vote of thanks having been passed unanimously,

Mr. Atkinson acknowledged the same, and expressed his thanks to Professor Greenish for his kindness in manipulating the lantern.

DONATIONS TO THE LIBRARY AND MUSEUM.

At a meeting of the Library, Museum, School and House Committee, on Wednesday, February 9, the Librarian and Curator presented the following reports of donations:—

To the Museum (London).

Mr. J. Moss, Deptford:—Moss-covered specimens of *Rhamnus purshiana* bark.

To the Museum (Edinburgh).

Mr. T. Whiffen, Battersea:—Specimens of Cephaeline Hydrochloride and of Emetine Hydrobromide, representing respectively the yield of 1 lb. of Carthagena and of 1 lb. of Rio Ipecacuanha.

Messrs. Fletcher, Fletcher and Co., London:—A set each of Fletcher's Patent Autometric Stoppers, Thermo-Hydrometers, and Thermo-Urinometers.

Messrs. Horner and Sons, London: Specimen of Japanese Wood Oil (*Aleurites cordata*, Steud).

To the Herbarium.

Dr. A. Franchet, Paris:—Specimens of *Strophanthus courmontii* and of *S. ecaudatus*.

Mr. J. Wilson, Bath:—Specimens of the Glastonbury Thorn.

The Curator:—Specimens of *Scrophularia scorodonia* and of *Astragalus glycyphyllos*.

To the Library (London).

Professor D. G. Lagerheim, Stockholm:—Ueber Phæocystis Poucheti; Technische Mittheilungen, 1-2.

Resorcin in Whooping Cough.—Roskam has treated 290 children suffering from pertussis by Moncorvo's method, which consists in touching the glottis with a solution of resorcin. Not a single case terminated fatally; 200 were cured in less than fifteen days and seventy more before twenty-five days. Very young children were more readily cured than older ones. With infants less than a year old a 2 per cent. solution was used; from one to two years the same strength for two days, then 3 per cent., and above that age 3 per cent. only. The applications were made every four hours in the day and once or twice at night.—*Bull. Gen. de Therap.*, cxxiii., 189, after *Annales Soc. Med. Chir. de Liege.*

MEETINGS OF SCIENTIFIC SOCIETIES

CHEMICAL SOCIETY.

At a meeting held on Friday, February 3, Professor Dewar, F.R.S., President, in the chair, a paper was read by H. J. H. Fenton, M.A., on

The Volumetric Determination of Sodium.

When dihydroxytartaric acid is oxidised with potassium permanganate in excess of sulphuric acid, the reaction, although it begins slowly, soon becomes rapid and proceeds normally according to the equation: $C_4H_6O_8+3O=4CO_2+3H_2O$. Taking account of this fact and the very sparing solubility of the sodium salt of this acid, it seemed probable that a method of estimation based on these principles could be formulated. In a preliminary experiment, sodium chloride was taken and treated with excess of dihydroxy tartaric acid, the mixture being neutralised with ammonia. The precipitate was collected, drained, dissolved in excess of sulphuric acid and titrated. 0·0918 Gm. was found instead of 0·0975 Gm., the amount taken. This result was not lower than might be expected, as the salts of this acid are unstable in water, decomposing as has been previously shown into the dibasic tartronate and carbonic anhydride, and moreover, the sodium salt is appreciably soluble in water at 15°. But at 0° the solubility is insignificant, ·100 C.c. dissolving only about ·039, which corresponds with about ·006 of sodium, and since the amount of solution used in the experiment amounted with washings to only 30 C.c., the loss in this way can be very much reduced. As it was found difficult to make neutral with ammonia and avoid using excess, which would vitiate the result, potassium carbonate was tried instead, but this was found to give a too high result on account of the relative insolubility of the potassium salt. Finally, it was found that by using an ice-cold solution of the potassium salt to precipitate the sodium, perfectly accurate results could be obtained. Both the solutions, as well as the water for washing, are kept at 0° to prevent loss, while the permanganate solution may with advantage be standardised by means of pure sodium chloride. Experiments were carried out to determine the influence of other substances dissolved in the solution to be estimated. When magnesium sulphate was present, the result was correct, while ammonium chloride made the number slightly too low. A determination of the sodium in Rochelle salt came out accurately. With salts that are alkaline, such as sodium phosphate or the salts of weak acids like acetic, it was found better to precipitate with the free acid. Borax, on the other hand, gives no precipitate whatever with this substance, so boric acid, if present, must be removed before determination. The best results are obtained with sulphate, chloride, and nitrate. The author recorded the result of an experiment made by a student as a first attempt from verbal directions only, which result corresponded with the theoretical. The admissibility of the presence of some other metals has yet to be proved. The final details of the determination can be varied, as explained in the paper, either by measuring the carbonic anhydride given off from the sodium salt or by a method of weighing, and as the results given are as accurate as those obtained of potassium with platinum tetrachloride, the author recommends this method as a preferable alternative to the latter where one has a mixture of sodium and potassium salt, only one of which need be determined. As a qualitative reagent for sodium, dihydroxy tartaric acid, or, better, its potassium salt, is very delicate. One part in five hundred gives a precipitate at once, and if the precaution be taken to cool the solutions to 0°, one part in two thousand can be detected.—Mr. Hehner remarked that he had already used the insolubility of the sodium salt for quantitative purposes, but without cooling. He was of opinion that it would be preferable to convert the sodium salt into chloride, which could be weighed, instead of employing the volumetric method.—Mr. John Newlands said that, in sugar refining, sodium had been estimated by precipitation in the form of sodium hydrogen oxalate, a reaction which formed one of the easiest ways of showing the production of sodium carbonate from sodium chloride, the oxalate being decomposed with calcium carbonate.—Dr. Lawson asked how the dihydroxytartaric acid was obtained, in reply to which question Mr. Fenton stated that a quantitative yield could be obtained by oxidising dioxymaleic acid in presence of iron.—The next paper was by F. B. Armitage, on

The Atomic Weight of Boron.

The atomic weight of boron is based on the determination of the water of crystallisation in borax. The author stated that the uncertainty of this method lay in the fact that it is difficult to obtain the borax dry without losing water by efflorescence. The water used in recrystallising the specimen employed was redistilled twice, and collected in a platinum apparatus. The recrystallised borax, in a finely-divided state, was washed with alcohol, the alcohol being removed by ether, and the ether in its turn by evacuating with the Sprengel pump, admitting air and evacuating a second time. About two grammes were placed in a platinum crucible provided with a perforated lid; this was placed in a test-tube, which was heated in an air-bath at 90° for four hours; the temperature was then slowly raised and kept an hour at 200°; it was then heated for three hours at 400°. Being now heated over a Bunsen burner there was no intumescence, and hence no loss by decrepitation. If heated over the blow-pipe it was found that the borax continually lost weight, while a sublimate appeared on the crucible lid, so the use of the blow-pipe was discarded, the crucible being heated over the Bunsen instead, until the weight became constant, a condition always attained in three-quarters of an hour. As the mean of several experiments, the number chosen by the author for the atomic weight of boron was 10·959. The number previously published by Professor Ramsay is 10·966. The author mentioned incidentally that he had tested the value of anhydrous borax for standardising sulphuric acid solution; and using a solution of the latter which had been standardised both by means of sodium carbonate and gravimetrically with barium salt, he obtained the figure 10·934 as the atomic weight of boron.—Mr. Groves inquired whether it had been determined whether the borax volatilised as such or as boric acid and sodium carbonate.—Dr. Scott stated that the amount of water given off by borax was dependent upon the hygrometric state of the atmosphere.—Mr. Fenton related the result of an experiment upon this point, in which on weighing a quantity of borax day by day during a considerable period it was found to undergo no loss whatever.—The question was asked by Mr. Newlands whether the standard taken was hydrogen as unity or oxygen as sixteen, to which it was replied that oxygen had been taken as the standard. The author also stated, in replying, that the efflorescence of borax had been noted by Ramsay and Aston.—The President expressed the hope that the work would be continued, and suggested that the loss of water by borax per unit of time should be determined.—The next paper was by E. P. Perman, D.Sc., on

The Rate of Escape of Ammonia from Aqueous Solution.

It has been shown previously that the amount of ammonia remaining in a solution can be expressed by an equation of the form: log. $q=a+b\ t$, q being the quantity and t being a factor representing time. The author now finds that a similar equation expresses the loss related to the volume of air passed through the solution. Replacing t by v, which represents the volume of air, the equation becomes

$$\log.\ q = a - b\ v.$$

In the experiments the temperature of the ammonia was maintained constant, and the air was saturated with moisture at the temperature of the solution. Although the numbers obtained in experiment agree remarkably well with the theory for concentrations of about 70 grammes per litre, the formula does not hold for concentrated ammonia. With a concentrated solution, in fact, the temperature falls so rapidly as to nullify the results obtained. In his last paper the author stated that the air passing through the solution did not become saturated with ammonia, but that statement he now wished to withdraw, the result being affected by the volume of air only, and not by the rate. The effect of variation of the temperature was observed by surrounding the apparatus with the vapours of boiling liquids, as carbon bisulphide and chloroform. At the boiling-point of the latter the solution behaved abnormally like the concentrated solution. The effect of different pressure, on the other hand, is small. The factor b of the equation, which is a measure of the rate of escape, is dependent on the temperature, and is also determined by a logarithmic equation—

$$\log.\ b = \alpha + \beta\ t.$$

The two equations may thus be combined. No general conclusions were yet drawn, but the author wished to say that this was only pre-

liminary to more work of the same kind.—The paper was criticised by Mr. Groves, Dr. Wildermann, and the President, who suggested that the tension of the liquid should be observed at the beginning and end of the experiment, since the difference in amount must bear an important relation to the law. It might perhaps be brought into relation with Van der Waal's formula.—The following papers were taken as read :—"On the Dissociation of Potassium Platinichloride in Dilute Solution and the Production of Platinum Monochloride," by E. Sonstadt; "Effect of Mono-, Di-, and Trichloracetyl Groups on the Rotatory Power of Methylic and Ethylic Glycerates and Tartrates," by Percy Frankland, F.R.S., and Thomas S. Patterson, Ph.D.; "The Rotation of Ethylic and Methylic Di-monochloracetyltartrates," by Percy Frankland, F.R.S., and Andrew Turnbull, Ph.D.—The meeting adjourned to February 17.

ROYAL INSTITUTION.

At a meeting held on Friday, February 4, Mr. A. A. Campbell Swinton gave an interesting lecture on

Some New Studies in Cathode and Röntgen Radiations.

The researches of Crookes and Röntgen, the lecturer said, have supplied us with a new eye, have given to nature a new light, and certainly to science a new problem. In the highly-exhausted bulb known as the Crookes tube we have a few billions of molecules of gas of which we know little. If we knew all we should understand the constitution of matter, but here we are certainly dealing no longer with aggregates of matter. When a current is passed through the tube a green fluorescent beam is seen to emanate from the negative electrode, and when a Maltese cross of aluminium is placed in this beam its shadow is clearly defined on the wall of the tube. If the tube be now surrounded by a coil in which an electric current passes, the shadow of the cross becomes smaller, and at the same time turns about its centre. A demonstration of this was given, and then followed a demonstration of the effect of a powerful magnet which is to concentrate the rays. When held over the pole of the magnet the tube must be constantly moved, or the glass will be penetrated, so great is the erosive action of the stream upon it. Pieces of glass are chipped off inside, but whether this is directly due to bombardment by the molecules or is a secondary effect due to heating is uncertain. A cathode ray electric lamp was next shown. In this there are two cathodes with concave surfaces, so that as the rays come off normally to the surface they may concentrate at a focus. A piece of lime situated at this focus incandesces brilliantly. As the current used was an alternating one, the two cups served alternately as cathode and anode. A second piece of apparatus of the same kind containing a smaller piece of lime behaved curiously. Periods of brilliant light and darkness followed each other in regular succession. This appears to be due to the alternate absorption and giving off of the gas by the lime, a thing most unheard of among chemists. With the alternating current the light appears alternately on opposite sides of the ball of lime, which becomes bored through from side to side, showing with what accuracy the rays can be focussed. As to what cathode rays are, it is now almost universally accepted that the original theory of Sir William Crookes is the correct one. The other idea, namely, that the rays are currents of ether, is not supported by experiment. The theory that the molecules themselves are repelled from the cathode with very great velocity is, on the other hand, more and more strengthened. The condition of things in the tube was illustrated by taking a pith ball to represent a molecule and suspending it between the poles of an electrical machine. The pith ball travelled from pole to pole and back with equal velocities, but when one pole was connected with the earth the pith ball was seen to travel in one direction with very much greater velocity than in the other. So in the tube the positive electrode is practically earthed, and that is at least one reason why the molecules travel so much more rapidly in one direction than in the other. The probable arrangement of the molecules in the tube was shown by a diagram which represented the space between the cathode and anode, as well as the space behind the cathode filled with negatively-charged molecules and the positively charged molecules occupying the space behind the anode, and that around by the walls of the tube. This representation is justified by an experiment with a tube containing a vane, the position of which is alterable. When placed in the line of fire, the vane rotates in one direction, and, when out of the line of fire, in another. As the vacuum becomes higher, the conical form of the stream disappears, and when carbon is substituted for aluminium or platinum, a luminous ring surrounding a bright spot is formed at the anode. In a still higher vacuum the rays come from the centre only of the cathode cup, and if this be of carbon, it also becomes luminous. When the luminous ring is deflected by means of a magnet, it moves with the latter without a perceptible lag. On allowing the cathode stream to pass through a slit in the anode and then between the north and south poles of a magnet, it becomes dispersed, producing the analogue of a spectrum. This spectrum shows dark bands, which continuously change their position, never remaining constant. Photographs of these bands were taken with instantaneous exposure, and also photographs of their x-ray effects, it being found that the bands in each coincided in position. If the x-ray effect be dependent upon the velocity of the cathode rays the greatest effect should be produced by the rays that are least deflected, as these have the greatest velocity, and this, in fact, is found to be the case. The size of the cathode is important. An experiment was performed before the audience with a tube containing a large and small cathode which showed that while with the smaller cathode the bones of the hand and arm threw a well-defined shadow, with the larger cathode no bones could be distinguished. The material for the anticathode, is also not without effect. Sylvanus Thompson has found that the best absorbers are also the best emitters. The usual way of altering the kind of rays produced has been to alter the degree of exhaustion, but it was now shown that almost any kind of ray can be obtained by altering the distance of the cathode and anode, and by altering their position in the bulb. x-ray photographs were shown which had been taken with the cathode in different positions in the bulb. The lecturer also showed a bulb containing a glass screen behind the cathode which could be moved up close to the latter or removed from it. It appears that the condition to be sought is that the supply of molecules to the cathode should be restricted; the more limited the number of molecules the more rapid is the discharge. This was shown well with a tube that was formed of a central spherical portion opening into a smaller cylindrical part; when the cathode was in the middle of the bulb the x-ray images were much fainter than when moved back to the mouth of the cylindrical part.—Mr. Swinton also exhibited some curves which he had prepared showing the effects produced relative to different positions of the cathode.

SELECTED FORMULÆ.

Boroglycero Lanolin.

Lanolin cream, for putting up in collapsible tubes for toilet use, may be made by dissolving 8 parts of boric acid in 50 of glycerin, and adding paraffin ointment, 120 parts; anhydrous lanolin, 60 parts. —*Journ. de Pharm. d'Anvers*, liii., 271, after *Nouveaux Remèdes.*

Application for Perspiring Hands.

Borax, salicylic acid, of each 15; boric acid, 5; glycerin and proof spirit, of each 60. Apply with rubbing three times daily. —*Les Nouv. Rem.*, xiii., 601, after *Wien Med. Pr.*

Emulsion of Cod-liver Oil.

Irish moss, 15; water, 1300. Make a decoction and strain. In 150 of this decoction dissolve sugar, 25; and add to the cold solution cod-liver oil, 80. Shake well together in a bottle. A perfect inseparable emulsion will result, in which no oil globules will be visible, even with a lens.—*Répertoire de Pharm.* [3], ix., 479, after *Giorn. de Pharm. de Trieste.*

Non-Poisonous Fly-Paper.

Prepare a strong decoction, or, better still, a tincture, of quassia raspings, and add to it a warm mixture of 300 parts Venice turpentine, 150 parts of poppy seed-oil, and 60 parts of honey. This preparation should be spread thickly on strong paper.—*Pharm. Post*, xxx., 328.

A Perfumed Disinfectant.

To remove the inconvenience suffered by travellers through the disinfecting process of quarantine stations, Gawolowski recommends the application of a disinfectant prepared by introducing sulphurous acid gas at a low temperature into alcohol until saturated, and then adding thymol and suitable perfumes.—*Pharm. Centralh.*, xxxviii., 424.

LEGAL INTELLIGENCE.

PROCEEDINGS UNDER THE PHARMACY ACTS.

Pharmaceutical Society of Great Britain *v.* Siddle.

On the 9th instant, at the County Court, Hull, before Harold Thomas, Esq., Deputy Judge, the Council of the Pharmaceutical Society of Great Britain sued Charles Henry Siddle for a penalty of £5 for selling poison contrary to the provisions of the Pharmacy Act, 1868.

Mr. R. E. Vaughan Williams, instructed by Messrs. Flux, Thompson, and Flux, appeared for the Council.

Mr. H. Wray represented the defendant.

Mr. Vaughan Williams, in opening, said that the proceedings were for the recovery of a penalty under the provisions of the Pharmacy Act, 1868, the particular offence being for selling a poison contrary to the provisions of Sections 1 and 15. He briefly mentioned that Section 1 made it unlawful for an unqualified person to sell a poison, and Section 15 provided that for every offence of selling the seller became liable for a penalty of £5, and the procedure for recovery of penalties was provided for by the earlier Act. The present proceedings were taken against the defendant, who is an assistant in the employ of a company carrying on business in Hull and elsewhere called The Hull Drug Company, Limited. Since the decision of the House of Lords it had been competent for a limited company to carry on the business of chemists and druggists provided that the sale of poison was conducted by a duly qualified person. The particular company employing defendant is what is known as a one-man company. It has a capital of 2000 shares of which a Mr. Millburn holds 1994, the remaining six being held by six other persons. He is the managing director and secretary, and is virtually the company. Under these circumstances it became necessary to proceed against the actual seller as the only way in which there can be protection afforded to the public. He would prove that on October 8 last a bottle of Teasdale's Chlorodyne was bought at the shop of the Hull Drug Company, Limited, 34, Whitefriargate. The chlorodyne contained a scheduled poison, viz., "morphine." He should prove that this poison was sold by defendant, and that he was not a qualified person.

Mrs. Sabina Watson (examined by Mr. R. E. Vaughan Williams): I received instructions from Mr. Mitchinson to make a purchase of poison at 34, Whitefriargate. Mitchinson went with me to the shop. He waited outside.

His Honour: Whom did you see?

Witness: I saw Mr. Siddle; he served me.

Examination continued—I asked him for a bottle of Teasdale's Chlorodyne. I made another purchase, and I handed defendant half-a-crown to pay for them. He passed it to Mr. Millburn, and Mr. Millburn gave me the change I identify the purchase.

His Honour: There is no dispute as to the bottle?

Mr. Wray: No.

Cross-examined by Mr. Wray: I went to Monument Bridge Stores. It was between 2 and 2.30 in the afternoon. Had seen defendant before. There were three persons behind the counter—defendant, Mr. Millburn, and a young man.

Re-examined: I have seen defendant here this morning. I know him by sight.

John Mitchinson, examined by Mr. Vaughan Williams: I received my instructions from the Registrar of the Pharmaceutical Society. I saw Mrs. Watson go in and come out of the shop on October 8. She handed to me the purchases immediately. I handed the chlorodyne to Mr. Moon. I know Mr. John Douglas—he is a qualified man. I saw him leave the shop before Mrs. Watson went in. He did not return before Mrs. Watson came ut.

Harry Moon, examined by Mr. Vaughan Williams: I received the bottle of chlorodyne produced from last witness. It remained in my possession until I handed it over to Mr. Eastes.

Ernest John Eastes, F.I.C., examined by Mr. Vaughan Williams: I am an analyst. I received the bottle produced from the last witness—it had then an unbroken medicine duty stamp over the cork. I have analysed the contents of the bottle. It contains, among other ingredients, morphine and chloroform. The amount of morphine present was four-fifths of a grain. Morphine is the chief toxic constituent of opium.

His Honour: I want to see which schedule this is in. (To witness): Is it a preparation of opium?

Witness: I say that it is a preparation of opium.

Mr. Vaughan Williams: I put in a printed copy of the Register of Chemists and Druggists, and upon reference thereto it will be seen that defendant's name does not appear therein. The case in which it was decided that an unqualified assistant selling poison is liable for penalties is the case of the Pharmaceutical Society *v.* Wheeldon, and I call your Honour's attention to the judgment of Mr. Justice Hawkins.

His Honour (to Mitchinson): Did you notice any name over the shop?

Witness: Yes. Hull Drug Company, Limited.

His Honour: Is the name Douglas there?

Witness: I have not seen it anywhere.

Mr. Vaughan Williams: That is my case.

Mr. Wray: I ask for a non-suit. There is no evidence before the court to show that the person who sold the article is not duly qualified. All that the evidence amounts to is that this bottle was bought at the shop in Whitefriargate, and there is nothing to identify the defendant as the person who sold.

His Honour: I will recall Mrs. Watson. To Mrs. Watson: Had you been in the shop before?

Witness: Yes, many times. I have seen the same young man. I have seen him here this morning and pointed him out. I did not know his name before I went to buy the chlorodyne. I now know his name to be Siddle.

His Honour: Is defendant here?

Mr. Wray: No.

His Honour: It is important to clear this up. I will direct a subpœna to be served upon him for his immediate attendance and adjourn the case until he arrives.

On resuming the case His Honour recalled Mrs. Watson.

His Honour: Is that the man who served you?

Witness: Yes, and his name is Siddle.

Charles Henry Siddle, examined by Mr. Wray: I am not a chemist. I am in the service of the Hull Drug Company. Mr. Douglas is a qualified man. He is manager of the stores. I am under his direction. The business is carried on under Mr. Douglas's supervision. When Mr. Douglas is there I tell him when I have a demand for poison and he then gives directions. Mr. Douglas does the dispensing. If a patent or proprietary medicine containing a poison is called for I refer to Mr. Douglas. I have never sold a poison itself or any medicine containing a poison without first consulting Mr. Douglas. When he is out I do not sell medicines containing a poison at all, but I say we have not got it in stock. I fail to recognise Mrs. Watson.

Cross-examined: I don't recognise the bottle of chlorodyne. The cod-liver oil may have been bought at the shop. Douglas is manager. Millburn is the managing director. I do not know whether Millburn has paid a penalty. Whiteman is the qualified man at Prospect Hill. Wright is at Hessle Road. He is not qualified. I could not contend that he has not paid a penalty.

Mr. Wray: I have no further evidence.

His Honour: The authority cited to me in the case of the Society *v.* Wheeldon makes it clear that an unregistered chemist's assistant, who, in the absence of his master, sells any poison, or preparation containing a poison, is liable to a penalty, notwithstanding that he effects such sale on behalf of his master, and that his master is only registered. I take it for the purposes of this case that Douglas was the master. I find as a fact that Douglas was not present when this poison was sold. I find that Mrs. Watson's evidence is true, and that she did purchase this article from defendant. I therefore give judgment for the plaintiff for the penalty of £5 and costs.

Police Prosecution under Section 17.

At the Dudley Borough Police Court on Friday, February 4, Messrs. Flesher Raybould, Ltd., carrying on business as chemists at Wellington Road, Dudley, were charged with selling prussic acid on January 18 without entering the sale in the poison-book.

The circumstances out of which the case arose are, briefly, that on the day in question Matthias Dimmack (41), metal refiner, purchased at the defendants' shop a quantity of prussic acid without signing the register, and was afterwards found dead in a railway carriage at Tipton Station.

Mr. F. W. Ensor, deputy coroner, subsequently held an inquest, and a verdict that death was due to prussic acid poisoning was returned.

When the case came before the magistrates, Mr. F. W. Ensor, the aforesaid deputy coroner, appeared for the defendants and

asked that the summons be amended, so that the Company should not be made to suffer for the action of an individual. If the summons were amended he should plead guilty.

After some discussion the Bench decided to proceed with the case.

Inspector Hinde then gave evidence to the effect that he visited the shop in Wellington Road and saw Mr. Goldstraw, a director of the firm, to whom he showed a small bottle labelled "Prussic Acid," found in the possession of Matthias Dimmack, who poisoned himself on the railway. There was no entry of the sale in the poison-book. Mr. Goldstraw told him he was very sorry, he had only recently joined the firm, but had known Dimmack for twenty years and he let him have the poison on the understanding that he would call the next day and sign the poison-book, as it could not be found at the time.

In answer to a question by Mr. Ensor, the witness said Mr. Goldstraw had given him every assistance during his inquiries.

Mr. Goldstraw had previously given evidence on oath, at the Coroner's inquest, to the effect that when Dimmack called at the shop and asked for the poison, he said it was to destroy a dog. The poison-book could not be found, but as the man said he wanted to catch a train and would call and sign the book the next day, Mr. Goldstraw, after impressing upon him the necessity for being careful with the poison and to destroy the bottle when the dog was poisoned, allowed him to have the prussic acid.

Mr. Ensor said Mr. Goldstraw was a qualified chemist, and had been in practice at Bilston for twenty years without a complaint being made against him.

The magistrates, in fining the defendants 40*s.* and costs, expressed surprise that Mr. Goldstraw, considering his experience, should have allowed the poison to be sold in the way it had been.

PROCEEDINGS UNDER THE PHARMACY ACT (IRELAND).

In the Queen's Bench Division of the Irish High Court, on Wednesday, February 8, before the Lord Chief Justice, Mr. Justice O'Brien, and Mr. Justice Gibson; Robert Galbraith, grocer and hardware dealer, Main Street, Aughnacloy, co. Tyrone, was prosecuted by Head-Constable Knox under the Irish Pharmacy Amendment Act of 1890. There were two summonses against the defendant, who, it was alleged, had on April 23, 1897, sold laudanum to one James Boyd in violation of Section 30 of the Irish Pharmacy Act, 1875, he not being legally qualified to do so, and that on the same date the defendant unlawfully kept open shop for retailing and dispensing poisons in violation of the same section. The summonses first came on for hearing on June 14, when Robert Orr, an assistant in the defendant's shop, was examined, and proved that he sold a drachm of laudanum to Boyd. It was admitted that the defendant was not qualified; but it was stated in mitigation of the offence that he had succeeded a qualified person in occupation of the shop, and that there was no qualified chemist within ten miles of Aughnacloy, and further that he was qualifying to pass the Pharmaceutical Society's examination as a chemist and druggist. The hearing was adjourned to August 9, and it was then submitted on behalf of the defendant that Section 30 of the Act of 1875, which fixes the penalty for unlawfully selling poisons at £5, was modified by Sections 15 and 23 of the Irish Pharmacy Amendment Act of 1890, and that the magistrates had power to impose as small a penalty as they thought fit, and they were asked by the defendant's solicitor to amend the summonses by citing the Act of 1890 in them. They amended the summonses, and under that, for the unlawful sale, fined the defendant £1, with £3 costs; and as to the summons for keeping open shop they held that the proof given of one sale was not sufficient evidence that the defendant had kept open shop for the retailing of poisons, and made "no rule" on that summons. At the instance of the prosecutor the cases were shelved.

In the course of the arguments of counsel the summons for keeping open shop,

The Court unanimously held that the magistrates were wrong; that the defendant did not come under the Section of the Act of 1890; and that the case should go back to the magistrates for the imposition of a £5 fine for selling.

PARLIAMENTARY NOTES.

The Flood Gates of parliamentary eloquence were flung open on the 8th instant, and the session of 1898 is now in full progress. What will it accomplish? To judge from the indications afforded by the Queen's Speech, the usual congestion in the matter of private members' Bills may be anticipated, for the Government programme is as ample as it is tough. Local Government for Ireland, the Strengthening of the Defences of the Empire, the establishment of the Prime Minister's ideal "London Limited," Church Patronage, Amendment of the Law Relating to Vaccination, Companies, Food and Drugs, and Prisons are not items which the House will be disposed to accept without considerable wordy warfare, and when one adds to the foregoing the London University Bill, and the measures dealing with Secondary Education and Agricultural Holdings, which are also promised by the Government, it is not difficult to appreciate the all but hopeless condition of non-official measures.

The Pharmacy Acts Amendment Bill is not yet a *fait accompli*, and its future, in common with other draft measures, depends upon the fortune of the ballot box. As Sir Stafford Northcote told the Exeter chemists, unless a Bill gets a favourable place it is doomed, and even with a favourable place on the notice paper its prospect of passing is by no means secure. It is a case of the devil take the hindmost. No doubt the promoters of the Pharmaceutical Reform Bill will recognise the force of this dictum, and will see that the all important first days of the session are not allowed to slip by before they commence that essential but ill-defined form of activity known as "wire-pulling." Up to the present time some 250 members have given notice of their desire to ballot.

In the House of Lords the Copyright Bill of Lord Monkswell was read a first time before the session was an hour old, and it is now waiting for second reading. The Bill was in evidence last session, and was dealt with in these columns, but it failed to pass into law. The noble promoter of the measure is evidently determined that he will deserve success this time if he cannot command it.

The Tuberculosis Commission furnishes Mr. Field (St. Patrick's, Dublin) with his first war-cry of the session. He wants to know why the Commission does not report, and whether the Government propose to put a stop to the confiscations and injury to business caused by local maladministrators, for whom "microbe" has the same fascination as the Royal Head had for Mr. Dick in 'David Copperfield.' Mr. Field, as the author of a pamphlet on 'Pleuro-Pneumonia,' is entitled to assume a certain amount of authority on questions relating to the important subject on which the Tuberculosis Commission has been asked to deliberate. The question is to be answered on the 10th.

Mr. Kearley has been spared the necessity of moving an amendment to the Address this session, because the speech from the throne contains a reference to an official Food and Drugs Bill. It is noticeable, however, that the reference is coupled with the saving clause "if the time at your disposal should permit you to proceed" with it. If the Government again introduce last session's Bill they will find it is far from being non-contentious, and that it will satisfy neither the trader, the chemist, nor the analyst. There are rumours that the Local Government Department have drafted an entirely new measure, in which more attention has been paid to the recommendations of the Select Committee. It is to be hoped that something may be done, too, in the direction of differentiating food and drugs.

The Early Closing Campaign has recommenced with undiminished vigour, and the local option principle embodied in Sir John Lubbock's proposals will be placed before the House at the earliest possible moment. It is understood that Sir John has the tacit approval and moral support of the Ministerial front benches. Whether this abstract stiffening will render the good baronet's parliamentary armour opposition proof remains to be seen.

THE STUDENTS' PAGE.

EXPLANATORY NOTES ON THE B.P.

Sodii Sulphas.—Heating with solution of potash shows simultaneously the absence of ammonium salts and metals, iron, *e.g.*, which forms hydroxides insoluble in caustic potash. The weight of barium sulphate obtained in the quantitative test indicates a practically pure salt

$$\underbrace{Na_2SO_4,10H_2O}_{322} + BaCl_2 = \underbrace{BaSO_4}_{233} + 2NaCl + 10H_2O$$

$$322 : 233 :: 100 : 72{\cdot}3$$

Sodii Valerianas.—The oxidation of amylic alcohol by the chromic acid mixture to valerianic acid is precisely analogous to the oxidation of ethyl alcohol to acetic acid. Since, however, the amylic alcohol of the Pharmacopœia is not a pure substance (see the article on Alcohol Amylicum in the Students' Page), but consists of several isomeric and homologous alcohols, the acid distillate will contain the several acids corresponding to these alcohols. Moreover, the acids formed will react with some of the alcohols to form esters, chiefly, of course, amyl valerianates, just as acetic acid reacts with ethyl alcohol to form ethyl acetate. These esters will distil over with the acids and be saponified by some of the caustic soda to form the sodium salt, while the liberated alcohols, being mostly insoluble in, and lighter than, water, rise to the surface in the form of an oily layer. Taking normal amyl alcohol (butyl carbinol), $C_4H_9CH_2OH$ or $C_5H_{11}OH$ as a type, the following equations represent the reactions described above :—

$$C_4H_9CH_2OH + O_2 = C_4H_9COOH + H_2O$$

Amyl alcohol. Valerianic acid.

$$C_4H_9COOH + C_5H_{11}OH = C_4H_9COOC_5H_{11} + H_2O$$

Amyl valerianate.

$$C_4H_9COOH + HONa = C_4H_9COONa + H_2O$$

Sodium valerianate.

$$C_4H_9COOC_5H_{11} + HONa = C_4H_9COONa + C_5H_{11}OH$$

Amyl alcohol.

THERMOMETRIC SCALES.

The conversion of degrees of one scale into those of another is accomplished by an arithmetical process according to certain rules to be found in all text-books dealing with the subject. Before utilising these rules the student should make sure that he can deduce them himself from first principles so as to check his results if need be, but more particularly that he may have an intelligent comprehension of what he is doing, without which no solid progress in any branch of scientific study can be expected. Let us first of all consider why certain numbers are affixed to certain standard points on each scale. Taking the Fahrenheit scale first because of its priority in historical order—why is 32 selected to indicate the freezing-point and 212 the boiling-point of water? These numbers do not bear any simple relationship to each other and the difference between them, viz., 180, has also no simple relationship to either. When compared to the centigrade scale, they appear needlessly complicated; but a consideration of the origin of Fahrenheit's scale will explain the selection of these numbers. Fahrenheit's scale was introduced at the beginning of the last century, and at that time the temperature producible by a mixture of sal ammoniac and snow was regarded as the lowest possible, and was selected by Fahrenheit as zero, so that the degrees of heat were always indicated by numbers having a positive value. Imagine, now, an ungraduated thermometer placed successively in sal ammoniac and snow, melting ice, and steam from boiling water, with suitable precautions in each case. Let the stem be marked A, B, and C, at the three places where the mercury successively stands. Then, assuming the tube to be of uniform bore, and admitting the desirability of indicating the freezing and boiling points by whole numbers without fractions it will be found only possible to do this by using the numbers 8 or 45 or some multiples of them. For if the distances between the points A and B and between B and C be carefully measured and compared, the smallest whole numbers expressing their relative lengths will be found to be 8 and 45. The degrees on a scale so divided would, however, be inconveniently large for most purposes, so four times those numbers was selected, and the distance, A to B, divided into 4×8 degrees, and the distance, B to C, into 4×45 degrees. By thus proceeding, the degrees above and below freezing point are of equal value, and the freezing and boiling points are indicated by whole numbers. And since $32 + 180 = 212$ the reason why apparently awkward numbers were taken is rendered evident. When the centigrade scale was introduced, the fallacy of regarding Fahrenheit's zero as the lowest possible temperature was known, and by putting the freezing point as 0° and marking all temperatures below this with a minus sign, the difficulty introduced by our ignorance as to the lowest possible temperature was overcome. And since the length of the tube between the points B and C in our imaginary thermometer would be divided into 180 parts on the Fahrenheit, and 100 on the centigrade scale, it is evident that each of the latter will be larger than the former in the proportion of 180 : 100 or as 9 : 5. In other words, the length of scale covered by 9° F. will be covered by 5° C. In converting degrees of one scale into the other, the simplest plan is to consider always how many points the given temperature to be converted is above or below the freezing point. In the case of the Fahrenheit scale, where the freezing point is marked 32, this number can only be identical with the scale number in one place, viz., 16°, which is sixteen degrees or points below freezing point. In the case of the centigrade scale, the number of degrees above or below freezing point will always be identical with the scale number, because the freezing point is also the zero point on this scale. Thus, if 50° F. is to be converted into degrees centigrade, 50° F. is 18 divisions (50-32) above the freezing point and these 18 divisions will correspond to $\frac{18 \times 5}{9} = 10$ divisions in the centigrade scale: the required value is therefore 10° C. On the other hand, if 5° C. is to be converted into degrees Fahrenheit, 5° C. is 5 divisions above freezing point, and these five divisions on the centigrade scale are equal to $\frac{5 \times 9}{5} = 9$ divisions Fahrenheit. Since the corresponding point on the Fahrenheit scale is 9 divisions above freezing point its actual value is 41, because the freezing point is already 32. Similarly, to convert 23° F. to degrees centigrade, 23° F. is 9 divisions below freezing point = 5 divisions in the centigrade scale and, therefore, 23° F. = −5° C. Also 10° C. is 10 divisions below freezing point, equal to 18 divisions $\left(\frac{10 \times 9}{5}\right)$ below freezing point on the Fahrenheit scale, and 18 divisions below freezing point will be 14° F. (32-18).

A third case is presented when the given temperature is below zero Fahrenheit. For example, − 4° F. will be 32 + 4 = 36 divisions below freezing-point = $\frac{36 \times 5}{9} = 20$ divisions centigrade, and therefore − 4° F. = − 20° C. On the other hand, − 40° C. is forty centigrade divisions below freezing-point = $\frac{40 \times 9}{5} = 72$ divisions Fahrenheit. And 72 divisions below freezing-point Fahrenheit will be − 40° F., since there are 32 divisions with a positive sign and $32 - 72 = -40$.

The key to the three cases presented above, which include all possible variations, is to find first the number of divisions above or below the freezing-point represented by the degree to be converted. From a consideration of this the rules may easily be deduced, and, in fact, for practical purposes need not be remembered. The remarks made with regard to the centigrade scale apply with equal force to the Reaumer scale if it be remembered that 80 divisions Reaumer are equivalent to 100 divisions centigrade and 180 divisions Fahrenheit, *i.e.*, the relative lengths of the three kinds of degrees are 4, 5, and 9.

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A MATTER OF JUSTICE.

On Tuesday last Parliament reassembled, and an opportunity is at length afforded for doing justice to the claims of examined chemists and druggists who—in regard to membership of the Pharmaceutical Society of Great Britain—are desirous of being placed in a position of equality with the pharmaceutical chemists who, at present, together with a number of unexamined chemists and druggists, constitute the only fully privileged members of that body. The claim of those who ask, but are not as yet legally entitled, to be admitted to full membership of the Society is both logical and reasonable; the great majority of existing members freely admit the force of the arguments employed in defence of the proposal to place all legally qualified men on an equal footing in the Society; and the only opposition so far manifested is, we are fain to believe, based on an imperfect comprehension of the true facts of the case. It seems both desirable and necessary, therefore, that pharmaceutical chemists who persist in their opposition should realise what may be the effect of that persistence, and what difficulties and danger may lie in their path if they continue to allow full play to an unreasoning and unreasonable spirit of obstruction. They should bear in mind that the founders of the Society were simply chemists and druggists, who did not even enjoy legal recognition as such; they should also recall the fact that many pharmaceutical chemists acquired their title without study or examination, and that a very large number of chemists and druggists who are now members or are entitled to membership are in a similar position; finally, they must not lose sight of the fact that ever since 1868—a period of thirty years—chemists and druggists as a class have done quite as much as, if not more than, pharmaceutical chemists in support of the Society.

The present position is that whilst all chemists and druggists in business satisfy the legal requirements to exactly the same extent as pharmaceutical chemists, and, when they join the Society, do quite as much to support it, they occupy an inferior position in the Society and are denied privileges that have been freely accorded to thousands who possess nothing approaching the qualifications of present-day Minor men. When the matter is expressed thus baldly the unfairness of the position is so striking that one can only wonder the undoubted grievance has not been remedied years and years ago. And there is little doubt that it would have been remedied had chemists and druggists only been agreed in this matter and demanded their just rights. It is not at all clear that they are troubling themselves much about the matter even yet, that is to say, generally; but for the sake of those who would appreciate the improvement in their position in the Society, it appears high time to make a sustained effort to secure that improvement. As to the apparently unconcerned majority, no opportunity should be neglected of awaking them to the importance of the present crisis. If chemists and druggists all over the country would but rouse themselves, and in forcible terms express to their parliamentary representatives their desire for the proposed change, the opposition of a few perverse-minded individuals would soon appear to be of the little importance that it really is, and defence associations formed to defend what is as a matter of fact indefensible would shortly expire of mere inanition. The pages of the Journal have been freely opened to all interested parties who were not disinclined to append their names to published communications dealing with the draft Bill, and no partiality has been shown to one side or the other, either as regards the time or order of insertion. But, during all the weeks that the discussion has dragged its weary length along, no good reason has been offered for further delaying the measure of justice, the granting of which has been so long deferred. As a matter of fact, no such argument can be found, for the opponents of the Bill have no case, and are simply beating the big drum of self-interest, without realising that their best interests bid them turn their energies in a diametrically opposite direction.

The time seems opportune, therefore, for asking what may be expected to occur if the threatened opposition to the Bill should prove successful, either owing to the inertness of chemists and druggists or to the triumph of persuasive though fallacious arguments advanced by the few ill-advised pharmaceutical chemists already referred to. In the first place it may be taken for granted that neither the present nor any future Council of the Society is likely to manifest any further desire to experience so decided a rebuff, and as a result the qualification for membership may be expected to remain as it now is. That being so, with the chemists and druggists that are eligible as members dying off and candidates for the Major examination diminishing in number, the lapse of comparatively a few years will bring us face to face with an enhanced difficulty in obtaining Members of Council. Reference has been made times without number to the sufficiently obvious fact that, year by year, barely one or two over the requisite number offer themselves for election to the Council; but how is that difficulty to be met if the members of the Society are a constantly dwindling body, whilst tending in time to become a vanishing quantity? The position of the Society in such a case would verge on the ludicrous. And what is to happen then, unless it be the compulsory adoption of a plan that, if accepted years previously, would have redounded to the credit of everyone concerned, and proved but the first step in a new and prosperous career? But such an event should not be allowed to happen, and those whose opposition may tend to wreck the present Bill are appealed to not to allow sentiment to override their sense of justice. For whilst the time is truly ripe for this reform, justice and the need for extended organisation most certainly demand it. The opportunity is as favourable as could be desired, and all that is required is a united effort on the part of the majority of the supporters of the Society, aided by those unattached chemists and druggists whose interests are almost, if not quite, as deeply involved in the issue at stake.

ANNOTATIONS.

The Use of the Metric System by Pharmacists will henceforth, as announced last week, be encouraged in the *Pharmaceutical Journal* to the exclusion, ultimately, of the older system of weights and measures. With the view of facilitating the change, it is proposed to publish in an early issue such conversion tables as seem likely to be useful, so that when occasion arises to convert quantities stated in terms of the imperial system into their metric equivalents, the trouble of so doing may be minimised. Whilst many expressions of approval have been received since the announcement appeared last week, but one contrary expression of opinion has come to hand so far, and that most unexpectedly from the enlightened and progressive city of Edinburgh. This correspondent, who is a representative Scottish pharmacist, thinks our proposal premature because, in his opinion, very few readers of the Journal are able as yet to think in terms of the metric system. Now that, we take it, is the very best argument that could be advanced in favour of the proposed course. As the result of constant association with the imperial weights and measures, it is quite easy for any of us to conceive approximately what will be the bulk of a certain weight or volume of a given substance. The words grain, drachm, ounce, pound, and pint call up more or less definite pictures in the mind; but not so gramme and litre.

With the Metric System generally it is different as a rule, and we quite agree with our correspondent that only a small proportion of the readers of the Journal are able to form an adequate idea of the value of metric weights and measures, such as they can do when imperial weights and measures are in question. In other words, the terms gramme, litre, metre, etc., do not call up more or less vivid mental pictures such as present themselves when the terms ounce, pint, and yard occur. And it is in the hope of removing this very difficulty that it is proposed to make the use of the less familiar terms more general in these pages. Twelve years of a permissive system have done little or nothing in the direction of familiarising the inhabitants of the United States of America with metric weights and measures, and it is open to serious doubt whether a hundred years would see any change in that respect, either there or here, unless some section of the general public undertakes the task of conversion. The fact that the new Pharmacopœia will adopt the metric system throughout, though, unfortunately, not exclusively, renders it a matter of comparative ease for chemists and druggists to act as pioneers of that system in British home trade, and in our opinion they will be wise to do so.

All that will be necessary in the first place will be that every chemist and druggist should provide himself with a set of metric weights and measures. This is essential, for the trouble and liability to error involved in the use of equivalents in the ordinary weights and measures are alone sufficient to forbid resort to such a crude method of procedure. Having procured the necessary appliances, then, the next step will be to make a practice of making kilogrammes and litres of all pharmaceutical preparations, instead of pounds and pints. That will not cause the least inconvenience as regards dispensing or retail trade, but if at any time a verbal order or written prescription is presented, which requires the use of metric weights and measures, everything will be in readiness to execute the order promptly, in a satisfactory manner. Chemists and druggists, of all people, should not be found in a state of unpreparedness if customers should come to them and ask for so many grammes or millilitres of a medicinal preparation. By adopting the plan suggested they will soon learn to think in terms of the metric system, and all difficulties connected with the adoption of that system will then have vanished, so far as they are individually concerned.

The Question of the Ownership of Prescriptions was raised in a case heard at the Birkenhead County Court on Tuesday last, before Judge Wynne Foulkes, in which Mrs. Horne claimed ten pounds damages from Arthur Dand, chemist, Liscard, for detaining a prescription. A medical man had written the prescription in defendant's shop, and in accordance with what the defendant believed to be the custom, he retained the paper in his possession. Contention having arisen between plaintiff and defendant over another matter, the latter refused to give up the paper without the authority of the medical man. His Honour having heard all the evidence for the plaintiff, and without waiting for the evidence of defendant and his witnesses, commented upon the absence of the prescriber, who had not been called to the Court, and non-suited the plaintiff.

The Example Set by Plymouth, in connection with the draft Pharmacy Acts Amendment Bill, has been followed by Exeter with signal success, as will be gathered from the report on page 153. It will be noted that Sir Stafford Northcote was struck at the outset by the same apparent inconsistency that has been commented on by several correspondents in letters to the Journal, viz., that whilst anyone—who was not in business as a chemist and druggist before August 1, 1868—must at present pass two examinations before he can be eligible to become a member of the Pharmaceutical Society, it is proposed by the draft Bill to admit him to all the privileges of membership after passing the qualifying examination only. Mr. Hinton Lake and his friends, however, were able to satisfy Sir Stafford on this point by explaining that membership of the Society is in no sense a legal qualification, and that it is not proposed to entitle other than those who have passed the Major examination to call themselves pharmaceutical chemists. The real advantage that accrues to those who pass the higher examination lies in the extra knowledge gained and the exclusive right to use this title; such confusion as has arisen with regard to membership of the Society has probably been due to an unjustified comparison with the Royal Colleges of Physicians and Surgeons, membership of which is a real qualification. The facts of the matter are very plainly put by Mr. Hyslop (see p. 160), and those who are as yet unconvinced as to the desirability of proceeding with the draft Bill as it stands, may with advantage peruse his pertinent remarks.

The merely Apparent Nature of the Inconsistency above referred to becomes evident when the matter is looked at from a different point of view, for when the actual situation is stated it will be seen that the real inconsistency lies in the fact that whilst those who were in business before August, 1868, can become members of the Society without passing any examination, those who have passed the examination qualifying them to practise pharmacy, cannot become members of the Society without passing another examination which is not required for legal qualification to practise. In regard to the craft organisation, which it was the object of the Society to establish as a basis for the full attainment of its objects, the existing position is both an obstruction to progress and a self-evident absurdity. Turning to the arguments advanced by Mr. Maskew (see p. 160) in opposition to the statement that justice demands the extension of

membership, they can only be described as being quite beside the mark. If, as he thinks, chemists and druggists are disinclined to help forward the movement on their own behalf, that circumstance would only show that the possibility of pharmaceutical organisation is still out of reach. But it cannot be an argument against providing conditions which would make such organisation possible.

A New American Idea that has been brought under notice by the inventor is not likely to be hailed with any degree of enthusiasm by pharmacists who are doing their best to conserve what remains to them of the practice of their peculiar art. This novelty is an emulsifying agent, offered under a fancy name, and consisting of a mixture of gum acacia and dextrin, with some unconverted starch. It is claimed that thirty grains of the powder will emulsify one fluid ounce of cod-liver oil in one or two minutes. That is quite true, it does. But surely chemists who take any pride in their art are capable of making their own emulsions without having recourse to proprietary emulsifying agents! The whole tendency of present-day pharmacy appears to be in the direction of ousting the pharmacist, except in so far as he may be considered such who labours for the profit of someone else in a factory. The pharmacist, as an individual practitioner, is threatened with extinction, and whether or not, therefore, any proprietary medicinal preparation is good in itself, he is a traitor to his profession who does anything to encourage the use of such preparations.

The Evening Meeting on Wednesday must be reckoned as another success of the session, and it is doubtful if a pharmaceutical audience could be more deeply interested by a lecturer in his subject than were Mr. Atkinson's hearers on this occasion. The lecture was well delivered, clearly illustrated, and possessed of all the qualities that tend to prevent a long discourse becoming tedious. The necessity of those conditions becomes apparent when it is considered how long the lecture actually was. Space only permits of half of it being presented to our readers this week, but the remainder will lose none of its attractiveness by the delay in publication, and any one who has thought of devoting his attention to the subject treated of by Mr. Atkinson will do well to devote careful consideration to the complete record of his lecture in our pages.

The Sale of Poisons is wisely restricted by the Legislature, and authority to proceed against persons unlawfully selling poisons is, as is well known, vested in the Pharmaceutical Society. That body has not yet, so far as we know, delegated any of its powers, and we fail, therefore, to comprehend why the Lincolnshire Association for the Prevention of the Administration of Poisonous Drugs, etc., to Horses assumes to itself authority "to prosecute any person unlawfully selling poisons." Such an object is stated in a large poster to be amongst others for which the Association has been formed, but it would have been as well had the founders first ascertained definitely what they might claim to do with any prospect of being able to do it. The administration of poisonous drugs to horses is amongst those things that no pharmacist can have any sympathy with and, of course, it is open to anyone to proceed, under Section XVII. of the Pharmacy Act, 1868, against sellers of poison who do not comply with the necessary formalities, but proceedings against persons for unlawfully selling poisons must, for the present at all events, be left to the discretion of the Council of the Pharmaceutical Society.

THE WORLD OF PHARMACY.

EXETER ASSOCIATION OF CHEMISTS AND DRUGGISTS.

At Exeter, on Thursday, February 3, a deputation from the Exeter Association of Chemists and Druggists waited on the Hon. Sir Stafford Northcote, Bart., C.B., M.P., to ask him, as the member for the city, to support

The Pharmacy Acts Amendment Bill

on its being introduced into Parliament. The deputation consisted of Mr. D. Reid (President of the local Association), Mr. J. Hinton Lake (Local Secretary of the Pharmaceutical Society), and Mr. P. F. Rowsell (Hon. Secretary of the local Association). Mr. J. Hinton Lake, at the outset, explained that the Pharmaceutical Society was formed in 1841 by a number of chemists in business, who thought it desirable to form themselves into an association. At that time it was simply an association. In 1843 they obtained a charter, and it was arranged that examinations should be held, and that those who passed the examinations should have the title of pharmaceutical chemists, which was the title of those who originally were members of the first association. In 1868 the examinations became compulsory, and the arrangement then made was that pharmaceutical chemists should be those who had passed a second examination, and chemists and druggists those who had only passed the qualifying examination, which entitled them to carry on business. It was expected that all persons who had passed the first examination would go on to the second, but such was not the case, and the consequence was that whilst only about one-third of the total number of those who were connected with the craft had joined the Pharmaceutical Society, the majority of those who had joined were not eligible for full membership, though holding the same legal qualification as those who were recognised as members. It had been thought, in order to consolidate the Society, that it would be desirable that all those who were registered as chemists and druggists should be eligible to be members of the Society, and to sit on the Council of the Society.—Sir Stafford Northcote: You mean without passing this further examination?—Mr. Lake: Yes. In other words, to make one examination the only thing necessary to qualify for becoming a member of the Council of the Society, if elected.—Sir Stafford Northcote: And do away with the second examination?—Mr. Lake: Not do away with it.—Sir Stafford Northcote: Then what is the object of passing the second examination if you can become a member of the Council without doing so?—Mr. Lake: That is the point. Those who are chemists and druggists are really eligible to be in business on their own account, but may not be members of the Society or of the Council. The object of the Pharmacy Acts Amendment Bill is that all those persons who are registered as chemists and druggists shall be eligible to be members. Practically that is the whole gist of the Bill.—Mr. Reid: It is to give them an opportunity of showing their interest in the Society, and for increasing the membership of the Society. If the Bill is passed those who are not members of the Society will be eligible for election as members, and for election on the Council.—Sir Stafford Northcote: But will their position be entirely the same as those who have passed the second examination?—Mr. Lake: They will not be entitled to use the title of pharmaceutical chemist. I may say that pharmaceutical chemists generally—I am one myself—have the same view, that it would be desirable that all chemists and druggists should be given the power to sit on the Council of the Society. Throughout the country they are desirous of giving all registered chemists an opportunity of taking a full share in the Society's work. That is practically the whole and sole drift of the Pharmacy Acts Amendment Bill.—Sir Stafford Norhcote: Who introduces this Bill?—Mr. Lake: I do not know who it is. I do not know whether it has really been settled by the authorities. The Council of the Pharmaceutical Society will find some member to do it.—Sir Stafford Northcote: Someone like Sir Walter Foster, I suppose?—Mr. Lake: Yes.—Mr. Reid referred Sir Stafford to a draft of the Bill, which appeared in the *Pharmaceutical Journal* for December 4, and pointed out that if the hon. member would read the speech of Mr. Carteighe, the late President, he would see that the question was put very clearly. Both he and Dr. Symes, speaking in Liverpool, had evinced the greatest interest in the Bill. In 1868, when the Pharmacy Act was being passed through Parliament, there was very strong opposition from a certain party to certain parts of the Bill in connection with the

proposed examination. Parliament had to amend it, and divide the one into two examinations, in order to meet the desires of the opponents; but they were really now, as Mr. Carteighe pointed out in his speech, going back to the original spirit of the Bill, as it was really intended to be in 1868.—Sir Stafford Northcote: Was the opposition in 1868 grounded on the fact that it was unfair to place gentlemen who had passed one examination in the same position as those who passed two?—Mr. Reid explained that there was another society in existence then, called the United Society of Chemists and Druggists, and the two societies were both asking for power. One society was fighting the other, and, of course, the Pharmaceutical Society won, but it had to give way on certain points, and it was those points they really wanted to modify again. The whole idea of the Bill was to unite the chemists of the country on an equal footing, as Mr. Lake had pointed out. Only one-third were now eligible to become members and sit on the Council. The other two-thirds said, What is the use of subscribing to the Society when we are not allowed to become members or to stand for election to the Council. If the other two-thirds could be brought into the Society by equalising the privileges of subscribers, they would be able to present a better front in the case of any further legislation.—Sir Stafford Northcote: Quite so.—Mr. Reid: Another point that has to be remembered is that the qualifying examination to-day—the Minor examination—is very much more severe, and wider in scope altogether, than the qualifying examination was twenty years ago.—Sir Stafford Northcote: That has followed the general rule of examinations.—Mr. Reid: The Bill is a short Bill, and non-contentious, and the Council of the Pharmaceutical Society is perfectly unanimous. The pharmaceutical chemists in the country are also agreed that this would be the right thing to do in order to consolidate the pharmaceutical chemists and the chemists and druggists of the country, so that they may take a general interest in the progress of pharmacy and present a better front to the Legislature at any future time. The Pharmaceutical Society wished to have a curriculum the same as medical men in the near future, but it was felt that all chemists should be of the same way of thinking before they proceeded with such a Bill. At present the forces were rather disunited.—Mr. Rowsell remarked that he did not think the Bill would meet with any opposition on the part of any organised body in Parliament. So far as could be seen, judging by the feeling of chemists throughout the country, there would be very little difficulty in getting the Bill through its various stages if it was brought before Parliament.—Sir Stafford Northcote: I hope you do not come with the idea that I am likely to offer opposition?—Mr. J. Hinton Lake: Oh, no, we feel pretty confident that after you have given the Bill careful consideration you will be quite in accord with it. It is a very reasonable Bill, so far as I can see. The pharmaceutical chemists in Exeter all, with one accord, wish to have the support of all chemists and druggists. They want to form a strong amalgamated Society, not a weak one, as it is at present. It might be afterwards considered desirable to grant a fellowship of the Society for pharmaceutical chemists, but power for that is not asked for to-day.—Sir Stafford Northcote: All you expect from me is that I should read this Bill very carefully. So far as I can see, there is no reason why I should not support the Bill, and I should do so with pleasure.—Mr. Reid: Our object is this: It is a very small Bill, and unless we specially bring it to their notice, members of Parliament may overlook it.—Sir Stafford Northcote: The real difficulty is this: We shall be balloting on Tuesday or Wednesday for the introduction of private Bills, and, of course, the difficulty is that only a few days in a session are devoted to private Bills, so that unless a Bill gets a favourable place in the ballot, the chance is very small. There are so many Bills put down that it is a chance whether a particular Bill is reached. They are entered day after day in the order book, and occasionally it happens with a perfectly non-contentious Bill that when the House is in a good humour they will let it pass through. That, I hope, will be the case here, not that you can bring on a private Bill when you like. It is only when you get the chance, and with a private Bill such as this the chances are not numerous. You might have a chance on Wednesdays between half-past five and six. There is usually a long list of Bills down, and now and then one slips through. The only thing to stop it is for a member to say, "I object." Also between half-past twelve and one you might have a chance.—Mr. Reid: So very little opportunity is given?—Sir Stafford Northcote: Yes. That is the difficulty of passing non-contentious private legislation. What I hope with a Bill like this is, that if you could get it read a second time, probably without opposition, you could get it referred to one of the Standing Committees. Then it might have a chance of passing the third reading and so passing out. It is getting more difficult every year to get private Bills through. I have two down this session. One is non-contentious, but it is a chance whether I shall pass it.—Mr. Reid said it was necessarily left to the Council of the Pharmaceutical Society to decide who should introduce the Bill, but all the different trade societies throughout the country were doing as they were that day, asking for the support of their parliamentary representatives, so that when the Bill came on they would be acquainted with its provisions and help it through.—Sir Stafford Northcote: I imagine that the Society's parliamentary advisers know that if they got Sir Walter Foster on the one side, and Sir William Priestly on the other—both eminent medical men—to put their names on the back of the Bill, such a course would give it the best chance it could have.—Mr. Lake: May we be permitted to offer that suggestion to the Council of the Society?—Sir Stafford Northcote: By all means; but I should think that in all probability it will have occurred to those who are responsible for the introduction of the Bill.—Mr. Reid and Mr. Rowsell agreed that it was desirable that Mr. Lake, as the Local Secretary of the Pharmaceutical Society, should write to the Secretary, informing him of Sir Stafford's suggestion.—Sir Stafford Northcote pointed out that both Sir Walter Foster and Sir William Priestly had done good service in that direction on more than one occasion. They both took a great interest in all questions relating to the medical profession.—Mr. Reid said the deputation felt grateful to Sir Stafford for having given them an opportunity of interviewing him on the proposed Bill; they felt he had done them good service.—Sir Stafford: I am delighted to do so. It has given me very great pleasure to see you.—The deputation then withdrew.

EXETER ASSOCIATION OF CHEMISTS AND DRUGGISTS.

On Wednesday night the annual dinner of this Association was held, the President, Mr. D. Reid, presiding. There were also present the Sheriff of Exeter, Mr. John Delpratt Harris, Mr. J. Hinton Lake (Vice-President and Vice-Chairman), Rev. E. Read, Mr. T. C. Milton, Mr. P. F. Rowsell (Hon. Secretary), Mr. E. Lemmon, Mr. H. W. Gadd, Mr. E. F. Stone, and other friends.—The President, in proposing the toast of "The Queen," said as chemists they would remember that in the present reign they obtained their first Charter.—Mr. Milton having proposed "The Navy and Army," Messrs. W. H. Dalgleish and Linscott responded in patriotic terms, and the President then submitted

The Exeter and District Chemists' Association.

In doing so, he said it was useful to have such trade associations with recognised officials who could call members together at any time to discuss important business. Referring to the Pharmacy Bill, he said that a deputation, consisting of Mr. Lake, Mr. Rowsell, and himself, had waited upon Sir Stafford Northcote, who told them that whenever the Bill came into Parliament he would do all he could to further it. He believed that the measure would consolidate the Society, and enable chemists to present a more solid front in the future. He judged from meetings held throughout the country that a great majority of chemists were in favour of the Bill. In the year 1900 the new Bye-laws would be introduced whereby the first examination would be considerably increased in stringency, so that so many candidates would not be disappointed when they entered for the qualifying examination. Associations throughout the country by their operations gave a great deal of force to the central Council in supporting proposals for legislation which they hoped to carry through.—Mr. Russell, in replying, said that in such associations they had something like a revival of the ancient guilds for the advancement of the trades or professions with which they were connected. He believed the Exeter Association was one of the oldest local associations in the United Kingdom, and he hoped that during the coming year they would hold meetings which would help towards advancing pharmacy in Exeter as well as strengthening the hands of the Council of the Pharmaceutical Society. He supplemented what the President had said regarding the deputation to Sir Stafford Northcote, and said he believed they were taking a step in the right direction in attempting to pass the Pharmacy Bill. It would do more than anything else to consolidate the ranks, and he hoped in time they would be able to do away with the

two classes, of pharmaceutical chemists and chemists and druggists, so that all members would have the same status and qualification.—Mr. Hinton Lake proposed "The Medical Profession," and the Sheriff of Exeter, who is the senior surgeon to the Devon and Exeter Hospital, replied that he was quite sure that the pharmacists of Exeter had done a good thing in binding themselves into a united body.—Mr. Lemmon proposed "The Visitors," speaking of the way in which members of the craft co-operated with medical men, and the toast was acknowledged by the Rev. E. Read, Messrs. Linscott, Ham, and H. J. Dalgleish. The latter desired to do all in his power for the advancement of the trade. His firm had always been ready to support them in many things connected with pharmacy.—Mr. Gadd proposed "The Press," and Mr. S. J. Shapley having replied, a vote of thanks was passed to the Honorary Solicitor, Mr. Clapp, for his past services. The company was glad to hear that Alderman Gadd was convalescent, and a convivial evening was spent.

SCHOOL OF PHARMACY STUDENTS' ASSOCIATION.

"A very pleasant and successful social evening" is the stereotype phrase for describing any meeting of a social character, and, as a rule, it merits the description, even though it is merely a gathering together of the members of an association for a quiet smoke and talk intermingled with music and coffee. Much more, therefore, when an old-established body like this Association holds a "social" open to "old boys" and friends of both sexes. Thus, on Friday, February 4, when the Dean of the School, Professor H. G. Greenish, took the chair at the first social of the session, no one was surprised to see the lecture theatre well filled with present and past students, many well-known pharmacists, and a goodly number of ladies. About twelve months ago, at a similar meeting, Professor J. Norman Collie entertained a large company with an account of his experiences while mountaineering in the Himalayas, and on this occasion he gave a most interesting lecture on

Mountaineering Exploration in the Canadian Rocky Mountains.

Professor Collie commenced by expressing the pleasure it gave him to bring before those present a series of photographs of scenes in the Canadian Rockies, the majority of which had not previously been exhibited in public. He went on to explain that being in Canada last August, he, together with several celebrated English and American mountaineers, decided to explore some glacier regions in the Rocky Mountains that hitherto had not been visited by white men. Provisions having been purchased for a lengthened stay in the mountains, a number of men and ponies were engaged on which to pack the numerous requisites of the party. A Swiss guide was also engaged and a start made from Laggan, a station on the Canadian Pacific Railway, the expedition occupying nearly a month. Before describing the various incidents of the journey, Professor Collie pointed out on a large map the route taken, and gave his hearers some slight idea of the vast tract of mountainous ranges in British Columbia still unexplored. After leaving Laggan the party climbed to the top of Mount Lefroy and Mount Victoria, then a journey was taken up the Bow Valley and an attempt made to climb Mount Balfour, but on reaching the summit they found that particular mountain was still beyond them, so the one climbed was named Mount Gordon. They then went to the head of the Bow Valley and crossed the pass to the Saskatchewan River in search of a high rock peak called Mount Forbes, which they found but did not climb. The Freshfield glacier and peaks around it were next explored, then across the watershed and down the Bleaberry Creek. Finally the party had to leave the Bleaberry Creek and strike south to the north branch of the Kicking Horse Valley, and from there to Field, a station on the Canadian Pacific Railway.—Most of the views, which were thrown on a sheet by a lantern skilfully manipulated by Mr. H. E. Matthews, were from photographs taken by Professor Collie, and as each one was exhibited a realistic account was given of the many interesting and amusing incidents of the expedition. The greatest difficulty the party had to contend with was the thick timber or brushwood through which a path had often to be cut. Even when they found an old trail, made when the railway was being laid some ten or fifteen years ago, it was found to be impassable, being completely blocked by fallen trees, the result of forest fires. Whenever a mountain or glacier was discovered not at present indicated on any known map, a name was given to it. The system adopted was to name the peaks after the various presidents of the Alpine Club, such as Pilkington, Freshfield, and Walker, and a range of unnamed peaks that no one had ever explored before was called the Freshfield Range.—At the conclusion of the lecture Professor Greenish asked those present to express by acclamation the pleasure and appreciation with which, he was sure, they had all listened to the lecture. A storm of applause followed, and in thanking the audience for the hearty way in which they had shown their appreciation of his efforts, Professor Collie advised all who take the trouble to go away for a holiday to go to the mountains. He was sure they would not only enjoy themselves in an excellent way, but would also greatly benefit in health. He was glad that the photographs had come out so well, as it was the first time he had used a camera that required exposure. On previous occasions he had used a snapshot camera.—An adjournment was then made to the examination hall, where the usual pharmaceutical refreshments were provided. Several large photographs of snow-clad peaks, beautiful lakes and valleys, illustrating the magnificent scenery of the Rockies, were exhibited after the lecture, and were greatly admired.

IRISH PHARMACISTS' ASSISTANTS' ASSOCIATION.

At Dublin, on the 4th instant, the usual fortnightly meeting was held at 67, Lower Mount Street, the President, Mr. W. J. Hardy, M.P.S.I., in the chair, when a paper was read by Mr. W. F. Wells, jun., ex-President of the Pharmaceutical Society of Ireland, on

Pharmaceutical Ethics.

Mr. Wells, who was received with applause, said the subject which he had chosen for his paper was one of the utmost importance to chemists, and yet received the least attention at their hands, some not even giving it a passing thought. They were surrounded by certain fixed laws by which their actions were governed, and it was by these laws that their duty to the public, the medical profession, their fellow-craftsmen, and to themselves was made clear. Their duty to the public was defined in the Pharmacy Act and Sale of Poisons Act. The Act of 1875 gave them to understand that they should protect and convenience the public, supplying pure drugs of the B.P. standard, and seeing that prescriptions were properly dispensed. For the public convenience they had to be at their post night and day, and a hard taskmaster was the public. Their duty to one another was to combine for their mutual benefit, not as trades unionists, but as men of education seeking to raise themselves socially and commercially. They should have a written code of laws, even as other professions and trades had. Uniformity of prices should be observed. The relations between the physician and the pharmacist were described, and the need of a clear understanding between them urged. Good drugs and prompt execution of orders were essential to a successful chemist. Assistants should also co-operate with their employers. "Patent" medicines should not be "cut." The public would not swallow a dose of medicine more than was absolutely necessary, or take an extra pill because a quantity was offered cheap. The chemist should take a higher level in his work than he does at present, and should act up to that standard in everything. The taking on of apprentices before they had passed the Preliminary examination of the Society was strongly discouraged by the writer, who maintained that the unqualified apprentice generally ended by becoming the flotsam and jetsam of pharmacy, whence the bogus trader obtained his assistants. The duty of employers to their apprentices was set forth in no uncertain tones by Mr. Wells, as was also that of the chemist to the doctor. *Ne sutor ultra crepidam* was the speaker's keynote in this respect, and the prescribing pharmacist and dispensing physician were roundly condemned. Happily, said Mr. Wells, they had none of the latter class in or around Dublin, and he trusted very isolated cases of the former. The routine of the laboratory, front shop, and despatch departments was commented on, and some practical advice in connection given. Incompatibilities in prescriptions should be referred to the prescriber, due regard being had to discretion and common sense. The great enemy of true pharmacy was company pharmacy, which was in their midst under various names, such as "store chemists," "co-operative stores," and "Codology and Co., Limited," the last-named including grocers, booksellers, leather merchants, etc. Such trading was detrimental to the best interests of pharmacy. In company trading there was no proprietorial personality so essential to success. The concern was generally over-capitalised, the managers of the departments having no stake became mere machines, driven by a board of directors the motive power

being the electricity of good cash results. Cutting of prices led to inferior quality of drugs or substitutions. Much could be done in the direction of reform if the licentiates held aloof from the limited companies, and disregarded the bait of less work and more pay thrown out by the promoters of such concerns. The young man who sold himself to these houses simply bartered his future for the present. The alacrity of the modern chemist in lending his shop windows for the puffing of patent or proprietary medicines was deplored, and the resemblance of the shop windows when so decorated to toy-shops or wax-works was caustically described by the essayist, who humorously pictured the grocer swooping down on the patent medicines after they had become popular through the medium of the "wax-works," and proceeding to undercut the cutter in the matter of prices. The pharmacists as a body were urged to give up the throat-slitting policy of advertising other people's goods, and to act fair and square to the public in not having two prices for the same article. This was dishonourable trading indeed, and its effects on the trade at large were of the worst description. The P.A.T.A. was commended by Mr. Wells, who said that that Association, though not all they might wish, was based on right principles, and was doing good work. Loyalty to the Pharmaceutical Society should be the first law of the licentiate and the registered druggist alike, who should become a subscriber, and thus have a practical interest in the Society's welfare, turning out the Council if those gentlemen were not going on satisfactorily, and replacing them by better men. This alone ought to be worth 20*s.* a year. Local associations were praised by the speaker, particularly the Irish Pharmacists' Assistants' Association. They were beneficial to young men in developing a friendly and helpful spirit between one another, and furthering the best interests of pharmacy. A cordial invitation to the forthcoming British Pharmaceutical Conference in Belfast next August was extended by the ex-president of the Society, who concluded by giving a number of valuable hints on dispensing, including the habits of neatness, accuracy, dispatch, attention to details, and general watchfulness, without which the accomplished dispenser—up to every duty and above none—was wanting.—The paper was criticised in a friendly spirit by Mr. Hunt, Mr. Jones, Dr. McWalter, and others.—Dr. McWalter, however, took exception to the essayist's plea for anti-cutting, on the ground that high prices for medicines drove the respectable to the hospitals or dispensaries, thereby pauperising them. He asked what were the chemists doing to relieve the sum of human misery? Were they doing their duty to their neighbour by their high sense of ethics in charging 1*s.* 8*d.* for an eight-ounce mixture? Between the physician and the high-class pharmacist the "pound-a-week" clerk had a big bite taken out of his week's wages after paying 5*s.* for a prescription and 1*s.* 8*d.* to the chemist. In consequence of these high charges the patient might be tempted to deny himself the requisite medicine, and in this way a grave responsibility was cast on the chemist. As to combination, they had the pharmacy laws for their guidance. These laws were in the favour of pharmacists, and the judges and magistrates were in sympathy with the Society. An easy way to keep pharmacy pure was to keep obnoxious persons outside the Society and sweep out those inside refusing their subscriptions, enforcing the Sale of the Food and Drugs Act, harassing offenders against the law and bringing them into Court on every possible occasion.—A hearty vote of thanks was accorded to Mr. Wells for his very able and instructive paper.—The President of the Association said they were a non-political pharmaceutical body, and never meddled with questions affecting company pharmacy, as a large number of the members were directly connected with the companies, though none the less true pharmacists. The settlement of trade questions was, of course, the function of the parent Society, and they had no desire to usurp its direction.—Mr. Wells having replied to the criticisms and expressed thanks for the kind utterances of the Association, to whose members he conveyed the greetings of the Pharmaceutical Council, who, he stated, were anxious to foster the junior organisation, the proceedings terminated.

PHARMACEUTICAL SOCIETY OF IRELAND.

On Wednesday, the 2nd instant, the monthly meeting of the Council was held at 67, Lower Mount Street, Dublin.—The President, Mr. R. J. Downes, was in the chair, and the other members of Council present were the Vice-President (Mr. Beggs), the Hon. Treasurer (Mr. Grindley), and Messrs. Wells, Hayes, Bernard, Conyngham, Kelly, Dr. Walsh, and Professor Tichborne.—The President reported in connection with the late election for St. Stephen's Green division of the City of Dublin that before the election took place he addressed an identical letter to each of the candidates, Mr. James Campbell, Q.C., and Count Plunkett. Count Plunkett did not reply; Mr. Campbell did, and a deputation consisting of Messrs. Wells, Grindley, Kelly, and himself (President) had an interview with Mr. Campbell, who, they found, thoroughly knew their requirements, and promised to give them every support that he could in any legislation that they should deem necessary. Thereupon he (President) issued a circular letter to the pharmaceutical electors, apprising them of the result of the interview.—A draft reply of the Council to the Lord-Lieutenant and Privy Council of Ireland *in re* the last report of Sir George Duffey, the Visitor of Examinations, was agreed to. It stated as to the

Preliminary Examination

that the original percentages of answering were fixed so as not to make the examination an obstruction to the youths of the country coming into the business, but it was expected that licentiates of the Society would in future expect their apprentices to be better educated than heretofore. "Optional" subjects had been put on not to "stick" the student but to enable him to give proof of having received a liberal education. The Council did not agree with the Visitor that there should be any limit as to the number of times that a candidate might present himself for the Licence examination. The importance of requiring a better knowledge of Latin from "Preliminary" candidates had long been appreciated by the Council. The Society's chemistry school, and materia medica and botany classes had been very beneficial for candidates.—A report on the chemical section of the Licence examination was received from Mr. Doran, one of the examiners. It stated, amongst other things, that with a few brilliant exceptions candidates knew next to nothing of the great leading principles of chemical science, and that rejections on very low scoring in the theoretical portion of the subject by those who had obtained exceptionally high marks in the practical section were of too frequent occurrence. The compulsory "hundred hours'" working at the bench had resulted in a marked improvement in the work done. This suggested that a similar course should be taken with regard to the theoretical work.—The President mentioned that a recommendation that the Preliminary examination should occupy two days had been given up.—On the motion of the President, seconded by Mr. Wells, the following alterations in the regulations for the Preliminary examination were agreed to :—

That the regulation as to marking be altered to read as follows :—

In each of the following subjects, and their sub-divisions, a candidate must obtain 50 per cent., viz. (1) English; (2) Latin; (3) Chemistry; (4) Arithmetic; (5) the British and Metrical Systems of Weights and Measures; 40 per cent. in each of the other subjects, and 50 per cent. on the entire course; to enable him to pass. In awarding marks, spelling and the quality of the handwriting will be taken into account.

That the marking in the sub-divisions shall be as follows :—Latin Translation, 10; Parsing, 10; English (Composition and Grammar), 15; Dictation, 10 Arithmetic, 10; Weights and Measures, 10; Algebra, 5; Geometry, 5; Chemistry, 15; Optional Subject, 10.

In sub-dividing the subjects for examination the Examiner shall maintain in each sub-division the minimum percentage adopted by this Council for the subject of which it is a sub-division.

—Mr. Conyngham leaving at this point, the other business was not disposed of for want of a quorum.

MIDLAND PHARMACEUTICAL ASSOCIATION.

A meeting of the Midland Pharmaceutical Association was held at Mason University College on February 3, under the presidency of Mr. J. Poole, when the subject of

Dispensing Difficulties

was introduced by Mr. F. H. Alcock. In the course of the discussion it was stated by members that during the past few months several prescriptions had been received which appeared to cause difficulty, especially to junior pharmacists, and it was thought that they might be of interest to members. The first was a modification of a copaiba mixture, which to produce a white emulsion requires care, viz. :—

R Olei Resinæ Copaibæ.....	Drachmas duas.
Mucilaginis	Sesqui-drachmam.
Liquoris Potassæ.....	Drachmam.
Aquæ ad uncias quatuor.	
M. Fiat emulsio.	

The method suggested, which gave the best result, was to put 45 grains of gum in powder in a dry mortar, mix with the copaiba, and add 70 minims of a solution containing the liquor potassæ and 7 fluid drachms of water, and triturate the three well until perfectly homogeneous. Then add the remainder of the solution, drachm by drachm, triturating well after each addition, and continuing the addition of the water until the last had been added. The second was a suppository of the tannin and alkaloid class :—

℞ Pulveris Gallæ ..... Grana triginta.
Extracti Belladonnæ ..... Grana tria.
Olei Theobromatis ..... *q.s.*
Ut fiant suppositoria sex.

If the usual plan of moistening the extract with water was followed, when the process of melting the whole mass to pour into the mould was attempted, a gummy mass formed, separated from the molten fat, and could not be further dealt with satisfactorily. If, however, no water was used, and the whole was beaten in the mortar as a pill mass, and melted gently at 110° to 120° F., then no difficulty presented itself. The third problem was—

℞ Pulveris Iodolis ..... gr. i.
Olei Eucalypti ..... ♏ ij.
Olei Theobromatis ..... *q.s.*
M. Fiat cereolus. Mitte vi.

In this case the difficulty was caused by the eucalyptus and iodol causing the theobroma oil to become very soft. The use of a few grains of beeswax per bougie remedied the trouble, but care was required, for if too much wax was used, then disintegration did not take place when the bougie was used ; and it creates much fear in the mind of the patient as to what was going to happen, and what was the cause of obstruction. The amount of wax to use varied according to the sample of theobroma oil and the season of the year, and was best arrived at by experiment. The fourth problem was an ordinary prescription, containing the ingredient mistura ammoniæ, and a difficulty arose because two or more formulæ were published, and unless the prescriber could be consulted, one did not know which to use. In the Paris 'Codex' there was : Am. carb., gr. iv. ; theriaca, ♏20 ; tinct. lav. co., ♏20 ; aq. menth. pip., ad. ℥i. Those were very different things both physically and physiologically, but the latter was intended. The fifth came from the city of Lichfield, and was :—

℞ Liquoris Strychninæ ..... minima 32.
Spiritus Ætheris ..... ℥ii.
Tincturæ Strophanthi ..... minima 32.
Syrupi Aurantii ..... ℥ss.
Infusi Chirettæ ..... ad. ℥8.
M. ft. mist.

It was made on the 5th of the month, and on the 21st was returned because it had changed to a curious jelly-like fluid, not easily to be poured from the bottle. The last was the mixture of male fern, which was taken from Squire's 'Companion to the Pharmacopœia.'

℞ Extracti Filicis Maris ..... ℥i.
Pulveris Tragacanthæ Compositæ .... ℥ss.
Aquæ Menthæ Piperitæ ..... Ad uncias duas.

That formed an unsightly draught, and could not well be considered a type of elegant pharmacy. Tragacanth was not a desirable substance for the production of useful emulsions, although perhaps it was sometimes used with advantage with resins and resinous tinctures. By no way could a presentable product be obtained when the formula was rigidly adhered to. The addition of glycerin had been suggested—so had liquor potassæ ; but the latter altered the odour, colour, and general character of the product, but perhaps, if added in small quantity, it did not materially affect its medicinal efficacy. A very useful way of administering male fern was as follows :—

℞ Extracti Filicis Maris ..... ℥i.
Pulveris Saponis Duri ..... gr. v.
Aquæ ad ..... ℥ii.
M Ft. Haustus.

That did not affect the green colour of the product, nor its peculiar odour, and it rather improves its medicinal effect.

BRIGHTON JUNIOR ASSOCIATION OF PHARMACY.

The meeting of this Association held on Wednesday, February 2, at the headquarters, Newburgh Hall, Cannon Place, was of a social character.—The chair was taken at 9.15 p.m. by Mr. J. R. Gwatkin.—There was a very fair attendance and a capital programme having been provided a very pleasant evening was spent.

CHEMISTS' ASSISTANTS' ASSOCIATION.

The second of a series of Cinderella dances was held at the Portman Rooms, Baker Street, W., on Thursday, February 3. There were about 110 members and their friends present, who spent a most enjoyable evening in dancing to the strains of music produced by Bacon's Quadrille Band. The arrangements which were satisfactorily carried out, were in the hands of the Hon. Secretary, Mr. H. H. Robins.

NOTTINGHAM AND NOTTS. CHEMISTS' ASSOCIATION.

Last week Mr. W. L. Howie, F.C.S., paid his second visit to Nottingham and delivered his very excellent lecture on

The Scottish Alps

under the auspices of this Association.—Mr. Richard Fitzhugh, President of the Association, occupied the chair, and there was an audience of over 400 people. Mr. Howie, as a large number of pharmacists are aware, has earned for himself a wide reputation as a photographer as well as lecturer. The whole of the views used in his lectures have been taken by himself at different times, and from the artist's standpoint are entitled to be included amongst the best. Mr. Howie has also very fine powers of description, which is an immense advantage in a lantern lecture. After the lecture Mr. Howie was entertained to supper at the Albert Hotel, Derby Road, where Mr. Fitzhugh again presided over a good number of local chemists. In the course of a speech after supper, the Chairman, in the name of the Nottingham and Notts. chemists, thanked Mr. Howie very cordially for his kindness in coming to Nottingham and giving the lecture. Meetings like that, he said, did the Association a great deal of good, and he hoped they would keep up their convivial gatherings because it was one way of bringing the chemists of the city together under circumstances which were to the advantage, he trusted, of them all. They had laboured under disadvantages of late years by that abominable "cutting" which had sprung up. Business was not what it was formerly ; there was not half the pleasure in doing business as there was ten, fifteen, or twenty years ago. At that time they had customers who never thought of going to another shop. Fortunately, however, the British public would still go where they could get the best article, and so long as chemists kept good physic he did not think they would lose their dispensing. That was the most profitable part of their trade. His advice was : Keep the best articles at good prices but do not lower the price of dispensing. The other was not a profitable part.—Mr. Howie, in replying, said he need not say that it gave him very great pleasure to stand there to reply to the toast they had so generously drunk. He should be very pleased at any time if he could come and help their Association or any other association connected with the business to which he was very pleased to belong. If he could promote fellowship and good feeling in the trade he was amply rewarded. Mr. Fitzhugh had alluded to the question of "cutting." He said he hoped they would keep on dispensing, but what he (Mr. Howie) thought he meant was, that they should turn out the kind of stuff that no limited company could. He was sure that it was that which kept their customers together.—Mr. A. Eberlin, the Secretary of the Association, was responsible for the arrangements of a very enjoyable evening.

GLASGOW AND WEST OF SCOTLAND PHARMACEUTICAL ASSOCIATION.

The annual supper of this Association was held on Tuesday, February 8, in the Grand Hotel, Glasgow, when about eighty gentlemen were present. Mr. W. L. Currie, President, occupied the chair, and Messrs. John Foster, Vice-President, and Alexander Fraser (Paisley), acted as croupiers. After an excellent supper the loyal toast was duly honoured, and Mr. Alexander Fraser (Paisley), in proposing the toast of "The Medical Profession," said this was always a popular toast, and from their intimate relationship with them in their professional work they as pharmacists had peculiar claims to speak in the highest terms of appreciation of their services to suffering humanity. There was one matter of considerable importance both to the medical profession and to pharmacists. He referred to the great facilities now given to the general public, by means of extensive advertising, for procuring such things as thyroid extract, ovarian substance, and a whole pharmacopœia of drugs which they were invited to come and buy almost without money and without price.

He thought this was a great evil and indicated something rotten in the state of medicine and pharmacy. They were well acquainted with the ordinary quackery, *alias* "patent" medicines, which might be called the constant stream that went to supply the demands of public gullibility. But this other was an evil in stemming the tide of which he thought they might bespeak the moral support of the medical profession. He had pleasure in coupling the toast with the name of Dr. Hector C. Cameron, the highly-esteemed and widely-honoured President of the Glasgow Faculty of Physicians and Surgeons.—Dr. Cameron, in replying, said he deemed it a high honour to reply for his profession to the toast they had so cordially honoured. If there were any two callings, among those who were engaged in serving the public, between which the most kindly feeling should be entertained, it was surely between those who, on the one hand, were engaged in the treatment of serious disease and those who had to dispense the remedial agents used. This year, and indeed this very month, was especially interesting as furnishing a striking instance of the professions of medicine and pharmacy acting as collaborators in the production of the national pharmacopœia. He had had a proof copy of the new British Pharmacopœia in his possession for several months, and it was expected that it would be published some time during the present month. The work had been very carefully gone into by a Committee of the General Medical Council and a Committee of the Pharmaceutical Society, with the aid of specialists like Dr. Lauder Brunton, Dr. Walter Smith, Professor Stockman, and chemists and botanists of the highest repute. In the preface he observed it was stated that the assistance of the Pharmaceutical Society's Committee had been invaluable, and he felt certain the new edition would be a great advance on any of its predecessors, and a most valuable edition, both to pharmacists and medical men.—Dr. Alexander Napier, in proposing the toast of

"The Pharmaceutical Society,"

said he had often wished they had a similar society in his own profession. In medicine a man might call himself an American specialist, or put any letters after his name, or advertise himself in any way so long as he did not use certain letters implying a medical degree. In this way the public were imposed upon and the medical man was defrauded of his legal rights, and there was no society to protect his interests. In their case, however, the Pharmaceutical Society not only took their fees and sent them out with the hall mark of legal qualification, but it did more, and protected their interests by prosecuting all unqualified persons who assumed the title of chemist and druggist or attempted to perform the work which they were declared legally competent to discharge. He felt sure the Pharmaceutical Society performed a most important and beneficial function, and he had pleasure and felt it an honour to propose this toast, coupled with the name of Mr. J. Laidlaw Ewing.—Mr. Ewing, in replying, expressed his regret that Mr. Storrar, who was to reply to this toast, was unable to be present. There was one feature which the Founders of the Society put in the forefront of their aims and duties, and that was education as a means of raising the status of their craft. Though much might yet require to be done, he felt sure all were agreed that this primary aim had been very largely accomplished. Closely connected with education was examination and registration. In that connection he would venture to refer to a formidable document, signed by himself, which appeared in the previous week's report of the Council's proceedings in the *Pharmaceutical Journal*. They were well aware that for some time the percentage of failures in Scotland had been unduly high, and this was a matter of regret to all. He felt bound to say that what was said in that report was from a feeling of the utmost kindliness towards candidates as well as teachers. The examiners were actuated by nothing but the best wishes for both, and he sincerely hoped what was said would have their very careful attention. In regard to the new pharmacopœia, he had officially had an opportunity of looking through that book, and thought it would not only be a monument to the services of those pharmacists who were engaged in its compilation, but also to the zeal and ability of Sir Richard Quain, the Chairman of the Committee. He would now touch upon what seemed to be in some quarters a vexed question, namely, the new Pharmacy Bill. He really thought some of their English friends were inclined to oppose that Bill on entirely wrong grounds, and from misguided motives. It was assuredly the design of the Society, from the very foundation, that every chemist in business should be a member of the Society, and no other plan would ever secure that large adhesion of the members of the trade that was so very desirable. He thought this reasonable scheme of consolidation not only a matter of justice to the great body of registered men, but he believed it would also very soon be a matter of absolute necessity, and the Society would be forced to admit to membership all who held the legal qualification. He would not discuss the police duties of the Society, but he took occasion to refer to its efforts to relieve the distress of unfortunate members of the craft. This was a most important work, and he was glad to think that in this Diamond Jubilee year they had raised more than in any previous of their history for this beneficent object. Mr. Ewing, in proposing "The Glasgow and West of Scotland Pharmaceutical Association," spoke of the good work done by the Association, and paid a high compliment to Mr. Currie, whose name was coupled with the toast, for the immense services he had rendered to the cause of pharmacy in the West of Scotland.—Mr. Currie, in replying, said he hoped the time would come when Glasgow would be a great centre for the Pharmaceutical Society. He made a very strong appeal for shorter hours, and urged that a determined effort should be made to close all pharmacies not later than 8 p.m., and then they could meet at a more Christian-like hour than 9 o'clock, as they had to do at present. He heartily wished that Sir John Lubbock's Bill should speedily become law.—Others toasts were "The Croupiers," by Mr. A. Laing, reply by Mr. John Foster; and "The Chairman," by Dr. John Carswell.—The proceedings were enlivened by songs, recitations, etc., and on the motion of the Chairman, hearty thanks were awarded to the Hon. Sec., Mr. D. Watson.

SHEFFIELD PHARMACEUTICAL AND CHEMICAL SOCIETY.

A general meeting was held in the Society's rooms, Surrey Street, on Wednesday night, when Mr. J. W. J. Turner read a paper on

The Proprietary Articles Trade Association,

and a discussion followed, Mr. G. Squire, the President of the Society, in the chair, and among those present were:—Messrs. J. B. Paton (Hon. Secretary), J. F. Eardley, H. E. Ibbitt, W. Ward, J. Preston, J. Austen, Antcliffe, G. T. W. Newsholme, J. W. J. Turner, Watts, and others. Several letters of apology were received. Mr. Bradwall wrote that he would have been glad to support a vote favourable to the P.A.T.A., believing that it had made a real attempt to meet the difficulties of the situation. Its efforts had already made some favourable difference in the matter. Mr. J. G. Jackson and Mr. W. Smith also wrote favourably to the Association and to the anti-cutting movement. —Mr. Turner, in opening the discussion, said his object was to try to persuade the chemists and druggists of Sheffield to take a more active interest in, and to give greater support to the crusade against the ruinous cutting of the prices of proprietary articles which was causing so much injury to the trade. In the course of his remarks he reviewed the work which had been accomplished by the Proprietary Articles Trade Association, showing that the anti-cutting movement had made very satisfactory progress, and pointed out the advantages which the success of the Association would bring to chemists and druggists. He said that the chemists of the country were gradually realising the gravity of this question. They now deeply resented a condition of things which caused them to work for nothing in handling proprietary articles, and were determined to stem the tide of profitless sales. The aim of the Association was to prevent the extraordinary cutting of prices and to secure fair profits, and it embraced in its membership all those traders who were interested in the distribution of proprietary articles. Its organisation was composed of proprietors and wholesale and retail vendors. It possessed as members 3000 retail chemists, 60 proprietors, and 18 wholesale dealers, the latter including the principal London and several provincial houses, and there were 200 local hon. secretaries. After quoting extensively from reports of the work done during last year and the previous year, Mr. Turner stated that the visits of the deputations of the Association to various towns had aroused into activity chemists' associations which were dormant, and had been the means of bringing new chemists' associations into existence. In some of the towns visited the whole of the chemists had joined hands in order to deal with this question; in others a majority of them had done so. In London alone 400 chemists had become

members. The Association would not cease its labours until its membership numbered at least 5000, then it would be able to convince those proprietors who were waiting to hear the wishes of the trade as a whole. He contended that fully nine-tenths of the retail trade was in sympathy with the movement, but without pressure being brought to bear upon them they were too indifferent to accept a remedy. Chemists as a body were distinctly averse to cutting, and only by keen competition had they been compelled in self-defence to adopt the tactics of their enemies, whose sole aim was to gain a monopoly of trade by methods however questionable. Mr. Turner felt convinced that the manufacturers would in time realise that they would be much better served by gaining the goodwill of 8000 chemists than by the support of 100 cutters, and he alleged that the cutters only used cheap patent medicines as a decoy to the public, substitution being the order of the day with cutters where patents were sold at cost price. Therefore, in the long run the work of the Association would benefit the wholesale dealer. The speaker further stated that the vindictive attacks upon the Association by certain cutting firms had resulted in large accessions to the membership. Various objections and difficulties which had been put forward with respect to the work of the Association were answered and disposed of.—Mr. Turner said that professional chemists might deplore the tremendous growth of proprietary articles, but it was a fact that as a dealer in medicines the chemist could not afford to ignore them. The demands of the public must be met by stocking well-advertised proprietary articles. He did not pay much heed to the fear that the cutting firms, thwarted in respect to proprietary articles, would cut the prices of drugs. The public do not, he said, like cheap drugs; a chemist could always obtain good prices for drugs of the best quality. Dealing with the list of protected articles, which, through the action of the Association, cannot be cut, he said there were 268 items, of which 163 were face prices. To those who protested that this list was not nearly large enough and did not include the more popular articles, his reply was that the remedy would be to join the Association, and then the list would grow larger.—The Chairman regretted to notice that the list of protected articles did not include the most prominent patent medicines; indeed there were very few everyday articles in it. He was sorry to notice the remarkable growth of patent medicines during recent years, and he feared the tendency would continue. The public would have patent medicines and the chemist and druggist must supply them, but he need not push such things nor do anything to encourage their sale and popularity. He did not altogether approve of the formation of the grocers' section, fearing that if it became generally known among grocers that good profits might be made out of the sale of patent medicines, many more of them, and also other trades, would take it up. He approved of the objects of the Association, and thought no article should be sold at less than the advertised price.—Mr. Ward thought the Association had acted wisely in securing the co-operation of the grocers, and he recognised that the organisation had aroused a degree of enthusiasm among the chemists throughout the country which nothing else had ever done. Its growth had been marvellous. The proprietors ought to stick to the advertised prices, as the present practice was demoralising.—Mr. Preston complained that the Association, while professing to exist for the purpose of keeping up prices, actually introduced the system of minimum prices. Thus, instead of operating to abolish cutting, the Association was helping the practice forward, and no honourable man could have anything to do with a society which sailed under false colours. What was wanted was the insistence on the face prices being charged for patent medicines in every case. The chemists had unfortunately given their names and countenance to a system which made the public pay very dearly for their medicine, and he regretted to see that respectable chemists had allowed their names to be used in puffing certain Yankee remedies. He always refused to recommend proprietary remedies, or to express an opinion upon them to his customers. It was demoralising to chemists to have to do with such articles.—Mr. Newsholme said although he was a hearty supporter of the principle of organisation he regretted that he had not yet been able to see his way to join the P.A.T.A. His opinion was that every article should be sold at the advertised price; he regarded it as immoral for a proprietor to have two prices. If a thing was advertised at 1*s.* ½*d.* that should be the selling price. Let the proprietors, if they wished, put up the wholesale price to within a halfpenny of the retail price. That matter was in the hands of the manufacturers entirely, quite independently of the P.A.T.A. or any other body. They possessed the power to dictate terms to the chemists or to the Association. If the retailer was foolish enough to throw away his profit, the proprietor of the article ought to say, "If you don't want this profit I do." It would not seriously affect the sale because if the people wanted patent medicines they would not let a few pence stand in their way. Another point which caused him to disapprove of the policy of the Association was that some of the articles protected were things with which he could not conscientiously identify himself. Again, he objected to chemists, who were the proper persons to sell medicines, allying themselves with grocers, and by that means countenancing the sale of such things by the grocers. He regretted that he was still unable to approve of the methods of the Association and to join it.—Mr. Ibbit having spoken in favour of the Association, Mr. Ward moved—

> That in the opinion of this meeting the P.A.T.A. is worthy of the practica support of the Sheffield Pharmaceutical and Chemical Society, and that all owners of chemists' proprietary articles should take advantage of this means to provide retailers with reasonable remuneration for their services.

—Mr. Watts seconded, and the resolution was carried, several voting against it.—Mr. Turner was thanked for his paper.

MANCHESTER PHARMACEUTICAL ASSOCIATION.

An ordinary meeting of the above Association was held on Wednesday evening at the Victoria Hotel, Mr. G. S. Woolley presiding. It had been decided to postpone the reading of Mr. James Grier's paper on (1) "The detection of water in ether"; and (2) "A comparison of the melting points of commercial specimens of soft paraffin," until the next meeting.—After the reading of the minutes of the previous meeting had been read by Mr. A. Blackburn (the hon. secretary), the Chairman said they would see from the *Pharmaceutical Journal* that Mr. Pilkington Sargeant had thought proper to allege that the votes of those present and the communications of others that were absent, constituted a majority against the Bill, and he dared say they had seen his reply that it was not so. The vote taken was 18 for the Bill, and 9 against. Mr. Walter Gibbons, as he was leaving the room, suggested that his vote should be taken, and he (the Chairman), in his charity, at the time thought that might be done, but afterwards some gentlemen left the room, who were in favour of the Bill. Therefore, it was not fitting that one gentleman's vote should be recorded and everybody else's left out, and, therefore, the vote as taken was 18 to 9, and with that correction he should move the confirmation of the minutes. He had seven letters written to him before the meeting. Five of those letters were from gentlemen who opposed the Bill, and two of them were partially opposed to the Bill, but quite showed, from the tenour of their letters, that they were open to argument. But there was another letter which, unfortunately, did not come into his hands until it was too late to make use of it, and that letter was from the Local Secretary of a neighbouring town, who spoke very strongly in favour of the Bill, and said that he had interviewed some of the Major men in his town, and they were in favour of the Bill. Therefore, how Mr. Pilkington Sargeant could have arrived at his statement, he could not understand. Taking the figures stated at the last meeting, and including all the writers of letters as opposed to the Bill, it was only 18 to 16, so that there was not a majority against, and if he had had the letter he had just alluded to, it would have shown a still stronger majority in favour of the Bill. He thought it was right he should make that statement, and with that correction he had alluded to—that the figures of the voting should be put in—he begged to move that those minutes be declared correctly recorded.—Mr. Wild asked if there was not a special whip sent out by Mr. Gibbons, otherwise the Chairman would not have had those letters?—The Chairman replied that he had no means of answering that question. Mr. Wild: I have heard that.—The Chairman said that hearsay was not evidence.—Mr. A. W. Harrison (Manchester) was unanimously elected a member of the Society, and several nominations were received for election at the next meeting.—The Chairman said they hoped to have a number of young men there next month, when the prizes would be presented to the successful candidates at the examinations about to be held. He added that the Secretary had sent out 130 notices of the meeting, and it was only repeating what he had said before it was disheartening that so few gentlemen attended.—Mr. Kirkby then gave a short address on the use of metric weights and measures.

LETTERS TO THE EDITOR.

The New Pharmacy Bill.

Sir,—Reading the correspondence from week to week in your columns on the proposed Pharmacy Act Amendment Bill, one cannot but notice with satisfaction the advantage that is allowed to the enemy—the general obstructor—in these days, so that what is at length brought about, though it be nothing so widely beneficial as was at first aimed at, is nevertheless so unalloyed with self-destructive influences, the result of the fierceness of unrestrained criticism that has been brought to bear upon it, that it becomes as perfect as the result of human effort can well be, and goes a long way into the future without need of renewal. Not but that one gets a little perplexed at the mutually antagonistic views of the various *Advocati Diaboli*, and, of course, a little vexed at seeing boils and blains and serious chronic swellings breaking out all over a preconceived healthy subject, so that at length one feels impelled by various motives to step in and try his hand at a little original pharmacy to alleviate the surrounding discomfort, and blend, if he can, what seems so diverse and incompatible. Bad reading, sir, is at the bottom of much disorder; see what a fog we are in sometimes over the words "qualification," "public," etc., etc. The stronghold of all kinds of quackery, as it was once of fierce religious dissension, is the inveterate habit of people to scan in print what suits their preconceived fancy and nothing else; they almost never read, they simply fix their eyesight on what tickles their passing fancy and swallow at a gulp the tid-bit, then glide on for another of the same sort. Some one speaks of "Nuttall." Why, who is Nuttall? the book was put together for the sake of ignorant folk who used to idle away their time at "spelling-bees." I am ashamed to hear it mentioned amongst us as an authority at all. Granted "qualify" does mean "make capable," this is its crude meaning, the more customary meaning being "to furnish with legal power." We are "qualified" by Act of Parliament in virtue of the examination certificate, not by being admitted members of the Society. It is to be feared that many of the "qualified" ones are as "incompetent" in respect to pharmacy as they are with respect to logic and the grammar of the English language, and that incompetency to manage their own business lies at the bottom of all the trouble. Qualification has respect entirely towards the public good, which must be attended to. Membership of the Society we may, if we please, take advantage of for our own good entirely. United in one body we stand shoulder to shoulder for the benefit of each other. There is the Charter of Incorporation, a good strong back-bone, and all that is requisite for the advancement of our business interests is that the Society include within its portals almost all of those who are qualified to minister to the public need pharmaceutically; for this end we can with patience wait and work, and be content with slow and steady progress. Justice and fair-play seem to demand that all those who have "qualified" as the law demands should be admitted on equal terms as members of the only organisation that might have potent influence to protect the interests involved in the discharge of their very onerous duties to mankind at large. It seems to me self-evident that the more a pharmacist understands the actual nature of his own business the less will he be disposed to cater for the recognition or support of the uninformed masses of society. It matters but little where he is plying his calling, be it in the various centres of elegance and refinement, or amongst the densely packed abodes of the poorer classes, everywhere he meets with the same sort of needs which he is qualified, *i. e.*, authorised to supply. He is wanted everywhere and everywhere for similar services; and if he will but be content to work up to the level of the intelligent and the good, who in a country such as this pervade the masses in all directions and prevent the total overthrow that dirt and ignorance and greed would bring otherwise upon the poor and the rich alike, he need fear no evil nor much complexity in his business career. One of your correspondents plaintively refers to the "Major man" who has spent his time and his money and finds after all what is elegantly termed the "commercial value of the title M.P.S." to be worthless. Poor fellow! Not much fit for a Major! He who wastes either his time or his money does not deserve much sympathy, but he who wastes both, why the sooner he is eaten up the better for all. Thirty years ago the like controversy was in progress, and in the Journal [2], viii., page 617, is an editorial that closes with these words; as applicable now as they were then, "Some objectors use the very popular plea of £ s. d., and truly it is marvellous to find men charging all their high premiums, lecture fees, laboratory instruction, and travelling expenses to the debit of their account with the Society. Can it be that their success in business depends altogether on the possession of a title, and not at all on their professional ability to practise the art in which they have been declared competent? Do they not carry into their own shops and laboratories some useful knowledge applicable in their every-day requirements—knowledge which gives them a positive advantage over unskilled neighbours? Would they depend entirely on a diploma for success?"

Marylebone, N. W., February 8, 1898. J. C. Hyslop.

Sir,—In your last issue Mr. Woolley remarks that certain of my statements were "not in accordance with the facts." At a meeting held on Saturday last of the committee formed in Manchester to direct the opposition to the proposed Bill, I was requested to state that, in the first place, no numbers were read out at the Victoria Hotel meeting. If this had been done, the vote would have been challenged. We believe that Mr. Woolley has made a mistake, as there were not twenty-seven persons in the room when the vote was taken. Moreover, extracts from nine letters (not seven) were read to the meeting, all opposing the Bill. Taking, however, Mr. Woolley's computation to be correct, namely, that eighteen voted for the Bill, even yet the majority of those who gave their opinions to the meeting opposed the Bill, nine by letter, nine by vote, and two orally, though retiring before the vote was taken. We also do not admit that the majority of those who left the room without giving any opinion were in favour of the Bill, there being no foundation for such assumption.

Manchester, February 8, 1898. F. Pilkington Sargeant.

Sir,—Having followed with much interest the correspondence on the proposed Bill, my opinion is that most of the arguments in favour of it are decidedly weak. It is said that the "Chemists and Druggists" are desirous of the proposed change. That this is not so is evident from the number of that body present at the recent Manchester meeting. The Chairman (Mr. Woolley) in his letter says that 500 invitations were sent out. Upwards of 400 of these must have reached "Chemists and Druggists," and yet out of this number not more than thirteen came to record their vote in favour of the Bill. If they do not think it worth their while to help forward the movement, my opinion is that if the Bill becomes law the membership will be none the larger, and the Society will suffer by loss of many of its present pharmaceutical chemist members. Though I am strongly opposed to the Bill as it at present stands, I think that the associates are deserving of more recognition and privileges. I would suggest that on their being elected, a "diploma of associateship" be granted, and also say, one-third of the seats on the Council be allocated to them. Much of the discontent which now exists would speedily subside, and satisfaction would be given to all parties concerned. Your correspondent, Mr. Schollar, departs entirely from the subject at issue. His letter may be divided under two headings: First, a depreciation of the Major qualification. This recalls the legend of the fox and the unattainable grapes. The remainder is a collection of personalities, the understanding of which may be within the reach of a limited few.

Manchester, February 7, 1898. William Maskew, Ph.C.

Note on Straining.

Sir,—In straining mucilago acaciæ, B.P., according to official instructions, through muslin, an inconvenience arises from the fact that a long period of time is required to complete the operation satisfactorily, and also that, owing to this, the mucilage usually becomes dry and hardened on the muslin. This necessitates frequent cleaning and consequent delay. I have found that an excellent method, described below, obviates all these difficulties, and gives a good preparation. After the solid gum has been wholly dissolved in the proper quantity of water, an ordinary large glass funnel is taken, and the neck loosely plugged with tow. This is fitted into one hole in a rubber bung, which fits the mucilage or other convenient bottle. Through the other hole is a short glass tube, which is then connected with a water aspirator or filter pump. On the latter being set in full operation, and the gum poured on the funnel, in five or ten minutes at the outside the whole is drawn through, perfectly strained. This method is also applicable for gelatin, etc., instead of muslin or wet flannel.

Stourbridge, February 1, 1898. J. Ernest Jones.

Royal Botanic Society's Gardens.

Sir.—As pointed out in your issue of last week, metropolitan students of botany who visit the Botanic Gardens, Regent's Park, are indebted to the Council of the Royal Botanic Society for an extension of the hours of admission. This concession is more particularly due to the kindness of Mr. Martindale, by whom the matter was laid before the Council. It remains for students to avail themselves of this privilege to the full, and thus demonstrate their appreciation in the most practical way.

Watford, February 7, 1898. F. A. Upsher Smith.

An Unusual Mixture.

Sir,—It is gratifying to find "Apprentice," following up the short note read by me before the Edinburgh Chemists', Assistants', and Apprentices' Association, but the method of preparation recommended by him does not result in a satisfactory mixture. His method was tried by a friend a few days after the publication of my "note," the result being inferior to that produced by the use of turpentine and mucilage. If "Apprentice" will allow a day to elapse after preparing the mixture by his method, and then pour out about a drachm on the palm of his hand, rubbing this with the finger will show him that the wax is not in solution, but is present in small particles. Thus, one of the conditions required is not attained, viz., that the wax shall be "equally distributed" throughout the mixture. I did not mention in my paper the purpose for which the mixture is required, but the presence of the wax in small particles renders it unsuitable. I will be pleased if "Apprentice" will experiment further.

Edinburgh, February 5, 1898. Claude F. Henry.

The Banquet to the Lord Mayor of Manchester.

Sir,—I am desired by my committee to ask your kind insertion of the accompanying paragraph in your issue for the current week.

Manchester, February 8, 1898. Harry Kemp,
Hon. Sec. Banquet Committee.

[Enclosure.]

The Lord Mayor of Manchester, in a letter addressed to the Chairman of the Banquet Committee, under date of February 7, after referring to the "unparalleled enthusiasm" of his reception, adds :—

"I am overwhelmed with a sense of deep gratitude to yourself, to all who took an active part in carrying out the arrangements, and to all who came to pay me such a compliment, and who thus contributed to the complete success of a truly unique affair.

"I shall be glad if you will be good enough to make it known as widely as possible how warmly and how heartily I return my sincerest thanks to one and all concerned."

A Degree in Pharmacy.

Sir,—The passage on the above subject in the "Annotations" of last week's Journal is interesting, and brings before us both the desirability and the hope of some higher recognition being made for those who desire to devote themselves to advanced pharmaceutical work. No doubt many chemists will pooh-pooh such an idea as both useless and impracticable in these days of shop-trading, but on the other hand there are many who are just as anxious and willing to increase their knowledge and to attain to a higher state of education than is afforded by the present pharmaceutical examinations. But if any of the universities should entertain any suggestions which might be made to them, first and foremost they would expect matriculation from candidates or an equivalent, and what have we to offer in the Preliminary examination? It cannot rank equally with, say, the London Matriculation, as you say, but one would have thought that in formulating a new syllabus provision would at least have been made to include such subjects as elementary chemistry and pharmacy. It therefore amounts to this—that a candidate would have to matriculate, which would be some drawback (imagine a pharmaceutical chemist starting to grind the Euclid, i.-iv., of his school days), and which, if the Preliminary examination was made to rank equal with any matriculation, would be entirely obviated, and a candidate, after having qualified as a chemist and druggist, could straightway proceed to his university training for the degree in pharmacy. In an article in the *University Correspondent* of January 29, the Colonial Secretary, speaking of a proposed Midland university, said "What did they mean by a university? They meant, he took it, a great school of universal instruction, not confined to any particular branch of knowledge, but taking all knowledge as its province, and arranging courses of complete instruction in all the great branches of information." Why, then, should not pharmacy, in this period of advanced education, take its place with the other sciences and be included in a university?

Liverpool, February 7, 1898. Frederick B. Hirst, A.P.S.

Bacteriology for Pharmacists.

Sir,—I wished, and had intended, to make a few remarks on this subject at the meeting last night, but for the unexpected vote of thanks which was prematurely put before the President had declared the discussion closed; therefore, I ask you to allow me a little space in the Journal. It must be quite twenty years since I last attended an evening meeting of the Socicty, but I was attracted last night alike by the subject of the paper and its author, and I must say I was in no wise disappointed, for a better thought-out and more ably delivered discourse I have seldom had the pleasure of listening to. Mr. Atkinson treated the matter so exhaustively that it would be difficult to find any point of importance which he did not touch upon, but there are one or two points I should like to emphasise. Mr. Atkinson spoke of the importance of keeping the body in a state of good general health as the best preventive against the attacks of bacilli, and when it is considered the vast influence exercised by light and air in this matter, such advice ought to be laid to heart. We have the aerobic and anaerobic growths of organisms, that is those attracting and those repelling oxygen, the hay bacillus (*B. subtilis*) may be taken as illustrating the former, and the *Spirillum* of cholera (Koch's comma bacillus) the latter. It is thus seen that free oxygen either reduces the vegetation of the an-aerobic growths to a minimum, or stops it altogether. Again, Mr. Atkinson mentioned the effect of sunlight, as found by Janowsky, was fatal to certain germs, such as those of typhoid, the rays at the violet end of the spectrum also produce the same result. Hence the primary importance of human beings being supplied with plenty of light and air, and one shudders to think of the condition of those, in some of our large London warehouses, who never get a glimpse of sunlight, or even direct light at all, it being supplied solely by reflection from mirrors or white walls. And is the air in such places any better than the light? Persons living under such conditions are truly alive but etiolated. The influence of temperature was also referred to, and Mr. Atkinson insisted on the importance of cooking as destructive of any bacilli which might be present in meat, but I do not recollect that he referred to milk, at least not in that connection, but it must be remembered that milk is even more likely to convey germs than meat (as has so often been so lamentably proved), and that milk, moreover, is more often taken either in its raw state or mixed with tea, coffee, etc., at which temperature, of course, no disease germs are destroyed. Tuberculous bacilli are most certainly conveyed to the lungs direct through respiration, hence the importance of the advice given by Mr. Atkinson on this head. Cholera germs, on the other hand, get into the intestines through the stomach, but as acid is fatal to them, it would seem that the digestive process must either be in abeyance or in an unhealthy state to allow of this bacillus passing the barrier of the stomach. Nevertheless, cholera is indirectly catching, and those who wash the clothes of a cholera patient are more liable than those who attend personally on the patient. Mr. Atkinson ably demonstrated how to cultivate bacilli, and gave, amongst other things, infusions of hay and turnips; but there is, perhaps, an even simpler and always ready-to-hand method, *i.e.*, a raw potato. Cut this in half and expose it, cut sides upward, anywhere you like. In a few hours the surfaces will be found covered with little colonies of bacilli, some white, some yellow, and some pink, and if these are introduced into tubes of sterilised peptonised gelatin by means of a sterilised platinum wire, as explained by Mr. Atkinson, the gelatin shortly becomes liquefied and is found to be swarming with bacteria. Some six or seven years ago I showed at the soirée of the Croydon Microscopical and Natural History Club, *inter alia*, some tubes of cultivations obtained in this way, and the contents of these tubes under the microscope. There is plenty of material handy, therefore, for the pharmacist to practise on, so that when a serious occasion arises he shall not be found wanting. Mr. Atkinson referred to the importance of cleanliness. Now, it has been well said that the extensive use of heavy hangings and thick piled carpets, especially in bedrooms, though doubtless eminently respectable, is essentially dirty, and the *Hospital* recently remarked that the first thing the housemaid does in the morning is to stir up all the dust with its contained

germs, ready to be respired by herself and all the other members of the household. In short, the whole subject supplies abundance of material for thought and experimental research.

Croydon, February 9, 1898. J. H. Baldock, F.C.S.

ANSWERS TO QUERIES.

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

Saleratus.—Saleratus, or more correctly sal æratus, is the old name for potassium bicarbonate. [*Reply to* W. H. B.—5/2.]

London Specialist.—We cannot assist you in the matter you mention. [*Reply to* C. J. P.—5/1.]

Medical and Dental Examinations.—A 'Guide to the Medical and Dental Professions,' by Percival Turner, is published by Mr. Henry Kimpton, 82, High Holborn, London, W.C., price 3*s.* 6*d.* [*Reply to* F. H. R.—4/18.]

Books on Physics and Organic Chemistry. — Everett's 'Physics' (Blackie, 3*s.* 6*d*) and Perkin and Kipping's 'Organic Chemistry' (Chambers, 6*s.* 6*d*). Read pages 232-3 of the *Pharmaceutical Journal* for September 11 last. [*Reply to* Ajax.—5/4.]

Minor Examination.—A candidate must have been apprenticed for three years, presumably with a registered chemist, or have been practically engaged for three years in the translation and dispensing of prescriptions. [*Reply to* Percontator.—5/3.]

Botanical.—You do not mention any particular form of *Sphærella*, but if you will refer to Kerner and Oliver's 'Natural History of Plants' (Vol. I., p. 39), you will probably find the information you require. On page 752 of the same volume you will also find a reference to the root-growths you mention. The specimen you send is rotten, so it is impossible to say anything definite with regard to it. [*Reply to* T. H. G.—4/29].

Green Dye for Ivory.—There is a green aniline dye supplied for this purpose, which is used in conjunction with picric acid. You may, however, find it preferable to use a hot solution of picric acid and indigo mixed to the desired tint. The handles should be put in the cool liquor and gradually heated, but not boiled. This should be done before they are attached to the blades. If this mixture does not give the tint you require let us hear from you again. [*Reply to* Minor.—4/26.]

Hydrogen Peroxide, 10 Volumes.—The expression "10 volumes" relates to the number of volumes of "available" oxygen which will be liberated on treating 1 volume of the peroxide with suitable reagents, such as dilute sulphuric acid and potassium permanganate. In this instance half of the oxygen is derived from the H_2O_2 and half from the $K_2Mn_2O_8$; consequently 1 C.c. of good 10 volume H_2O_2 should yield with this reagent nearly 20 C.c. of oxygen, if this be measured or titrated. A convenient method of assaying the commercial article is as follows:—Take 10 C.c. of the sample and make up to 50 C.c. with distilled water. Introduce 5 C.c. of the mixture into a nitrometer over saturated brine, add 5 C.c. dilute sulphuric acid, and 5 C.c. of saturated aqueous solution of $K_2Mn_2O_8$. When action ceases read off the volume of O. It should not be less than 18 C.c., since half the O only comes from the H_2O_2. To test "20 volume" peroxide, take 5 C.c. and dilute to 50; proceed as before. Here, as the 5 C.c. only represents 0·5 C.c. of the original sample, the *whole* of the oxygen should be read as being derived from 1 volume, *i.e.*, it is double that given by the half volume, less the small loss due to the solubility of the gas in the brine solution. The reaction is represented by the equation—

$$K_2Mn_2O_8 + 3H_2SO_4 + 5H_2O_2 = K_2SO_4 + MnSO_4 + 8H_2O + 5O_2.$$

[*Reply to* Ajax.—4/9.]

Spectacle-Makers' Company.—The Clerk's address is Guildhall, London, E.C. [*Reply to* C. F.—5/9.]

Prescription Latin.—You cannot do better than order from your bookseller a copy of Crother's and Bice's 'Elements of Latin,' referred to in the Journal for January 29 last, page 98. [*Reply to* Radix.—4/31.]

Publishers of Books.—Fowne's 'Organic Chemistry' is published by J. and A. Churchill (London), Maisch's 'Materia Medica' by H. Kingston (London), and Vines' 'Botany' by Swan, Sonnenschein and Co. The last-mentioned is published at 15*s.* Apply to the Registrar of the Pharmaceutical Society for copies of examination schedules. [*Reply to* L. S.—5/5.]

Brilliantine.—By inseparable brilliantine we presume you mean the bright preparation in which the oil is in perfect solution. The basis is merely castor oil dissolved in spirit, thus: Castor oil, 1 fl. oz.; rectified spirit, 2 fl. ozs.; oil of rose geranium, 3 ♏; oil of lemon, 10; oil of neroli, 5. Another nicely perfumed but dearer article may be made from castor oil, 1 fl. oz.; rectified spirit, 1½ fl. oz.; jockey club, ½ fl. oz., or any other good perfume. [*Reply to* Parolene.—4/30.]

ADDRESS SUPPLIED.

A Correspondent kindly informs us that the address Mr. G. H. Wilkinson is seeking through the Journal is Messrs. T. Edwards and Co., 61, Oxford Street, London, W.

CORRECTIONS.

Formulæ, Methods, and Reactions.—On page 118, column 2, line 8, for "potassium nitrate" read "potassium nitrite"; in Allen's modification of Fehling's test, the urine should be boiled *after* adding the cupric sulphate solution; on page 119, column 2, line 12 from bottom, for "sodium plumbate" read "sodium plumbite." Mr. Bird also points out that the test associated with his name is improved and rendered more expeditious and sensitive by immersing the test-tube in water at about 70° C. for 5 or 10 minutes. If much sulphur be present, a brown or black colour is produced on heating.

OBITUARY.

Bennett.—On January 24, Samuel Bennett, Chemist and Druggist, Tunstall. Aged 60.

Glaisyer.—On February 4, Thomas Glaisyer, Pharmaceutical Chemist, Brighton. Aged 89. Mr. Glaisyer was one of the founders of the Pharmaceutical Society, and a member of the first Council of the Society, elected after the Royal Charter of Incorporation was granted. He was a man of considerable scientific attainments, and at one time filled the position of President of the Sussex Natural History Society. For many years Mr. Glaisyer was a leading member of the Society of Friends in Sussex, and held various offices in connection with that body.

Edisbury.—On February 8, Henry Edisbury, Chemist and Druggist, Everton. Aged 70.

PUBLISHERS' NOTICE.

COVERS FOR BINDING.

Cloth gilt-lettered covers for binding the half-yearly volume of the *Pharmaceutical Journal* are supplied by the Publishers, at a charge, including postage, of 1*s.* 6*d.* each.

All Orders and Remittances should be Sent to the Publishers, 5, Serle Street, London, W.C.

COMMUNICATIONS, LETTERS, etc., have been received from

Messrs. Andrews, Baldock, Bayley, Bird, Buck, Coull, Cracknell, Dawney, Douzard Dunlop, Ferguson, Flint, Garc, Hebb, Henry, Hill. Hirst, Hyslop, Jackson, Johnson, Jones, Kemp, Leslie, Lloyd, Mackenzie, Maskew, Mumbray, Pater, Pollitt, Read, Sargeant, Seaborne, Wilkinson, Wrenn.

Pharmacy and the Allied Sciences.

A REVIEW OF CURRENT WORK.

Dissociation of Platinum Platinichloride. E. Sonstadt points out that whilst a solution of potassium platinichloride in 1000 parts of water undergoes no sensible change on heating for an hour or two, a solution in 10,000 parts of water becomes turbid almost immediately on heating, the turbidity increasing until, after some hours, the liquid becomes nearly opaque. Continued heating during some days, the bulk of the solution being maintained by the addition of water from time to time, results in the formation of a sediment and partial clearing of the liquid, and that clearance is facilitated by increasing the quantity of water during the heating process. In the first place the potassium platinichloride appears to be dissociated, and the resulting platinic chloride is then decomposed, with formation of platinum monochloride, hydrochloric acid, and hydrogen peroxide. The yield of the monochloride in the experiments described was about five-eighths of that theoretically obtainable.—*Proc. Chem. Soc.*, 188, 25.

Soluble Starch and Diastase. In an investigation on the chemical constitution of diastase and the determination of its activity on soluble starch, A. Wroblewski has obtained results showing that in all preparations of diastase the greater part of it consists of the inactive body arabin, and that diastase is a protein substance more resembling albumose than any other known proteid. Soluble starch can be prepared from starch either by boiling with water or with 2 per cent. potash solution; in the latter case acidulating and precipitating with 95 per cent. alcohol. Starch treated in this manner gave 50 to 60 per cent. of snow-white soluble starch, which dissolves to the extent of 3 per cent. in cold water, but is almost insoluble in 40 per cent. alcohol. Soluble starch is no doubt none other than the first product in the hydrolysis of starch. The action of alkalies on starch is similiar to that of diastase, and alkalies, if slower, have greater hydrolytic power.—*Hoppe Seyler, Zeits. Physiol. Chem.* xxiv., 174.

Determination of Uric Acid in Urine. The method of Hopkins for the determination of uric acid in urine has been examined by O. Folin, who suggests the use of ammonium sulphate instead of ammonium chloride for precipitating the uric acid (*Hoppe Seyler, Zeit., Physiol. Chem.*, xxiv., 224). The precipitate obtained by adding 10 grammes of ammonium sulphate to 100 C c. of urine is allowed to settle for two hours, then collected and washed with a 10 per cent. solution of ammonium sulphate until free from chlorine; it is treated with a little dilute sulphuric acid, then with 15 C.c. concentrated sulphuric acid, and titrated with permanganate solution of 1/20 strength, of which 1 C.c. equals 3·75 milligrammes of uric acid. To the result obtained one milligramme is added as a correction for solubility. Drs. Tunnicliffe and Rosenheim have, in the *British Medical Journal*, of February 5, described another modification of Hopkins' method. It consists in titrating the uric acid with a standard solution of piperidine. The uric acid is precipitated by ammonium chloride, as in the original process, from 100 C.c. of urine, and the precipitated ammonium urate decomposed with hydrochloric acid. The uric acid is then washed on a filter with water (15 to 20 C.c.) until free from hydrochloric acid, dissolved in boiling water, and titrated with 1/20 normal piperidine solution, using phenolphthalein as an indicator, until the purple colour is obtained. One C.c. of a 1/20 piperidine solution equals ·00425 gramme piperidine or ·0084 gramme of uric acid.

Assay of Glycerophosphates. A. Astruc has confirmed the view that calcium glycerophosphates in solution are alkaline to methyl-orange, and that they may be either acid or alkaline to phenolphthalein. To determine the amount of phosphoric acid present, he neutralises a known volume of glycerophosphate solution with sulphuric or hydrochloric acid, with methyl-orange as indicator, then titrates the solution with standard alkali and phenolphthalein. In the equation representing the first reaction—

$$2PO\begin{cases}O \\ O \end{cases}\!\!>Ca + H_2SO_4 \\ \quad\ \ \backslash O{-}C_3H_7O_2 \;=\; \begin{cases}(PO_4C_3H_7O_2)_2{\cdot}CaH_2, \\ CaSO_4\end{cases}$$

one molecule of mineral acid corresponds to two molecules of phosphoric acid, and in the second—

$$(PO_4C_3H_7O_2)_2{\cdot}CaH_2 + 2NaOH = (PO_4C_3H_7O_2){\cdot}CaNa_2 + 2H_2O$$

or

$$\left.\begin{matrix}(PO_4C_3H_7O_2)_2{\cdot}CaH_2 \\ 2NaOH\end{matrix}\right\} = \left\{\begin{matrix}PO_4C_3H_7O_2Ca \\ PO_4C_3H_7O_2Na_2 + 2H_2O,\end{matrix}\right.$$

one molecule of phosphoric anhydride corresponds to two molecules of soda. The quantity of phosphorus pentoxide in solution can thus be calculated, the results obtained being about 0·5 per cent. lower than those obtained by calcining a known weight of glycerophosphate, dissolving the ash in hydrochloric acid, and determining the phosphorus as magnesium pyrophosphate. The author concludes that the phosphoric acid in glycerophosphates can be determined very closely and rapidly by the method he describes; that the glycerophosphates of lime appear to decompose, even during their preparation; and that undecomposed calcium glycerophosphate seems to require a quantity of acid equivalent to that of the soda necessary to act on phenolphthalein in order to react on methyl-orange.—*Journ. Pharm. Chim.* [6], vii., 5.

Action of Sulphuric Acid on Mercury. M. P. E. Berthelot finds that concentrated sulphuric acid is not, as is usually supposed, entirely without action on pure metallic mercury at ordinary temperatures. On the contrary, gradual and evident evolution of gas is observed on placing the concentrated acid in contact with the metal, and after the lapse of a few days, and still more at the end of a couple of months, notable quantities of mercurous sulphate will have formed, as well as sulphurous anhydride. The presence of a trace of water arrests the action.—*Comptes rendus*, cxxv., 749.

Salitannol. The action of phosphorus oxychloride on a mixture of molecular quantities of salicylic acid and gallic acid results in a condensation product having the composition $C_{14}H_{11}O_7$. The properties of this body are entirely distinct from those of salicylide or tannin. It forms a white amorphous powder, which is insoluble in water, ether, chloroform, benzol, and scarcely soluble in alcohol. It is insoluble in the cold in alkaline carbonates, readily soluble, however, in caustic alkalis, but is extracted again from the solution by acids. The body melts and decomposes at 210° C. Salitannol is used as an antiseptic remedy for wounds, and is said to combine the antiseptic properties of salicylic acid, gallic acid, and tannin.—*Pharm. Zeit. f. Russl.*, xxxvi., 696.

Captol. This is a condensation product of tannin and chloral, forming a dark brown powder. Iron salts mixed with solutions of captol give dark coloured solutions, which are rapidly discoloured by oxalic or hydrochloric acid. Captol is used as a medical cosmetic for seborrhœa. A 1-2 per cent. alcoholic lotion is rubbed into the scalp morning and evening, the use of fat, pomades, or soap being strictly avoided.—*Pharm. Post*, xxx., 521.

Seed of Ceratonia Siliqua.

Dr. H. Marlière has made a study of the structure and development of the remarkably thick membranes of the cells of the endosperm of the carob seed. He states that, at an early stage, the cell-wall is composed entirely of cellulose, with only a trace of pectic substances. After the secondary thickening has commenced, there is an outer and an inner layer of cellulose, and, between the two, a thick, mucilaginous layer, the result of transformation of the cellulose, and still impregnated by that substance. In the mature seed this secondary membrane has become completely transformed into mucilage; the cellulose remains only in the outermost tertiary layer. The reticulate structure characteristic of cell-walls is still partially retained in the layer of mucilage. The cell-walls of the cotyledons are composed entirely of cellulose without any admixture of amyloid. As regards its chemical and optical properties, the mucilage of *Ceratonia*, if dissolved without inversion, deviates the plane of polarised light 10° to the right at a temperature of 20° C. Hydration in the presence of acids transforms the mucilage into three reducing sugars—dextrose, levulose, and galactose. After hydration analysis indicates the presence of 68 per cent. of glucose, 19 per cent. of levulose, and 12-13 per cent. of galactose.—*La Cellule*, vol. xiii., pp. 1-60.

The Harvest Bug.

It may be consoling to those who have suffered the intolerable discomfort caused by harvest bugs to learn that the identity of the acaroid mite which gives rise to the "bumps" by burying itself in the skin, has been satisfactorily determined. M. Brucker has examined specimens taken from human beings during the last autumn, and has defined them as the hexapod larva of *Trombidium gymnopteron*. The same animal in the larval form has been found by the author on the rat and on the blackbird, as well as on many plants, especially on kidney beans. As other trombidian larva may, in other localities, attack man, it is well to note that those reported on were obtained from Semur-en-Auxois (Cote d'Or), where this autumn plague is especially troublesome.—*Comptes rendus*, cxxv., 879.

Economic Botany.

J. R. Jackson has commenced an interesting series of articles on economic botany in the February number of *Knowledge*, and in the introductory article he points out that the first and by far the most important attempt, in this and perhaps in any other country, to elucidate and make popular the economic side of botanical science was begun by the late Sir W. J. Hooker, when in 1847 one room of the building now known as Museum No. 2 in the Royal Gardens, Kew, was fitted up for the purpose to which it has ever since been devoted. In the same year a building which had hitherto been used partly as a storehouse for fruit was added to the Botanic Garden proper. The nucleus of the museum thus established consisted of the Director's private collections, presented by himself; but no sooner was the establishment and aim of the museum generally made known than contributions to it poured in from all quarters of the globe, until in a few years the ten rooms of the building, with its passages and corners, were absolutely crammed with specimens. Application was therefore made to Parliament by the Chief Commissioner for a grant to defray the expense of an additional building for the proper accommodation of the objects, the house occupied by Museum No. 1 was opened to the public in the spring of 1857, and from that time the collections have gone on increasing in importance and value till at the present time they stand unrivalled all the world over. Besides this, in almost every botanic garden at home and abroad, as well as in most teaching centres and in large towns, museums on the system of those so well known at Kew have been established. The result of all this has been the diffusion of a knowledge of economic botany, which, however, did not command that attention its great importance deserves until the last ten or twelve years. The structure of plants, their affinities, their geographical distribution, and similar points attracted the attention of the scientific worker, who gave no consideration to their properties and uses, though the connection between the purely scientific and the economic sides is very apparent upon a moment's consideration. As Mr. Jackson points out, in some natural orders there is a distinct property running through the plants which constitute the order, which may serve as an indication of their botanical affinities and also prove them to be of economic value or otherwise. Thus, in the Malvaceæ the inner barks for the most part abound in long soft fibres, and the roots and fruits of many are mucilaginous, *e.g.*, the roots of the marshmallow (*Althæa officinalis*) and the fruits of gombo or ochra (*Hibiscus esculentus*), while in the allied order, Sterculiaceæ, the fibrous inner barks are interlaced. In Gentianeæ all parts of the plants abound in a bitter principle, which makes them valuable as tonic or febrifugal medicines. Then, some natural orders abound in milky juices, wholesome or poisonous as the case may be, and others, again, as in such orders as Artocarpeæ, Euphorbiaceæ, Apocynaceæ, and Asclepiadeæ, upon solidifying become elastic, and form caoutchouc or indiarubber. A knowledge of the properties of the several natural orders, or of any group or genus of plants, is thus not only of assistance in their determination, but also of much help in deciding their commercial value.

Larkspur Poisoning.

According to Dr. Knowles, large losses of stock have resulted in Montana from larkspur poisoning. The symptoms are manifested first by the animal straying behind the herd in a lethargic state, and in inability to surmount obstacles. In nearly all cases salivation is evident. The antidote is the inhalation of strong ammonia vapours and the internal administration of a teaspoonful of solution of ammonia in a cupful of water for a sheep every fifteen minutes. Where it is available, the hypodermic injection of a sixtieth of a grain of atropine sulphate for a sheep, or one grain for cattle, will bring about a rapid cure, often reviving apparently moribund animals.—*Therap. Gaz.* [3], xiii., 766, after *New York Med. Journ.*

Scale Preparations.

T. W. Murphy states that, when making solutions of scale preparations of iron salts for preparing syrups containing iron phosphate, he heats the water to boiling, then pours it into a mortar, and adds the scale phosphate gradually to the water, constantly stirring meanwhile. Solution is said to be effected more quickly in this manner than when the scales are heated with the water. In like manner scale pepsin and bismuth ammonio-citrate are said to be much more readily dissolved if they are not powdered, but added gradually to water contained in a mortar, with continual stirring.—*Merck's Report*, vii., 38.

Dangers of Hair Dye.

Cathelineau calls attention to an unpleasant effect that may follow the use of hair dye containing paraphenylene-diamine, which has lately been used for that purpose. He quotes eighteen cases, in some of which the itching and irritation was so great as to prevent sleep; in others, œdema of the eyelids and eruptive lesions, from a simple erythema localised to the part treated, to a dermatitis involving the head, face, and even the feet. Of the eighteen cases, eleven were attacked immediately after the application of the dye. The author attributes this action to the decomposition of the paraphenylene-diamine, which furnishes quinone, which is known to be very irritating.—*Bullet. Com.*, xxvi., 41.

BACTERIOLOGY FOR PHARMACISTS.*

BY LEO ATKINSON.

(Concluded from page 144.)

Typhoid (Bacillus typhi abdominalis).

The bacillus of typhoid or enteric fever first described by Eberth in 1883 is not killed by drying (thermal death point 55° C.) or exposure to low temperature; said not to form spores. Like most pathogenic organisms, is affected by light. Daylight prevents development, and direct sunlight is fatal in five hours. Its microscopic appearance (Fig. VII.) is not sufficient to distinguish it. It is motile with flagellæ, closely resembles coli communis, an organism always present in the intestines of man and animals.

Typhoid being restricted to humanity, the test for exciting cause cannot be applied to animals. Polluted water is the most general conveyance of typhoid; carbon filters have often been found literally packed with typhoid germs. Filters of any description if not constantly cleansed in an efficient manner are productive of more harm than good. The influence of season is considerable, October being the worst month. In summer months rivers contain fewer organisms, being mainly com-

Fig. VII.—Bacillus typhi abdominalis.

posed of spring waters; at other seasons rivers receive the washings of much cultivated land, and therewith spores of various organisms. Typhoid is often conveyed by milk, probably through want of care in washing out cans and dairy utensils. In many cases of water-borne typhoid the amount of organic matter has been so small that the water supplied has been passed by chemical analysis to be of high purity. This fact, together with recent experiences, clearly indicates the necessity for the more refined processes of bacteriological examination.

Influenza.

Organism first described by Pfeiffer in 1892; found in the blood of patients during the febrile period (Fig. VIII.). Influenza is peculiar from the short period of incubation—twelve to twenty-four hours. It is often accompanied by severe complications; one attack is no protection against another; it is not uncommon to have two or three attacks in one year. In this as in other germ diseases, the best precaution is to keep up the general health and place no reliance on sprinkling or spraying fancy but useless disinfectants.

Anthrax.

Anthrax, or splenic fever, is a very fatal malady and very irregular in its behaviour. It is specially interesting as being the first contagious disease in which the presence of a bacterium was positively determined and its full life-history ascertained. Anthrax was long considered by farmers to be non-infectious; it was attributed to improper feeding and climatic conditions. Obviously, so long as the disease was regarded as the result of unknown conditions, no information could be given of its erratic outbreaks, or could any remedial measures be suggested.

Anthrax is always more prevalent on the Continent. In France, Germany, Russia, and in Siberia it is known as the Siberian plague. The spores are highly resistant, and may get into the soil and remain dormant for years. The spores may also be present in grain or hay imported from an infected district, hence the disease may be started in a locality where it was previously unknown.

The malady is readily communicated to man, especially those who handle carcases, wool, or hides of infected animals. Wool-sorters' disease is anthrax of the lungs, acquired by inhaling spores present in the wool of sheep which have died from anthrax.

Dr. Cruikshank relates the case of a veterinary surgeon being called to see a bullock which had died suddenly in a meadow. A

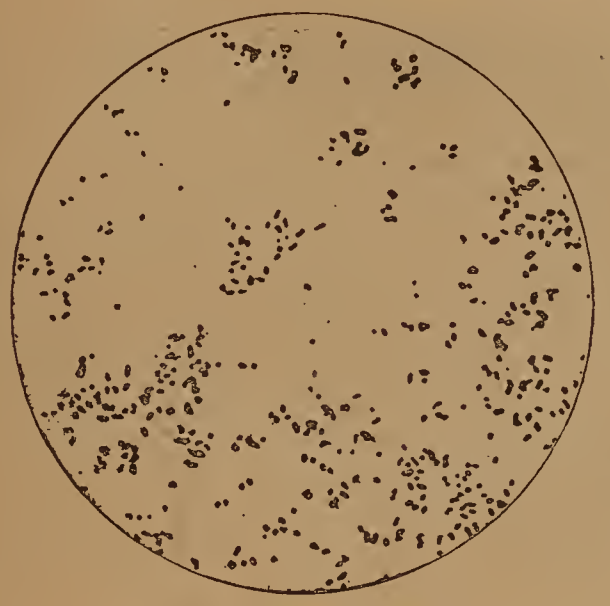

Fig. VIII.—Bacillus of influenza.

post-mortem was made, and the surgeon wiped his hands on some rough grass and then washed them in a stream; the sedgy grass made some insignificant scratches on his fingers, with the result that he was inoculated with the blood of the diseased bullock. Local anthrax followed, two fingers were promptly amputated, and he fortunately recovered.

The following animals are susceptible in the order named:—Mice, guinea-pigs, rabbits, cattle, horses, human beings; whilst Algerian sheep, dogs, and white rats are immune. Grey rats and grey mice are frequently found susceptible to diseases from which white rats and white mice are immune. The introduction of the Algerian breed of sheep has saved France from losing all her flocks by anthrax.

Hydrophobia.

The nature of this organism is still unknown, as, so far, it has not been possible to cultivate it. There is, however, little doubt as to its being a germ disease. The virus is present in the spinal cord and brain. The incubation period is variable, seventy-two days the average. The Pasteur method of inoculation having unquestionably been attended with such excellent results, it is somewhat surprising we have no representative of the Pasteur Institute in this country. Out of 1532 people badly bitten and treated for rabies there were only five deaths. Out of these

* Read at an Evening Meeting of the Pharmaceutical Society on Tuesday, February 8.

patients 122 were bitten by animals proved experimentally to be mad, 949 by animals certified by veterinary surgeons as mad, and 449 suspected of being mad. These facts surely, at least, will show how enormously the danger from hydrophobia is exaggerated in public opinion. There is little question but the disease could be stamped out in England in six months if the muzzling order was general.

Cholera (Spirillum choleræ asiaticæ).

Discovered by Koch in 1884, and known as Koch's comma bacillus The original home of cholera is no doubt the delta of the Ganges and from thence it follows the lines of commerce by ships, railways, caravans, etc. Wherever there is want of proper sanitation and a bad water supply there is a home ready prepared for the reception and propagation of cholera germs. This germ does not form spores and is killed by drying, consequently with suitable precautions this terrible disease may be prevented from becoming epidemic. Cholera was not known in Europe until the beginning of this century. In 1817 there was a violent outbreak in India, thence it spread to the Malay Islands in 1819, to China and Persia in 1821, following on to Russia by slow stages in 1830, and over-

Fig. IX —Tetanus Bacillus.—Spore-bearing organisms with "drumstick" ends

running Poland, Germany, England, and France in 1832. In 1849 it followed the same route, as also in 1853. The three last epidemics—1865, 1873, and 1884—differ in this particular, that they did not follow the Continental route, but came by the Mediterranean Sea, being brought from India to Egypt by the Mecca pilgrims and entering France by way of Marseilles. There are organisms which produce symptoms closely resembling Asiatic cholera, which, nevertheless, are quite distinct. The sudden epidemic in Greenwich is an example. This outbreak lasted three weeks; as there were only 11 deaths out of 245 cases, the virulence was clearly far below that of Asiatic cholera. The comma bacillus could not be detected, but a different organism (*Proteus vulgaris*) was found polluting the water supply. The cause of the outbreak was contaminated water.

Tetanus.

The first pure cultures were obtained by Kitasato in 1889. Tetanus, lockjaw, or convulsions resulting from open wounds, had for some time been considered an infective disease before an organism was separated from which artificial tetanus could be produced. It has long been observed that agricultural labourers, gardeners, or anyone working on the soil were peculiarly liable to lockjaw following any considerable injury. By inoculating mice, rabbits, or other small animals by introducing a small portion of garden earth under the skin, symptoms similar to tetanus were exhibited. From the organs of animals so inoculated pure cultures were obtained. This germ (Fig. IX.) is almost universally distributed over the globe. Soils from different parts of the world have been examined, and from most samples positive results obtained. Soils from Bath, Plymouth, and Manchester produced tetanus, whilst soil from Portsmouth did not. The poisonous property of some soils appears to have been known to savage tribes, who poison their arrows with earth known to produce lockjaw. A kick from a horse may inoculate a man by the earth on its shoe. Stanley gives an interesting account of the pigmy tribes who use arrows from which the slightest scratch produces either tetanus or a violent form of blood poisoning. These arrows are coated with a film of mud containing various septic bacilli, retaining activity for months and sometimes years.

Actinomycosis, or Ray Fungus.

A disease that manifests itself in cattle, commonly known as "Wen," malignant tumour of the tongue, or "wooden tongue." This disease may be acquired by man. The fungus (Fig. X.) is formed in nearly every part and tissue of the body. There is little doubt many deaths from this disease have been attributed to other

Fig. X.—Actinomycosis or ray fungus.

causes; it is, however, comparatively rare in this country, chiefly confined to Norfolk. The spores are highly resistant to heat. Animals suffering from this disease should be destroyed, and in no case used for food.

Erysipelas.

A large number of organisms give rise to the formation of pus on wounded surfaces and after surgical operations. The most general being "Staphylococcus Pyogenes Aureus," "S. P. Albus," and "Streptococcus Pyogenes" (Fig. XI.). These organisms closely resemble each other in microscopical appearance. Streptococcus pyogenes is believed by some observers to be identical with "Streptococcus Erysipelatus," and probably also the general cause of puerperal fever. It is this class of organism which mainly concerns the surgeon and indirectly the pharmacist. It is the knowledge we now possess of these organisms which has rendered possible the wonderful results of modern surgery, constituting the most brilliant application of bacteriology to human preventive medicine. Operations only attempted a few years ago as a last resource are now performed without the slightest hesitation. In former days some operations were scarcely thought possible, or at least it was considered almost certain that fatal results would ensue. At this day these operations are scarcely regarded as serious. We may look upon the rough surgery in the Navy, when

Nelson was making England "Mistress of the seas," as an unconscious example of antiseptic treatment. The freshly amputated stumps were plunged into hot pitch with the object of preventing hæmorrhage. If the patient survived the double shock, recovery was rapid, the coating of pitch effectually excluding all micro-organisms.

The dangers connected with extensive surgical operations are two-fold: First, the shock, and secondly, the complications known as surgical fever, blood-poisoning, gangrene, etc. The first danger has long been provided for by the use of anæsthetics. The second is reduced to a minimum by the Listerian method. The danger from wounds and surgical operations arises, as we now know, from contact with the germ-laden air, dust on instruments, dressings, etc. Sir Joseph (now Lord) Lister's method in its early stages was an appreciative application of observed facts rather than the discovery of a new principle. The subsequent researches of Pasteur, Koch, and others in reality supplied the key to the astounding results accruing from the adoption of surgical methods devised by the clinical genius of Lord Lister. His practical methods of safeguarding open wounds and ruptured tissues from micro-organisms is the actual foundation of antiseptic surgery. The method it is unnecessary to detail, the critical feature is that all operations must be performed with sterilised instruments under the most exacting conditions of cleanliness. Nowadays whenever secondary or inflammatory troubles follow simple operations it is regarded as testimony of surgical carelessness.

Disinfection.

From this brief summary of facts connected with disease germs it must be obvious that popular ideas in regard to disinfection are entirely fallacious, the methods commonly adopted being useless, or worse than useless, by engendering a false sense of security.

Fig. XI.—Streptococcus pyogenes.

The preparation of germicidal solutions, culture media and reagents, antiseptic dressings, and sanitary appliances I claim to be the work of the intelligent pharmacist, without the smallest suspicion of endeavouring to usurp functions not properly pertaining to his legitimate duties. The chemist is popularly regarded as an authority on household disinfection; if he is to be so in reality, surely he should be acquainted with the leading characteristics of disease germs. Our common experience is that whenever a contagious disease breaks out the householder goes to the chemist saying he has been advised to have a little of some disinfectant in two or three saucers distributed on the bedroom floor. The shade of "Sairey Gamp" still hovers round us; one can only suppose those who are responsible for combating contagion on these lines imagine bacteria are like the "Gadarene swine," furious to rush headlong to destruction in these inviting conveniences.

It is useless to try to disinfect the air of a room where a patient is lying, but the floor, walls, ceiling, and furniture can be dealt with. As by far the greater number of bacteria must be on the floor, it is important to destroy them first, and not allow them to be stirred up into the air by those engaged in cleaning operations. The floor should be liberally sprinkled with sawdust mixed with 10 per cent. solution of carbolic acid or mercuric chloride 1 in 1000. A fire should be lighted to cause the air to leave by way of the chimney, and all sweepings and *débris* should be burnt upon the spot. Clearly if any kind of material is swept up, carried through the house, and deposited in the dust-bin, all the conditions for spreading disease are being elaborated. Burning sulphur or using chlorine is probably nearly useless, unless everything has first been made damp by boiling away a quantity of water, and so filling the room with steam. The spraying of rooms with germicidal solutions is more frequently applied abroad, and is a more scientific method, the death of the organism being assured if brought in contact with the disinfecting solution. Hot air does not kill all organisms at any temperature that would not destroy most fabrics. Where steam is not available boiling must be resorted to. Strictly superheated steam has about the same value as hot air for disinfection, but in practice the amount of superheat is rarely sufficient to prevent the steam from being reduced to saturation. Steam that condenses without cooling is saturated steam, such as steam from a kettle or boiler.

Although many disease germs, typhoid, cholera, diphtheria, and others, can certainly be destroyed by exposure to temperatures below 100° C., this does not apply to all, for, as previously stated, dried tuberculous matter has resisted three hours' boiling. Moreover, our present knowledge of other disease-producing

Fig. XII.—Bacilli of malignant œdema.

bacteria is insufficient to justify any definite statement of method that will insure certain disinfection in every case or condition. It is, however, a distinct gain to have some information of the dangers we are exposed to and the best means of resistance. This information, I venture to assert, cannot be too widely disseminated, for we are in a great measure mutually dependent. It is to little purpose any householder may be reasonably careful if his neighbour, either through ignorance or negligence, disregards simple sanitary precautions. Every epidemic bringing death and disaster in its train is a forcible object lesson, demonstrating the desirability for popular information in regard to some of the facts bacteriology has established.

THE DETERMINATION OF SUGAR IN URINE.*

BY ARTHUR MCKELLAR,
Pharmaceutical Chemist.

The analysis of urine, particularly with reference to the presence of sugar and albumin, is a subject which has engaged the attention of the medical profession for a long time, and one can hardly pick up a medical or chemical annual without coming across some newly-devised test for the presence of the two bodies mentioned.

Unfortunately, the bulk of the medical profession possess but a slight knowledge of the necessary tests, or perform them in such a crude manner, that we, as chemists, frequently are called upon to test samples of urine for the medical adviser's better information.

In the case of sugary or diabetic urine, the first test that occurs to the mind is Fehling's, probably the most exact we are likely to have when carefully used, but with drawbacks that are troublesome to the pharmacist, who has little time to spare for what is generally unremunerative work. The test I desire to bring under notice is a modification of Fehling's, particularly suitable for shop use, and for all purposes quite as reliable.

Before describing it, I will briefly recapitulate the processes most in favour, and for this purpose have drawn somewhat upon Dr. Robert's work "On Urinary and Renal Diseases."

Diabetic urine is usually of a very bright clear "lemonady" appearance with a specific gravity varying with the amount of solids present and usually very high. (The highest I have personally tested was 1·049, and contained over 60 grs. of glucose to the ounce.)

For testing purposes such urine may be regarded as a solution of grape sugar in water, the other constituents having little, if any, interfering effect upon the determination. Each method has its particular adherents. Dr. Johnson, an eminent authority, believes strongly in colourometric analysis. The urine is boiled with picric acid, which, by action upon the glucose, forms picramic acid, an intense red solution resulting. By diluting this solution with water until the colour corresponds with that of a standard colour and making appropriate calculation, the amount of sugar per ounce is got at. I have never found this satisfactory somehow; it is difficult for the eye to be certain of the identity of the two colours.

The Fermentation Process.—Yeast is added to the urine and set aside in a warm place for twenty-four hours. A similar quantity of urine, but without the yeast, is placed under the same conditions, and at the expiry of the time the specific gravities of the two liquids are compared. The yeast splits up the glucose into alcohol and carbonic acid gas, thus lowering the specific gravity of the solution; every degree thus lost in comparison with the blank solution corresponds to one grain of sugar per ounce. Owing to the CO_2 being dissolved to some extent by the liquid it is generated in, the fermentation test is unreliable for small quantities of glucose, besides, it takes too long to arrive at the result.

Moore's Test.—About equal proportions of urine and liquor potassæ are boiled together, producing a discoloration varying from a slight brown to a jet black, according to the amount of sugar present. In experienced hands it is valuable as a rough indication of the amount to be looked for in the quantitative determination. But it is also subject to error. It is uncertain for small quantities, say anything under two grains to the ounce, and should the liquor potassæ contain lead—a not infrequent occurrence—or with certain albuminous urines, particularly if blood or epithelial matter be present, this test will show a marked darkening of colour, although the specimen may be quite free from saccharine matter.

The use of Moore's test, therefore, would appear to be confined to the detection of large quantities of sugar.

Trommer's test is perhaps better known. A solution of sulphate of copper and the same amount of liquor potassæ is boiled in a test-tube. To the boiling liquid is added a small quantity of the suspected urine, when, if sugar be present, red suboxide of copper is thrown down. Should the amount of sugar be small the result is not so certain.

The liquid at first assumes an opaque or milky-green colour, just as if a drop of milk had fallen into the tube, very gradually changing from five to twenty minutes to a bright yellow deposit, an appearance, says Dr. Roberts, quite characteristic of sugar. This test allows of the detection of sugar down to about one-quarter grain per ounce, below which it ceases to have any pathological signification. Fehling's solution it is not necessary to dwell upon, being familiar to all of us. Pavy's is a modification of Fehling's, and consists in the addition of ammonia, whereby the produced oxide of copper is dissolved up as fast as it is made, thus giving a sharper end reaction than Fehling's, shown by the total disappearance of the blue colour, and leaving a clear solution when reaction is completed.

I now desire to bring under your notice a test as used successfully in my place of business, and which has advantages over those already mentioned, both for utility and dispatch. Originally devised by my predecessor, it is a combination of Trommer's and Pavy's tests, both in one. I have used it over a considerable period of time, testing its reliability in a variety of manners, and find it answer admirably.

It consists of a solution of copper sulphate in water and glycerin. The exact formula is :—

Pure Sulphate of Copper.....	90½ grains.
Distilled Water	2 ozs., 225 grains.
Glycerin	4 ozs. weight.

Each ½ ounce will decompose ¾ grain sugar.

Pure grape sugar was obtained, rendered perfectly anhydrous, and used as a standardising agent in the preparation of this "copper sugar test." Add to this the great convenience of having a solution always ready, it keeps perfectly in blue-stoppered bottles, and I think you will find it very handy for shop use.

My method in testing urine for sugar, both qualitative and quantitative, is as follows :—

Having noted the specific gravity as well as the presence or absence of albumin, I boil equal amounts of the test and of liquor potassæ together in a test-tube, and while boiling run in a little of the suspected urine, practically Trommer's test, when, if sugar is present, it will be indicated in the manner described under Trommer's test.

If present in any quantity the amount of darkening produced when the specimen is boiled with liquor potassæ is observed as a rough indication of the probable quantity of sugar to expect in the quantitative determination. So far the usual course has been followed.

I now take half an ounce of the glycerin solution of copper and carefully rinse it with a little water into a 4-oz. Florence flask, then add an equal bulk of liquor potassæ, and finally a large excess of liquid ammonia; the whole is then boiled. A small quantity of the urine is appropriately diluted with a definite proportion of water, according to its supposed strength, say, 1 part urine to 2 parts of water, and with the aid of a thin glass stirring rod run in, a few drops at a time, into the boiling liquid. When reaction is complete the blue colour has entirely disappeared and the liquid has become clear. The actual amount of urine used

* Read at a meeting of the Pharmaceutical Society in Edinburgh, on Wednesday, February 16.

in this operation will have contained three-quarters of a grain of grape sugar, and the result calculated to grains per ounce, as it is usually given. The whole operation need not take more than a couple of minutes. The vapour of the boiling ammoniacal liquor serves to keep off the atmospheric influence on the copper oxide, but on the removal of the source of heat oxygen is absorbed from the air and the blue colour gradually returns as the liquid cools.

I cannot claim any originality for this method, but from long experience of its use am fully convinced of its efficiency. Its advantages briefly put are :—

1. A practically permanent sugar test always ready for use.
2. The end reaction is sharp.
3. No special apparatus required beyond what is always in the drug shop.

MICHAEL CONROY—AN APPRECIATION.*

Among the results of advancing years, one of the most sorrowful is the loss of friends. Other gaps may be filled, other losses retrieved, but the opportunities for forming new friendships are not likely to recur. The new generation springing up around us has new training and new aims. Their sympathies are with men of their own time, and if they do not look upon their elders as veterans who "lag superfluous on the stage," they naturally consort with their comrades of their own age. Such thoughts as these filled my mind as I attended the funeral of one with whom my intercourse had extended over many years, and who might have reasonably expected to have rather followed me to my resting place. When I was asked to say a few words to you this evening, such thoughts as I have mentioned returned to me with redoubled force, as I remembered how recently a similar task was laid upon me, when I endeavoured to bring before you a sketch of the work of another of your members, who, like Mr. Conroy, was my junior, and who, like him, was cut down when many years of life and work might have been hoped for. My acquaintance with Mr. Conroy was largely confined to his public life. Various causes prevented me from enjoying the private relations that I had with Mr. Mason, but so far as I had the privilege of knowing him, none but pleasant memories exist. At all times I found him ready to impart any information with regard to the wide field of practical pharmaceutical chemistry of which he possessed such extensive knowledge, and especially in the difficult branch of that science which deals with the analysis of organic compounds. Mr. Conroy also added to our knowledge. He devised new methods of analysis, improved processes of manufacture, and condensed the stray fragments of information on various subjects into *resumés*, and papers, in which the work of many labourers in the field of science was brought together so as to be available for practical use. Owing to the kindness of Mr. Wyatt I am able to bring before you the titles of these contributions of Mr. Conroy to the common fund of pharmaceutical chemistry. Taking them in the order which I have already named I find the following :—

Analysis.

1881, "Test for the Purity of Olive Oil."
1883, "Scammony, a New Adulterant."
1884, "The Assay of Opium" (adopted in the B.P., 1885).
1888, "Lard. Its Adulteration with Cotton Seed Oil and Detection thereof."
1889, "Castor-Oil Adulteration."
1891, "A Note on Proposed Method of Standardising the Extract of Nux Vomica and Opium."
1893, "Note on the Sp. Gr. of Sandalwood Oil."
1897, "Adulterated Copaiba."
1897, "The Purity of Oil of Rose."

Processes.

1879, "An Improved Formula of Liquid Extract of Cinchona."
1886, "Linimentum Terebinthinæ."
1891, "Mistura Olei Ricini."
1891, "A Note on Extractum Euonymi Siccum."
1892, "Collodium Belladonnæ."
1896, "Extract of Malt."

General Papers.

1879, "Fucus Vesiculosus. *Résumé* of History."
1883, "Sesame Oil. Report on its Suitability for Pharmaceutical Purposes."
1895, "Leaflets and Leaf Stalks of Jaborandi."

Eighteen in all, representing an amount of work which only those who have endeavoured to work out a new process of analysis or of manufacture can fully appreciate. Many of these were communicated to our Society, and on few subjects brought before us did Mr. Conroy fail to throw fresh light.

Such was the member whom we have lost, and to us all his example remains as an incitement to work, and also to impart the results of that work. With many such members what a Society would ours be. Let us rejoice that the Liverpool Chemists' Association has never lacked such men, and I cannot better conclude than by an earnest exhortation to all our members, and especially to those endowed with the inestimable blessing of youth, to resolve that the future shall be a fitting sequel to the past, and that whilst we cherish the memory of those who have gone, that the work shall be taken up and carried on in the same spirit, knowing that untrodden continents of research are waiting for ardent explorers.

Mr. Conroy, so far as I can learn, owed most of his knowledge to his own efforts and reading. In the present day there is far too much reliance on machinery, but after all, an ardent student will learn more, and certainly do more, by remembering that unless there be the receptive power, and that be hard worked, the whole resources of a university may be employed in vain. With that power and hard work limited means will do wonders. I do not depreciate the advantages of well-fitted laboratories and every aid that ingenuity can suggest, but I do carnestly warn the student against trusting to them.

* Read by Mr. Edward Davies, F.I.C., F.C.S., at a meeting of the Liverpool Chemists' Association on February 10.

MEETINGS OF SCIENTIFIC SOCIETIES

LINNEAN SOCIETY OF LONDON.

At a meeting held on February 3, Dr. A. Günther, F.R.S,, President, in the chair, Professor Stewart, F.R.S., exhibited (1) specimens illustrative of the articulation between the upper and lower jaw of a skate, *Raia batis*, Linn., upon which remarks were made by Professor Howes and Mr. Holt; and (2) sections of *Puccinia graminis* showing the form of the teleutospores and æcidiospores, upon which some observations were made by Dr. D. H. Scott confirmatory of the exhibitor's views.—Mr. Thomas Christy exhibited a portion of an iron chain, through the links of which a Virginian creeper had grown, and had become naturally intertwined.—Mr. G. C. Crick then read a paper on

The Muscular Attachment of the Animal to its Shell in some Fossil Cephalopoda (Ammonoidea).

Having first briefly noticed previous descriptions and figures of what were believed to be impressions of the muscular attachment of the Ammonoid animal to its shell, the author pointed out the form and position of the "shell-muscles," and of the "annulus" in the recent *Nautilus*, and indicated the form of the impression of these

structures as seen upon an artificial internal cast of its body chamber for comparison with the fossil forms, in nearly all of which any indication of the muscular attachment there may be is similarly preserved upon the internal cast of that chamber. After describing the character of the "muscle scars" in an example of *Crioceras*, in which they were both very perfectly preserved, and the position of the "annulus" as clearly shown in an Ammonite from the Oxford clay, the author described the corresponding impressions in the various forms assumed by the Ammonoids, viz., *Baculites*, *Hamites*, *Ancyloceras*, *Crioceras*, *Macroscaphites*, *Scaphites*, *Turrilites*, *Heteroceras*, and in several Ammonites, as well as in *Clymenia* and in some of the Goniatites.—Mr. W. C. Worsdell next read a paper on

The Comparative Anatomy of Certain Genera of the Cycadaceæ.

The chief points touched upon were:—In *Cycas*, the conduplicate vernation and arrangement of the bundles in the fleshy hypogæal cotyledons, the secondary extrafascicular rings, the concentric cortical strands, and, in one species, the peculiar concentric structure of the leaf-traces, in the stem, and in the hypocotyl some curious concentric strands running obliquely out from the cylinder, and, in a small seedling, the secondary vascular cylinders lying outside the normal stele; in the seedling of *Stangeria paradoxa* the small primary concentric bundles in the stalk common to the two cotyledons, which both higher up and lower down become collateral, and in the adult stem the occurrence of a secondary concentric strand in the periphery of the cortex, which appeared to be the remnant of a once normal system of nude strands; and in *Ceratozamia mexicana* the vertical succession through the pith of a large stem of effete peduncular cylinders, the peduncles which successively terminate the stem being in turn pushed to one side and their basal region enclosed by a lateral shoot which continues the main vegetative axis. In conclusion, the author endeavoured to show that certain characters in the vegetative structure of these plants showed them to be nearly allied to, or descended from, certain fossil fern-like plants, notably Medulloseæ, and these characters were: the extrafascicular zones in the stem of *Cycas*, which really represent the outer portion of the flattened concentric strands in the stem of the Medulloseæ, the inner portion of which has died out; and all the various concentric structures above-mentioned. For the type of structure prevailing in the ancestors of the Cycads would have been the concentric, whereas in their descendants it is the collateral. The significant outcome of this study is to form, in the vegetative characters of these plants, a connecting-link, over and above that already afforded by the discovery of spermatozoids in *Cycas* and *Ginkgo*, between "flowering" and "flowerless" plants.

ROYAL INSTITUTION.

At a meeting held on Friday, February 11, Dr. J. H. Gladstone lectured on

The Metals Used by the Great Nations of Antiquity.

At the beginning of the present century, he said, little was known of the metals used by the ancients, except through the classic poets and Jewish history. Since then excavations have been made that have added much to our knowledge of the subject. Languages previously unknown have been brought to light, inscriptions telling the histories of extinct races have become explained, and, what is more important, the articles themselves have been preserved. Many have taken part in the investigations; some have followed architecture, others sculpture, and others painting, but what had interested the lecturer most was the metals in use in these almost prehistoric times. The material for discussion was very great, and it would be difficult to know what to take up and what to leave out in an hour's lecture. The countries dealt with were those lying around the East of the Mediterranean—Egypt, Assyria, Palestine, and Greece being the most important—during the time from the reign of the first Pharaoh, Menes, about 4400 B.C., down to Alexander the Great. Dealing with these four in order, the lecturer first called the attention of the audience to a diagram of the hieroglyphic inscriptions on a tablet of Seneferu, which dates from nearly 3800 B.C. The tablet represents the conquest of the copper mines at Wady Magharah, and in it was represented a battle-axe, corresponding closely with a specimen on the lecture table. Explaining the hieroglyphics, the lecturer pointed out that the symbol of an axe-head represented copper or bronze. It followed, therefore, that hieroglyphics were invented before this. Since beginning the preparation of the lecture, Dr. Gladstone had fortunately been supplied with history going back to about 700 years before this. At Nagada a large tomb had been discovered, probably that of the Pharaoh Menes, containing besides objects of ivory and precious stones, two articles of copper, and one of gold. The French chemist, Berthelot, who has interested himself in this subject, and whose name is familiar in political as well as scientific circles, has analysed these, and finds the copper to be free from arsenic and tin. These articles must take the place of honour as being the oldest pieces of metal belonging to a date known with certainty, but a harpoon for taking the fishes of the Nile found at Nagada, if not older, must belong to a period very little later. The gold of the Egyptians of this period contains silver, and was probably obtained from Asia Minor, but later they obtained gold from Nubia. The lecture was plentifully illustrated with lantern slides. Some of these were now exhibited, showing drawings taken from the tombs, in which various operations in metallic industry were depicted. One showed the weighing of quantities while a scribe wrote down the amounts. In another a man was seen using a mouth blow-pipe with a furnace, while a third represented a bazaar, where one party was bargaining for a necklace and another for some fish-hooks. Some gold and jewelled necklaces belonging to a period about 1700 B.C. are stated to be scarcely matched in fineness of work at the present day. Copper was employed largely for implements, at this time replacing the older flints. It, of course, had the disadvantage in the pure state of being soft, and it is interesting to note the advances made in hardening it. Hammering and alloying with arsenic or tin were employed. It is not known where this tin was obtained, but it is more probable that it came from the neighbourhood of Etruria than from the British Isles. Tin can at once be detected in the metals by the muddy solution obtained when they are touched with nitric acid. Zinc was not used by the Egyptians, but its use in making brass is first found in the writings of Aristotle. A number of interesting specimens were shown, most of the copper articles being deeply penetrated by a peculiar corrosion, forming the red suboxide. Among them were a knife that had been moulded to shape but left unfinished, a knife covered with silver, and one that had lost its wooden handle but retained the ivory collar. A steelyard and some razors were also preserved. A spear-head, lent by Sir John Evans, bore an inscription showing that its date was about 2300 B.C. Lead was known by the Egyptians, but found no employment. A ring of tin and beads of antimony showed that these metals were also known. The latter was also known in Assyria, but was forgotten and re-discovered in later times. The question as to when iron was first known is a difficult one, but there is no evidence of its use till the time of Rameses II. The lecturer then dealt with Assyria. The Assyrians, like the Egyptians, had a fondness for writing down their history. Among some copper figures at Tello, belonging to a date of 2700 B.C., is a colossal sphere. At Tel-el-Sifr, 1500 B.C., was found a whole coppersmith's shop. In the earlier times of this empire they did not value metals greatly, but later, when they made such terrible campaigns against their neighbours, they prized them highly. A number of illustrations were thrown on the screen showing the tribute brought to Shalmaneser II. Vessels and goblets of silver and gold appeared to be abundant. One of the gates of this king's palace was built of wood bound up with brass. Passing on to Palestine, Dr. Gladstone stated that we first hear of it when in the hands of the Hittites. Their writings cannot yet be read, but there exists plenty of them, and probably they will soon be understood. The first date known accurately is that of the battle of Megiddo, about 1600 B.C., and an account of the tribute paid on that occasion remains. Exodus never mentions iron, while it does gold and silver often; if iron had been known at that time, it would almost certainly have been referred to in the instructions for building the tabernacle. At a later time the Hebrews were amazed at the wealth of some of their neighbours because they possessed iron. For want of time the account of Greece was hurriedly passed over, reference being made to Homer's descriptions, among which was that of Achilles' shield, "which was of gold, silver, copper, and tin, not alloyed, but hammered in layers at the forge of Vulcan." Iron appears only as a precious metal. Lantern-slides were used to illustrate the articles possessed, among which were vessels of various kinds in copper, bronze, silver, and gold, also ornaments, and a remarkable figure of a heifer's head in silver with gilded horns that tallies closely with the description given by Homer. Some cups of gold bore well-executed designs of quiet pastoral scenes contrasted with pictures of the violent behaviour

of wild animals. In conclusion it was pointed out what inference could be drawn from these facts as to the intercourse between the nations of that time. Copper was obtained from Arabia and from Cyprus, which island gave its name to the metal in many languages. Gold came from Asia Minor and Nubia, silver from Spain, lead from Sardinia. The Phœnician merchants travelled not only by sea but also by land, visiting Scandinavia, India, and Britain, bartering and introducing tools. They did not visit Britain, however, in the copper period, but only after bronze became established.

THE BIRKBECK INSTITUTION.

The Birkbeck students' annual conversazione was held at the Birkbeck Institution, Bream's Buildings, Chancery Lane, E.C., on Saturday, February 12, when the Principal, Mr. G. Armitage-Smith, supported by the Council, had the pleasure of greeting about 1500 guests, the company consisting of the students and their friends. After the reception the guests dispersed to various parts of the building, where numerous events were progressing at one and the same time. The ladies found congenial entertainment in the theatre and institute library, where, in addition to an excellent concert, musical selections were given by the Red Viennese Band and a one-act comedy, "The Guinea Stamp," was enacted. For visitors more or less scientifically inclined the programme arranged was of a very varied and interesting character, the chemical laboratories being the scene of numerous experiments, the principles of dyeing and various methods of purifying chemicals being demonstrated, while in the lecture theatre experimental lectures were delivered by well-known scientists. In the biological and geological laboratories, rocks, minerals, fossils, plants, animals, etc., were exhibited, and demonstrations and lantern lectures were given during the evening. Then there were displays of animated photographs, art exhibitions, Röntgen ray demonstrations, and the latest development of colour photography was illustrated by means of the "photochromoscope." To enable visitors to hear a variety of performances taking place in London the electrophone was connected with places of amusement, while another source of attraction was the graphophone. Altogether the conversazione was a brilliant success, the events being instructive, interesting, and amusing. In various parts of the building refreshment buffets had been arranged, the excellent catering of Messrs. J. Lyons and Co. contributing not a little to the enjoyment of the guests.

PHARMACEUTICAL SOCIETY.

EVENING MEETING IN EDINBURGH.

The fourth evening meeting of the present session was held in the Society's House, 36, York Place, Edinburgh, on Wednesday, February 16, 1898, at 8 30. Mr. J. Laidlaw Ewing in the chair.

The minutes of last meeting were read and approved.

Apologies for absence were intimated from Messrs. C. F. Henry and George Coull.

The first paper read was by Mr. Arthur McKellar on

The Quantitative Estimation of Sugar in Urine,

which appears in full on page 168.

Mr. Peter Boa said his own experience was that in Edinburgh they did not get very much of this sort of work to do. The Edinburgh School of Medicine taught their graduates to do this sort of work for themselves. It did sometimes crop up, but very seldom, and not so often as to lead him at any rate to be very particular as to the method he adopted in testing. Mr. McKellar's process seemed to be a very reasonable one, and he had no doubt it would be quite satisfactory. If he found his practice in this line increasing he dared say he would give his attention to Mr. McKellar's suggestion. They were very glad to see Mr. McKellar there, and he hoped they would have more such papers from his district.

Mr. George Lunan said he could corroborate what Mr. Boa had said about the number of samples they got to do in Edinburgh. In Liverpool they had occasionally half a dozen samples a day. He thought it must be that the younger generation of doctors was being so well taught to examine urine that chemists did not get any of that work to do. At all events, he thought it devolved upon them to be able to do it when they were called upon. He had occasionally had a diabetic patient bring urine once a week to him to test. Two years ago his attention was directed to Gerard's method for exactly determining glucose in urine, and again, latterly, he had used that process and had found it very satisfactory. Like Pavy's method, the end reaction was a colourless solution, and there was no free ammonia. Exception might be taken to the use of potassium cyanide. With regard to to Mr. McKellar's criticism of Johnson's picric acid colour test, he had used it ten years ago, and found it worked very well. Mr. McKellar's process was probably an improvement on them all, since no special apparatus was required as in Pavy's process.

Mr. Duncan said he had some years ago to examine a urine from a patient who had been rejected by an insurance company on the testimony of a Glasgow doctor, who reported that his urine was "loaded" with glucose. On examination he found no glucose present. The doctor had used an old vessel with Fehling's solution. Mr. McKellar used a glass rod for running in the urine. He should have thought a burette would have answered the purpose better. One must be working in an atmosphere of ammonia during the process, and he would think that objectionable.

Mr. McDiarmid said he had considerable experience in testing urine; his object was to find a test that would act quickly and sharply, and he came to the conclusion that Sir George Johnson's picric acid test was practically as successful as any mentioned, and he did not agree with the remark that it was unsatisfactory. It had been shown by his son that urine perfectly free from glucose would give a colour reaction due perhaps to creatinine, but this did not amount to more than a half or five-sixths of a grain of sugar per ounce, and that might be ignored. Fehling's test was too tedious and required an expert eye to know when the reaction was finished; his experience of doctors agreed with Mr. Duncan's. A west-end physician was alarmed to find his urine strongly diabetic by his own testing. On examining a sample for him in his presence he found it free of glucose, much to the delight of the physician, who said he would now have a drink of beer, from which and many other things he had been rigidly abstaining for years. He died shortly afterwards, but whether through a reversion to his normal diet he could not say. He asked Mr. McKellar what advantage his process had over Pavy's, in which the ammonia was got rid of by passing it into a solution. He agreed with the remark that the use of a burette would be an improvement.

Mr. J. Rutherford Hill said it was important for pharmacists to be practically familiar with work of this kind. As education increased the public would pay more attention to the laws of health and to the treatment and symptoms of disease, and they would naturally turn to the pharmacist as the man best fitted to do work of this kind. He knew of several instances where this was already done, and constituted a very remunerative part of a pharmacist's work. Mr. McKellar's test seemed identical with that recommended by Purdy in his book on uranalysis.

Mr. Allen said Purdy's process was open to grave objections, and he asked Mr. McKellar if he had tested his process against others. It would improve Mr. McKellar's process to conduct the ammonia fumes into water, as might easily be done by a simply adjusted apparatus. With regard to the time required for an estimation, he thought two minutes must be too short, as in Pavy's process the reaction was slow towards the end. He agreed with Mr. Lunan that Gerard's process was bound to supersede all others. Mr. McKellar's process might be sufficient for ordinary diagnosis, but would be only roughly approximate in its indication of actual percentage of sugar.

Mr. McKellar, in reply, said that two minutes to do the process was perhaps a slight exaggeration. Certainly a burette would be an advantage, but his object in reading the paper was to give a method which could be used in an average retail druggist's shop with the apparatus always at hand. He had not tried Gerard's method, but would take an early opportunity of doing so. As to the ammonia fumes he kept the solutions at a level slightly above his nose, and experienced no greater inconvenience than in the case of filling ammonia bottles. With regard to the advantage of his solution over Pavy's, his reply was that it was more readily made by the average pharmacist. He had tried his process against others, using anhydrous grape sugar, and had found that it was accurate. It had been said that glycosuric acid had a slight effect in reducing the copper. In Glasgow some of them had a fair amount of this work to do, which, unfortunately, was not paid for; he had, however, frequent applications from foreigners, who paid a fee. It appeared to be a specialty with pharmacists generally on the Continent.

Mr. Boa then read a paper on

Fluid Extract of Liquorice.

In this paper, which will appear in full in next week's Journal, Mr. Boa described experiments he had undertaken with the view of satisfying himself that the present official process for preparing the extract is as good as might be. He concludes that water is the best mentruum for extracting the sweetness of liquorice. If percolation of a rougher powder were substituted for double maceration and expression of the root in No. 20 powder as directed in the official formula, it would make the process less messy. Ammonia might be judiciously employed in the way he had indicated to prevent loss of sweetness, and a slight increase in the spirit would make sure work of preservation and produce a cleaner extract.

The Chairman said he always understood that it was to the use of ammonia that the sweetness of liquorice extract was due. Mr. Boa's paper would probably lead Professor Remington to take up the cudgels on behalf of his view.

Mr. Lunan said he did not agree with Mr. Boa that a cold water extract of liquorice with the epidermis removed gave an acid reaction. He had tried it repeatedly with English-grown liquorice. He was surprised to find that Mr. Boa recommended cold water as the best menstruum for exhausting liquorice. He had tried a few experiments, but would not venture to contradict, though he accepted Mr. Boa's statement with some reserve.

Mr. Duncan said he thought Mr. Boa had hit the nail on the head with regard to the use of ammonia. He thought decorticated root should be used. In some experiments conducted by Mr. Burell in 1875, results similar to Mr. Boa's were obtained. He found the sweetest extract was obtained from solazzi juice, the mistake in using ammonia was adding excess. Glycyrrhizin might behave like saccharine, where a trace of alkali increased the sweetness by increasing the solubility.

Mr. Rutherford Hill said he had had an opportunity of examining the samples referred to, and he thought Mr. Boa had done much to prove that Remington's recommendation of ammonia was fallacious ; the ammonia percolate was more deeply coloured, as might be expected, but it was less sweet and did not possess the peculiar earthy liquorice flavour so characteristic of the aqueous percolate.

Mr. Boa, in reply, said he had there a sample of the American fluid extract, which was very deeply coloured, and if they tasted it they would find it far from palatable. As to the question of using decorticated root, his feeling was that such an extract was not an extract of liquorice root, but merely a sweetish solution, the extract was used for disguising the taste of medicines, and one wanted the whole of the root, including the cortical portion. He thought there was some anæsthetic effect got from such an extract. The extract from decorticated root did not mask the taste any better than syrup would. He believed the whole of the commercial extract was made from unpeeled root, and that, therefore, seemed to be what was wanted. He exhibited a sample of fluid extract obtained from a historic house. It was intensely dark in colour, and seemed to be made from solazzi juice.

On the motion of the Chairman, votes of thanks were awarded to the authors, and the meeting closed.

PARLIAMENTARY NOTES.

Food Products Adulteration is evidently to occupy a prominent position at Westminster this session. The House is being inundated by petitions praying for an amendment of the law, and the resources of the "table" to find room for these documents must by this time be almost exhausted. The most striking feature about the petitions is that they nearly all emanate from villages of which the average Londoner has only the remotest geographical conception. It comes almost as a revelation to find that the sparsely inhabited provincial districts of England are so keenly interested in the report of the Food Products Committee. A cynically disposed person might be tempted to suggest that the absence of petitions from large towns and cities is a proof that public opinion is more easily organised in villages. Be this as it may, there is something approaching a "boom" in adulteration just now. Mr. Kearley, not satisfied with the qualified reference to a Food and Drugs Amendment Bill in the Queen's speech, comes forward with an amendment to the Address expressing regret that no assurance is given that legislation on this important subject is in contemplation this session. The object of the Amendment is, of course, to invite a ministerial declaration of faith on the subject. Chemists will await the result with as much anxiety at least as the inhabitants of those advanced villages which have embodied their hopes and fears in formal petitions. Local pharmaceutical associations might profitably discuss the desirability of expressing their views in like manner, for it would be a thousand pities to allow Members to suppose that the food side of the question is the only one needing attention.

Another Interesting Amendment to the Address is that bearing the name of Mr. Cawley (Prestwich), calling attention to the prejudicial operation of the Patent Laws which permit foreigners to obtain patents in this country for inventions they cannot patent in their own. Mr. Cawley is interested in the chemical and bleeching industries, and views with alarm the tactics of the Teuton in taking advantage of the Patent Office to secure a practical monopoly for his goods. It is true that a bad patent may be resisted and set aside, but the process is at best expensive, almost always protracted, and never free from uncertainty.

Bills rained down on the House on Friday in a perfect shower, for members were anxious to take advantage of whatever luck the ballot box had given them. Sir J. Lubbock secured sixty-second place in the scramble and promptly introduced last year's Early Closing Bill, which has been accorded Tuesday 22nd for its second reading. Dr. Farquharson and Mr. Kearley are among the supporters of the measure. The Shops Bill in the joint charge of Dilke, Burns, and Davitt, also made its appearance on Friday, and is equally tabled for its second appearance on the 22nd. Mr. J. B. Balfour's Midwives Registration is fixed for May 11 ; that is a day or two before the Whitsun recess ! Street Noises are to have a chance of consideration on May 25, and the Registration and Inspection of Boilers, together with the Certification of persons in charge thereof, are respectively allotted March 2 and May 11 for second reading. Mr. Faithfull Begg (Glasgow, St. Rollox) has rushed in where the Lords have for two sessions been fearful of treading, and has introduced to the Commons a Bill to amend the Companies Acts. It is down for May 4. In view of its interest we will next week give a *résumé* of its provisions.

Drawback Threatened.—The Commission appointed to inquire into the woeful condition of the British West Indies have made a very conscientious report, and have suggested the application of various species of financial tonics to restore the vanished prosperity of the islands. But the very smartest recommendation is that which proposes a reduction or even abolition of the present differential duty of fourpence a gallon levied on foreign spirits, coupled with a withdrawal of the existing drawback allowance on exported British spirits. The North British distillers of "mountain" and other dew have taken time by the forelock, and have already told the Chancellor of the Exchequer that there is another side to the question.

The Pharmacy Bill is overdue, but is expected to be sighted in Parliament next week. The President and Secretary of the Society are familiar figures to the lobby attendants just now, for they are almost nightly engaged in explaining to more or less indifferent Members of Parliament the innocent character of the Bill. The Council and its representative officers have undoubtedly given evidence of their desire to effect the tardy measure of justice to Associates embodied in the draft Bill. All that is wanted to carry it through is the earnest co-operation of those directly concerned.

Patents and Proprietaries were brought within the pale of practical politics on Wednesday, when Mr. Wootton Isaacson, coal and iron merchant, and Conservative Member for the Stepney division of the Tower Hamlets, brought in a Bill to amend the law relating to patent and proprietary chemical compounds. Is it another Pharmacy Acts Amendment Bill ?

The Companies Bill, which is, word for word, the same Bill as that shelved last session, has passed its second reading in the House of Lords, and is to be again considered by the re-constituted Select Committee. The Government intend to carry the Bill through this session if possible, but *nous verrons*.

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THE WEAK SPOT IN PHARMACY.

That insufficient elementary education is one of the chief evils afflicting pharmacy in this country has long been recognised, but as if to emphasise the fact, the recently published report of the Board of Examiners in Scotland on the Minor examination indicates deficiencies in the candidates who present themselves for examination across the border, that would seem in great measure to have their origin in imperfect early education. Doubtless unsatisfactory shop training and lack of system in the later course of study must also be taken into account; but there is good reason to believe that both those factors would lose much of their force if the primary education of candidates for legal qualification in pharmacy were all that it ought to be. And though the Scottish results at the First examination come out generally rather better than those for England and Wales, it would appear from the Examiner's report that the amendment of the Bye-law affecting this matter has been accomplished none too soon According to the Registrar's Report recently published, the preliminary weeding-out process resulted last year in the elimination of more than fifty-two per cent. of those whose inclinations or necessities led them to look with favour upon the idea of adopting pharmacy as a profession. Since however, during the same period, the percentage of rejections at the qualifying examination was not far short of seventy per cent., it appears obvious that the initial weeding out process might be further encouraged with advantage to all concerned. If a high standard is maintained in the Preliminary examination, more particularly as regards the percentage of marks that shall be held to justify a pass, the mental calibre of those who present themselves for the subsequent test cannot fail to be sensibly improved and, as a necessary corollary, better results will be achieved, if for no other reason than that a well-educated youth may be expected to make better use of his opportunities during the qualifying period than one who has not enjoyed the same advantages during his earlier years. By extending the syllabus, which is practically what has been done by deciding to abolish the First examination now conducted by the Pharmaceutical Society, probably still more can be effected in the same direction, so long as a high standard of efficiency in each individual subject is maintained in the examinations, one or other of which must be passed instead. It is fortunate that the means are now available for putting this matter to the test of experience, and within the next five or six years it may be anticipated that the British examiners and Government Visitors will be able to present reports that will fully justify the wisdom of the change so recently effected.

It is much to be regretted that in the sister isle, where—according to Sir George Duffey's report for 1897—similar weakness prevails, equally effective measures are not being taken to remove the reproach of insufficient elementary education. If we consider simply the actual percentage of rejections (46·3) at the Irish Preliminary examination during 1897, the comparison with Great Britain is not in favour of the latter, and the more especially so since the existing syllabus of the Irish examination covers much more ground than ours. But the standard of attainment must also be taken into consideration, and when the low percentage of marks required to secure a pass in Ireland is allowed for, the apparently greater sufficiency of the Irish over the British test vanishes completely. In Sir George Duffey's opinion "the standard of answering" that is required from a candidate to pass in the optional subjects—Elementary Physics and Mechanics, the rudiments of Botany, and a Modern Language—as well as in Latin, Algebra, Botany, and Geometry, is much too low. That tends, he observes, to induce candidates to endeavour "to scrape through with a most superficial acquaintance with the subject, and is prejudicial to the character of the examination as well as to honest education and study. When the maximum mark for a subject is only ten, there are few examiners, perhaps, who will not give a candidate two for even very inferior answering." Similar remarks are said to apply equally to Latin, a subject in which profound ignorance is constantly exhibited, and in which the pass standard is only 20 per cent. Moreover, the marking arrangements are such that though a candidate may be so ignorant of Latin that he cannot parse a few simple words in the language—as evidenced by the examiner marking him a cipher—yet because he gets marks for struggling through a piece of easy translation, that are equivalent to 20 per cent. in the whole subject, he is passed in that subject. Several striking examples of this kind are quoted in the Visitor's Report, and he remarks that when the Preliminary examination in Latin can be passed on such marks, the ignorance of the language exhibited by many of the candidates in attempting to read and translate prescriptions at the qualifying examination is not to be wondered at. There is a 50 per cent. standard in English, in Arithmetic, and in Weights and Measures; and 40 per cent. of marks on the entire course must be obtained by candidates to entitle them to pass, but the percentage in each of the subjects other than the three just mentioned should, in Sir George Duffey's opinion, be higher than at present. The minimum required for a pass in each of the other compulsory subjects—Latin, Algebra, Geometry, and this year Elementary Theoretical Chemistry—is only 20 per cent. Objection is also taken to the total marks in Latin and in English being "arbitrarily decided as they now are."

But the Council of the Pharmaceutical Society of Ireland seems somewhat unwilling to fall in with the views of Sir George Duffey, and in its reply to his comments an attempt is apparently made to minimise the importance of his recommendation. We say "apparently" advisedly, for the well-

known anxiety of the Irish Council to improve the status of its licentiates may be expected to lead to the recommendations being adopted in their entirety after careful consideration. In the letter to the Privy Council, however, it is somewhat illogically urged as a reason for maintaining the present low standard of efficiency that "many of the candidates commence at the business with such knowledge as they obtain from an elementary school, and it is not until they have spent some time at the business that they discover the necessity for anything more than the most elementary education. They then apply themselves to acquire sufficient knowledge to pass the examination. This must always occasion bad results, and accounts for the large percentage of failures." Here, in brief space, we have the whole case for advance and reform given away, and how badly and fully it is given away is obvious when the Irish Council goes on to express its admiration of the perseverance of those who present themselves repeatedly for examination. Pity for the unfortunate candidates could be understood in such cases, but why acknowledge a sense of admiration for their ill-advised perseverance? Then it is stated that the original percentages of marks were fixed with the desire of not making the examination too high, or a mere obstruction to prevent the youth of the country coming into the business. But why continue to act in accordance with the original desire when every rational argument that can now be brought forward is in favour of a diametrically opposite policy? "As the Society ages," the reply proceeds, "it is expected that the licentiates in business will be more careful in the selection of apprentices, and will require a better education as a condition of service," but this is a very weak reed to depend upon. It is beyond question that pharmacists in business have the matter of the quality of apprentices entirely in their own hands, but experience on this side of the water may be expected to repeat itself in the Emerald Isle, to the extent that this best of all defences against lowering the status of pharmacy will be found totally ineffective in practice. Inasmuch, however, as the Irish Council fully appreciates the Visitor's remarks on the whole of the Preliminary examination, and the desirability of requiring more than a superficial knowledge of the subjects, it may be anticipated that steps will be taken ere long by that body to deal with the difficulty as thoroughly as has been the case in Great Britain. In view of a possible future arrangement for the interchange of British, Irish, and colonial certificates, such a solution of the problem is greatly to be desired, and there is perhaps little reason to doubt that a generally satisfactory solution will be forthcoming in due course.

THE SALE OF FOOD AND DRUGS.

The adulteration of food and drugs promises to be a subject of some prominence during the present session of Parliament, and, pending the re-introduction of the Bill introduced last session by the President and Secretary of the Local Government Board, or some similar measure, the Council of the Society of Public Analysts has published its report on that Bill, with the object of securing some modification of the clauses it contains. The great desire of the body referred to is to see a Bill introduced by the Government which shall embody the recommendations of the Food Products Adulteration Committee, with as few modifications as possible. Accordingly, the Bill introduced by Messrs. Chaplin and Russell is regarded by the Society of Public Analysts as unsatisfactory, inasmuch as it does not embody "the most important recommendation" of the Select Committee, viz., that referring to the formation of a Court of Reference. That recommendation, it is urged, should be acted upon if new legislation is to lead to satisfactory results, and it is parenthetically suggested that such Court of Reference ought to include one or more public analysts. That is to say, not content with adding to their only legitimate function of adulteration detector, that of director of prosecutions, as is only too frequently the case, public analysts wish in addition to constitute themselves part of a final court of appeal, which shall decide whether or not their methods of procedure are justified, and their results accurate. The existence of this proposed Court of Reference was provided for in the Bill introduced last session by Mr. Kearley, and shortly to be re introduced by the same Member of Parliament. Clause 38 of that measure specified that immediately after the passing of "this Act" there shall be appointed a court of reference consisting of the principal officer of the Government laboratory at Somerset House, a person nominated by the Local Government Board, a person nominated by the Board of Agriculture, two nominees of the Society of Public Analysts, and one each of the General Medical Council, the Institute of Chemistry, the Pharmaceutical Society, the London Chamber of Commerce, and the Association of Chambers of Commerce of the United Kingdom. But why two, or any, nominees of the Society of Public Analysts?

THE WESTERN CHEMISTS' ASSOCIATION.

The draft Pharmacy Acts Amendment Bill was discussed at a meeting of the above Association on Wednesday night, and it was unanimously agreed to support it. The publication of a detailed report of the discussion is unavoidably deferred until next week; meanwhile it may be useful to refer to one point, raised by Mr. R. H. Parker, a past-president of the Association. With the idea of uniting all pharmaceutical chemists in support of the Bill, Mr. Parker suggested that it might be possible to effect a compromise with those opposed to the Bill by inserting a clause, the effect of which would be to entitle members of the Society who are pharmaceutical chemists to use the title "Fellow of the Pharmaceutical Society." The title would be worth nothing in itself, but if it will satisfy those who would otherwise remain dissatisfied, why not grant it to Major men? Mr. W. Pickard supported Mr. Parker's suggestion, but the views of the meeting being opposed to it, the proposition was withdrawn. In the hope, however, of effecting a compromise by some means, it was decided that a communication should be sent to the Manchester chemists who are opposed to the Bill, asking them to withdraw their opposition, in the best interests of the craft. This is an example that may with advantage be followed by other local associations. Another interesting incident that took place at this meeting was a notice of motion given by Mr. Mathews, the President, to the effect that the title of the Association should be altered to that of the "London Chemists' Association." It is to be hoped that this change may be agreed to, as it cannot fail to be useful by helping to widen the sphere of influence of the body.

ANNOTATIONS.

The Semi-Sporting Character of Mr. Jeeves' address to the Brighton Junior Association of Pharmacy (see p. 178), which is to some extent lost in our necessarily condensed report, must have served to give an enhanced interest to matters that tend to become vapid in the course of years. But he was not too careful to state all his premises correctly and, consequently, it is not surprising to find that he arrived at some wrong conclusions. The first question with which he confronted his audience should not have been "Is the chemist and druggist of to-day a sufficiently educated man to carry out ably and conscientiously the many and varied duties of his business?" but "Is the chemist and druggist of to-day a sufficiently educated man to fulfil ably and conscientiously his duty to the public and to his fellow-chemists?" The standard of education and training required, from this point of view, must of neccssity become higher as the years pass and civilisation progresses, and the educational schemes of the Pharmaceutical Society both can and will help forward that most useful of all ends better than any other method that has yet been tried or even suggested. The weakness of Mr. Jeeves' position is manifest when it is noted that he is prepared to accept what can only be rcgarded as an excrescence upon pharmacy proper, as being itself thc pharmacy of to-day. Any chemist and druggist who acknowledges that wholesale firms can carry out the cssential details of his business better than he can himself fully deserves the non-success from both professional and trade points of view that will almost inevitably fall to his lot.

Penny-in-the-Slot Pharmacy is what Mr. Jeeves advocates, for no other concise term is sufficiently comprehensive to describe the absolute dependence upon manufacturers for tho preparation of "pills, capsules, plasters, tablets, etc.," that this Brighton pseudo-prophet indicates as a position to be acquiesced in. It might almost be imagined that he held a brief for one of the wholesale firms whose products he so unsympathetically compares with medicines dispensed by the "small dispensing chemist," and it is to be much regretted that no one present at the meeting is reported to have called in question the accuracy and good taste of such an unjustifiable comparison. The answer to the second question put before the meeting, "Will an increased standard of education and examination produce in the successful candidate a better chemist or a more successful man in business?" is best supplied by the careers of those whose names are best known in British pharmacy. Of course, neither education nor examinations can compel men who prefer to seek inspiration in the mud to strive after higher ideals, the attainment of which may at times involve some slight degree of personal inconvenience. The man who is successful does not become so by continually brooding on non-success, any more than he who progressively advances is cheered on his way by thoughts of retreat. The fact of the matter is that Mr. Jeeves has quite missed the point at issue, and confused conditions with objects to be striven for. The three great factors influencing success in pharmacy are education, examination, and business capacity. Without the last the others do not count for much, and when a chemist and druggist is found lamenting that education and examination do not assist him much in his business career, it is only reasonable to assume that he is lacking in the third essential of success. If, in addition, he proceeds to throw mud at the Pharmaceutical Society for not having ensured him a business competence in exchange for the few guineas he paid for registration, we must also question his logic or his sanity.

The Present Unusually Mild Weather is naturally being marked by the early development of spring blossoms, etc. Correspondents in different parts of the country are sending plants which are interesting as showing the early dates of flowering. Mr. E. W. Pollard, of Ryde, has sent *Pulmonaria angustifolia* in full flower to the Curator. The earliest date for this plant during the last twenty years has been February 7, and the specimen sent was gathered only four days later. Daffodils and blackthorn, Mr. Pollard reports, are also in flower. Mr. H. James, of Truro, sends *Echium vulgare* in blossom, a plant which usually begins to flower in June. Moreover, the cuckoo was heard in Richmond Park on Monday last, fully six weeks before its usual time.

The 'Nuttige Indische Planten,' by Dr. Greshoff, has reached its fourth part, which contains illustrations of the following plants:—*Acacia farnesiana*, *Bouea macrophylla*, *Calotropis gigantea*, *Coix lachryma*, *Gonostylus miquelianus*, *Morinda citrifolia*, *Nyctanthes arbor-tristis*, *Piper cubeba*, *Ricinus communis*, and *Santalum album*. The majority of the plants are also used in the British Indies, and as each monograph contains valuable information, it should prove useful to all interested in Eastern vegetable products. *Gonostylus miquelianus* yields a fragrant wood, in appearance like sandalwood, but softer. It forms the aloes wood or Kajoe garoo, of the Island of Riouw. The illustration of *Piper cubeba* contains figures of all the adulterations and substitutions of the drug hitherto recorded.

The Return of Empties is frequently a sore point with manufacturers and wholesale dealers, but what cannot well be regarded as an unreasonable appeal to the public has recently been made by a firm of mineral water manufacturers, who point out in a Brighton paper that they received on January 29 last, from a certain place 176 dozens of "empties," and out of that number no less than 39 dozens were destroyed—so far as their business is concerned—by the careless and unfair manner in which the bottles have been put to improper uses. On examination it was found that before being returned as "empties" they had been made receptacles for carbolic acid, paraffin, turpentine, linseed oil, medicine of different sorts, benzoline, neats-foot oil, paint, varnish, etc., and also used as candlesticks. It is not surprising, observes the local paper, that after this experience there should be a very strong feeling on the part of the receivers of the empties, and as, doubtless, in many cases, much of the injury is due to thoughtlessness rather than to malicious intent to destroy the manufacturer's property, it is hoped the appeal may lead to a mitigation of the evil.

The School of Pharmacy Students held their annual dinner at the Holborn Restaurant, London, on Wednesday last, and it was exceptionally successful, great credit being due to Messrs. Lescher and Nelson for carrying out the necessary arrangements. Especially interesting speeches were delivered by the President of the Pharmaceutical Society and Mr. Michael Carteighe, the former explaining at length why the Pharmacy Bill should be generally supported, whilst the School Visitor gave instructions in the art of speech-making, and showed clearly that the existence of the School of Pharmacy had helped largely in securing the passing of the original Pharmacy Act. Detailed reports of those speeches will be published next week. The Dean, Professor Greenish, made an excellent chairman, and the meeting was a highly representative one. Amongst the visitors was Mr. Gwilym Evans, of Llanelly, a former member of Council.

THE WORLD OF PHARMACY.

CAMBRIDGE PHARMACEUTICAL ASSOCIATION.

The annual dinner of this Association was held on Thursday, February 10, at the Victoria Assembly Rooms, Cambridge. The chair was taken by Alderman Deck, who was supported by Mr. Walter Hills, President of the Pharmaceutical Society, and the leading pharmacists of the district.—After dinner and the usual loyal toast, Mr. A. Sidney Campkin proposed the toast of the

Pharmaceutical Society of Great Britain.

He said he did so with peculiar pleasure and pride on this occasion, inasmuch as he had to couple therewith the name of the President, Mr. Walter Hills, to whom their local association was especially indebted for his presence that evening. The position was unique in their history, as it was the first time they had been so favoured. They appreciated it further because of his near relationship with one—present also that evening—who had recently filled with ability and distinction the office of mayor of their ancient borough, and who bore a name of one who, in the past, occupied a high and honourable position in the pharmaceutical world—T. Hyde Hills. They were further interested in their President because he was a successor in the business of one of the most honoured names in connection with the pharmacy of the past generation ; also because of the great ability he had shown in the discharge of the duties connected with the high and honourable office to which he had been appointed. He (the speaker) had been present at the annual meetings of the Society for some years past, and was able to bear testimony to the manner in which he had conducted and addressed the last under somewhat difficult substances. It would ill become him to stand for more than a short time between them and their distinguished guest, but there were a few matters of considerable importance to them to which he would allude, in the hope that the President would make some allusion thereto in his reply. Events of considerable importance to them and pharmacists had happened during the past year or two, and there were now before them proposals for legislation in which they were all interested, to which he was sure they would much appreciate a reference. The recent Bye-laws of the Society had caused much discussion in the press and at the annual meeting in May last, but had now received the assent of the central authority and would be applicable to future entrants ; it remained to be demonstrated if they would fulfil the anticipations of the promoters. Then a Bill had been prepared and approved by the Council, and would shortly be submitted to Parliament, having for its objects the further consolidation of the Society by an extension of the privileges of membership to a number of legally qualified pharmacists who, though supporters, had not the full advantages as some of the members. He hoped the result of the proposed legislation would be to bring every qualified pharmacist into the privilege of full membership with their Society, which, after all, was the only organisation of chemists recognised by the Legislature, and if duly supported would be able to speak in no uncertain tone on any proposals for legislation affecting the body generally. As at present only about a third of the registered chemists in the country were associated, but he claimed it was not only a privilege, but the duty of all to be associated together as members of the Society, and thus assist not only themselves, but the whole body. He had great confidence in the power of unity and federation, and hoped that the jealousies which had existed in the past and prevented their combination for one common purpose would disappear, that there would be complete unity of hearts and interests, which would strengthen and consolidate their Society, and be productive of such results that the future of pharmacy would be brighter than its present, and greater than its past.

Mr. Hills, in the course of a speech of some length, expressed satisfaction at meeting the members of a pharmaceutical association located in a centre so intimately connected with advanced education, and said he looked forward hopefully to the time when the system of education for the calling of pharmacy would be improved and when perhaps universities would eventually grant degrees indicating proficiency in the art. Speaking as President of the Pharmaceutical Society, he wished to take that opportunity of pointing out that the work of the Society was carried on for the benefit of all engaged in the business, and that it was beneficial to every individual so engaged, whether connected with the Society or not. The Bill now in course of introduction to Parliament was intended in that sense, and, consistently with the Charter of Incorporation, to provide that membership of the Society should be open to every person possessing the necessary legal qualification to practise pharmacy. Of the persons registered under the Pharmacy Act, 1868, two-thirds are ineligible as members of the Society and therefore disqualified from serving as members of the Council : they have no direct representation, and they cannot become connected with the Society except as Associates —a position that was intended only for assistants. As membership of the Society is not, in itself, a qualification, there would be no interference with the rights acquired by those who voluntarily took the higher grade of pharmaceutical chemist which the Society would always be the first to protect. Nor was it true that the Bill is, as had been stated, a mere scheme to get "more guineas" and nothing else. What the Society wants and desires to secure is not mere perfunctory payment of subscriptions, but active interest and participation in the work that has to be carried on for the welfare of the whole body of registered chemists. The provisions of the Bill were necessary for admitting registered chemists to participation in that work on a footing of equality to which their legal qualification entitles them. If their connection with the Society was the means of annually placing at the disposal of the Council a few thousands more, any such augmentation of its resources could be well and usefully applied in promoting the objects of the Society, both in the extended administration of the Pharmacy Act and in the provision of facilities for pharmaceutical education in the provinces.

Mr. E. S. Peck next proposed the toast of the

"Medical Profession,"

and said that to his mind the profession of medicine stood out pre-eminently above all others, at least all other secular professions. It controlled our earliest separate existence in the world, fostered a healthy condition during life, repaired our fractured limbs in accidents, and alleviated the pain and discomfiture of man's latest hours ; it did all this and much more with a disinterestedness as remarkable as it was rare amongst the other learned professions. They, as pharmacists, looked up to them with admiration for their knowledge, skill, and patience, and felt proud that they were permitted to act, as it were, as the handmaidens of such a noble profession, and if pharmacy was to succeed it could only do so by going hand in hand with the medical profession. He hoped the General Medical Council would so widen the scope of the Pharmacopœia and keep it so close "up to date" that it would be unnecessary for medical men to order so many proprietary articles, the equivalents of which were not now in the Pharmacopœia. After alluding in laudatory terms to the medical profession in Cambridge, he coupled with the toast the names of Mr. T. Hyde Hills, Mr. W. Penberthy, and Mr. Apthorpe Webb.—All three of the medical men whose names were coupled with the toast having responded

Mr. C. S. Addison, proposed the toast of the

Cambridge Pharmaceutical Association.

He said he had always taken a keen interest in the Association ; in fact, he was one of the founders of it. So far the Association had not sent forth to the world any wonderful pill excipient, nor had it dictated to the Pharmacopœia Committee what it should do or should not do. It had not even criticised the new B.P. before it was published, but it had done a good work in bringing the members of the local trade together and making them know each other, so that when they met they had at least a pleasant nod instead of a scowl, such as members of the same trade in a town are supposed to give each other. The Association had also been ready to discuss any vital trade question whenever it had been necessary to do so. It is more and more being brought before us how essential trade organisation is in other branches of trade and what a great amount it accomplishes, and therefore he hoped that the efforts of the Pharmaceutical Society with its new Bill would be successful, and that it will have the effect of making the Society representative of the majority of the members of the trade and so form a strong, solid organisation. He was sorry to see that what opposition there is to it comes from the Major qualified men. He had always thought that education broadened one's mind, and why they opposed it he could not understand, for surely if a man was qualified to dispense medicines and to sell poisons he was qualified to help manage his own Society. If he is not qualified to manage it, then he is surely not capable of practising pharmacy ; but no one can deny that

amongst the ranks of the Minor men there are many who are quite as successful in business and as intelligent as many who have the Major qualification.—This toast was responded to by Alderman Deck and Mr. B. S. Campkin.

Mr. Cook, in proposing the

Kindred Associations,

endeavoured to explain organisation from two standpoints—scientific and commercial. Taking for the first the Pharmaceutical Society as example, the speaker attempted to show that the difficulty experienced in making progress was not accounted for by lack of material wherewith to organise, but that many whilst doing their share of criticism positively refused to be organised, and whilst condemning the Society on the one hand they neglected the only remedy that offered itself. It was urged that all employés should recognise the desirability of endeavouring to get those under their care to become students or associates of the Society as soon as the opportunity occurred, having been a subscriber himself now close upon twenty years. The speaker's connection with the local association had proved to him—noting the great amount of energy put forth by the officers—that to organise is one thing but to be successful is something to be hoped for. —Mr. Glyn-Jones having responded,

Mr. White, in proposing the toast of

The Pharmaceutical Press,

spoke with approval of the widening of the character of the *Pharmaceutical Journal* as having met with great appreciation. He thought, however, that the complaints made of the Society's journal a few years ago were not quite fair, for if the readers of the Journal failed to benefit from the instructive efforts of the Editor, that was to his credit and to their discredit. It appeared that when chemists had got through their examinations they turned round and complained of the Journal, because they could not understand it. That was really a confession that their education was at present very superficial, or that they suffered from rapid mental decay immediately on leaving the examination room. In regard to the trade journals, Mr. White spoke of their general superiority to other trade journals, and of their value to the trade in giving useful information. He coupled with the toast the names of Dr. Paul, Mr. Wootton, and Mr. Cantwell. —Dr. Paul said that, as Editor of the *Pharmaceutical Journal*, he felt some difficulty in replying to the toast, as he had considerable doubt whether the Society's Journal could be regarded as part of the pharmaceutical press, except in a purely conventional sense. He pointed out the important differences between the conditions under which that Journal was carried on, as the official organ of the Society, and those affecting journals belonging to the pharmaceutical press which were irresponsible and free to criticise, condemn, or even oppose the work of the Society. Considering the incoherent state of the trade, those journals might not unreasonably be expected to represent any opposition that was worth representing. He objected, however, to that form of opposition by the pharmaceutical press which partook of the nature of disparagement of the Society and misrepresentation of its work. —Mr. Wootton and Mr. Cantwell also replied.— Subsequent toasts were those of "The Visitors," proposed by Mr. R. Sturton, and "The Chairman," proposed by Mr. McAvoy.

CHEMISTS' ASSISTANTS' ASSOCIATION.

This Association met on Thursday, February 10, at 73, Newman Street, W., Mr. T. Morley Taylor, President, in the chair. The minutes having been read and confirmed, Mr. Taylor called upon Mr. J. Campbell Fell, F.C.S., to give an account of some experiments made to ascertain

The Solubility of Glass in Water.

—Mr. Fell said that as it was well known that glass is soluble in water, which is said to be the universal solvent, he undertook a number of experiments to ascertain if an appreciable quantity of glass was dissolved in a short time, a quantity that would affect the amount of total solids in an ordinary potable water brought to the water analyst for examination. Of course, the amount of total solids in a sample of water is not a very important item, but as it is usually given it was thought that it might be of interest to see if the quantity was added to by the sample remaining in the bottle until an analysis was made. Six samples of water were examined, two of which were specially collected for the experiments. In five cases pale green Winchester quarts were used; in the sixth a dark blue one contained the sample. 70 C.c. was evaporated on a water-bath, dried and weighed in the usual way, and in most cases duplicate determinations were made. It would be seen from the table he had prepared that only in one case—that in which the dark blue bottle was used—was there any material increase in the amount of total solid residue, and it would therefore seem desirable to employ pale green bottles for the collection of samples for analysis. The table was as follows:—

Sample.	Time. Months.	Time. Days.	Weight of solid residue from 70 C.c.	Bottle.
I.	—	—	0·0110	Pale green.
	8	—	0 0124	
II.....	—	—	0·0115	Dark blue.
	8	—	0·0336	
III.	—	—	0 0246	Pale green.
	—	2	0·0246	
	—	7	0·0246	
	—	35	0·0246	
IV.	—	—	0·0225	Pale green.
	1	—	0 0212	
	1	17	0·0218	
	3	—	0·0222	
V.	—	—	0·0445	Pale green.
	3	—	0·0464	
VI.	—	—	0·0248	Pale green.
	1	—	0 025)	

—The President said it was a thing that probably had occurred to very few people that an appreciable amount of glass could be taken up by ordinary water. It naturally caused them to wonder what might happen amongst many of the bottles in which stronger substances and solutions of chemicals were placed. He should like to ask Mr. Fell if he could give any reason for the dark blue bottle being acted upon as shown by the table.—Mr. Gamble thought it would be interesting to know what influence organic acids or organic salts have upon glass.—Mr. C. Morley asked if pure distilled water had any effect on glass.—Mr. Fell in reply said, the reason he had taken up the work was in consequence of a suggestion made at a meeting of the Association some two or three years ago by Dr. Symons, who in reading a paper on "Analysis," observed that glass was very much more soluble than it ought to be. Being interested in water analysis he made a number of experiments and was astonished to find that it was soluble. He could give no reason for the dark blue bottle being more soluble than the lighter coloured ones, his experiments being carried out simply to ascertain whether the total solids were affected by being in a bottle. He was so astonished when he found that in the case of the dark blue bottle there was nearly three times the quantity of total solids after a few months, that he tried the experiment several times, and the value 0·0336 given in the table was the result The samples did not contain any extraordinary quantity of organic matter. As to the effect of distilled water on glass, he could not speak, not having tried it.—The next communication was by Mr. Herbert Hymans, who gave a short

Note on the Determination of Phenol.

Mr. Hymans stated that in the determination of phenol by means of bromine according to Koppeschaar's well-known process, a possible source of error lies in the loss of bromine vapour, either during the time of standing or in introducing the potassium iodide solution. To obviate this difficulty the following process was devised, and gave results which compared favourably with Koppeschaar's in accuracy and rapidity. In order to liberate a standard amount of bromine, a solution of potassium permaganate of semi-normal strength was run into a solution of hydrobromic acid in the presence of the phenol solution. The permanganate reacting with the hydrobromic acid set free bromine, which immediately combined with the phenol, forming tri-bromo-phenol—

$$C_6H_5OH + 3Br_2 = C_6H_2Br_3OH + 3HBr.$$

The determination was conducted as follows:—Five Gm. of the crystallised phenol was dissolved in water and the solution made up to 100 C.c. Five C.c. of this 5 per cent. solution, and about 10 C.c. of concentrated hydrobromic acid (30 per cent. HBr), were placed in a flask fitted with a good cork or rubber stopper. The semi-normal potassium permanganate was then delivered from a burette in quantities of about 5 C.c. at a time, the flask being thoroughly well shaken after each addition. After about 29 C.c. had been run in, a few drops of chloroform were added in order to cause the bulky precipitate of tri-bromo-phenol to agglutinate and fall to the bottom of the flask, as otherwise it adhered to the glass rod

used for removing a drop of the liquid to test, thereby obscuring the end reaction. Particular care was taken to add just sufficient chloroform to cause the precipitate to settle (not to dissolve it), as if more than that quantity was added, some of the bromine liberated was dissolved in it, thus giving too high results, two or three drops usually being sufficient. After thoroughly shaking, a small quantity of the clear supernatant liquid was removed with a glass rod and tested on a white tile with a drop of carmine solution, made by boiling 1 Gm. of carmine with 80 C.c. of water and 20 C.c. of alcohol, and filtering. The standard permanganate solution was then carefully added until the pink colour of the carmine was completely discharged when tested as described. The semi-normal permanganate was made by dissolving 15·8 Gm. pure $KMnO_4$ in water and making up to 1000 C.c. One C.c. of this solution = ·00781 Gm. phenol; therefore the 5 C.c. titrated would, if the phenol were quite absolute, require 32 C.c. In the case of determining the amount of phenol present in a solution of unknown strength it was necessary to dilute it until 5 C.c. required a convenient quantity of standard permanganate. If the solution was already too weak for semi-normal permanganate, it could be titrated with decinormal. The method was also found to be applicable in the determination of thymol, cresol, naphthol, salicylic acid, etc., as with Koppeschaar's process. In concluding his paper, Mr. Hymans expressed his thanks to Messrs. Wright, Layman and Umney, in whose laboratory the experiments were conducted.—The President said they were very much obliged to Mr. Hymans for his note on this process for the determination of phenol. He had no doubt that many of the processes employed were capable of being much improved in their details, as was shown by Mr. Hymans in the case under notice.

The Re-Copying of Prescriptions.

Mr. F. W. Gamble then directed the attention of the meeting to the subject of the re-copying of prescriptions, on which an editorial opinion was expressed in the *Pharmaceutical Journal* of January 22 and 29 (pages 78 and 103). Having briefly recapitulated the main facts of the legal trial which had led to this expression of opinion, Mr. Gamble observed that the second charge in the indictment was the only one bearing on this subject, that of having "sold morphine and atropine without having registered the sale of the same." It was admitted that the poison had first been supplied to a medical prescription, but afterwards it was handed over on demand, without the prescription being produced. The chemist was apparently under the impression that having once copied the prescription, he had discharged his legal responsibility concerning it for all time. The defending barrister and the police inspector held the same opinion. The magistrate held that the sale should have been registered, and the *Pharmaceutical Journal* supports this contention. Mr. Gamble said this was a matter of considerable moment to chemists. In the course of a long experience in the West-end he had not met with a single instance in which prescriptions were copied afresh at each repetition. Many pharmacists noted each repetition in their prescription book and gave it a number, but the majority, he thought, did not register a repeat order at all, much less re-copy the prescription. The *Pharmaceutical Journal* founded its opinion on the fact that the first part of Section 17 of the Pharmacy Act required the registration, in a book kept for the purpose, "of every sale" of a poison included in Part 1 of the Schedule. The second part of Section 17 says, with regard to the dispensing of poisons, that the ingredients must be entered in a book kept for the purpose, but it does not repeat that a record shall be made "of every sale." Although it is not definitely so stated, it is held that the Act of repetition required in the first part of the section is equally necessary in the second part. Mr. Gamble said the difficulty could perhaps be met by the adoption of a system of registering the name and quantity of every poison dispensed, together with the name of the patient in a dispenser's poison book, "kept for the purpose"; for it was conceivable that in the paragraph of Section 17 quoted in the Journal, "ingredients" would mean "poisonous ingredients," since non-poisonous drugs are not included in the Act. There should therefore be no necessity to recopy the prescription, but only to register the patient's name, and the name and quantity of poison dispensed at every sale. Mr. Gamble had brought the subject forward because he thought it had not received its due mead of attention, and he hoped all members would give it their consideration.—The President said that undoubtedly the matter which Mr. Gamble had brought before them was of extreme interest. He was not aware until that evening of Mr. Gamble's intention to bring the matter before the meeting, and consequently he had not given much thought to the question. It had occurred to him, however, that when once the prescription is entered in the book there is no necessity to recopy it if a memoranda is made of the date each time it is repeated.—Mr. C. Morley thought it is altogether unnecessary to re-write a prescription every time it is dispensed, so long as a record is kept of the date of sale, and a note made of the number in the prescription book.—Mr. Pearson thought, seeing it is prescriptions containing poison for injections that are most commonly repeated, that it is a matter for the General Medical Council to take up, and that medical men should be instructed to state when writing a prescription that it is not to be repeated unless initialled and dated by them on every occasion.—Other Members were of opinion that the suggestion in the *Pharmaceutical Journal* as to the recopying of prescriptions if carried out would involve too much time and trouble, especially where forty or fifty had to be dispensed during the day.—Mr. Fell thought the suggestion as to medical men initialling the prescriptions would not be practicable.—Mr. G. Roe's opinion was that a very serious responsibility rests upon the chemist in dispensing poison, and he ought, therefore, to endeavour to carry out the law to the very letter.—Mr. E. W. Hill then exhibited a small piece of apparatus, the "Pearl Suppository Machine," which makes suppositories and bougies in the cold by compression. Mr. Hill gave a demonstration of the facility with which it turns out suppositories in three sizes, and remarked that the machine possesses many advantages over the old suppository moulds, but unfortunately is not as well known as it deserves to be.—The machine was closely scrutinised by the members present, and the general opinion seemed to be that it is a great improvement on the older methods.—A vote of thanks having been accorded to Messrs. Fell, Hymans, Gamble, and Hill, the proceedings terminated.

NEWCASTLE-ON-TYNE AND DISTRICT CHEMISTS' ASSOCIATION.

A special meeting of the above Association was held in the Lecture Hall of the Church Institute on Wednesday evening, February 9, at 8 o'clock, Mr. George Weddell in the chair.—There was a very good attendance of members and their lady friends.—Mr. Robert Davidson took his audience on a tour in the south and west of Scotland, and Mr. Lionel Williamson manipulated the lantern. Many of the views shown were familiar to those members who attended the Conference meetings in Glasgow last August, and were altogether a choice selection.—Mr. Foggan (Bedlington) moved a vote of thanks to the lecturer, and Mr. Merson seconded.—Mr. J. D. Rose (Jarrow) performed a like office for the Chairman and the lanternist, and Mr. Chas. Ridley seconded and put the motion to the meeting.—The gathering was very successful.

BRIGHTON JUNIOR ASSOCIATION OF PHARMACY.

At a meeting of this Association held on Wednesday, February 9, the President, Mr. C. A. Blamey, in the chair, Mr. A. T. Jeeves read a paper entitled

The Pharmacy Stakes—A Straight Tip.

He said during the past year chemists had chronicled two rather notable events in the history of their craft, (1) the forward policy adopted by the Pharmaceutical Society and (2) the rise and spread of the organisation known as the P.A.T.A. The leaders of the Pharmaceutical Society had said a lot and still had a lot to say respecting what they called raising the status of the trade, and with that ethereal and disinterested view they proposed and sketched out a delightful scheme of a higher standard of education, stiffer examinations, and last, but by no means least, increased fees. But from an unbiassed and more liberal standpoint chemists found themselves confronted with two questions—"Is the chemist and druggist of to-day a sufficiently educated man to carry out ably and conscientiously the many and varied duties of his business?" and "Will an increased standard of education and examination produce in the successful candidate a better chemist or a more successful man of business?" He was of opinion that the knowledge essential to the chemist and druggist is not acquired at pharmacy schools, but at the dispensing counter and under the tuition of an experienced tradesman. The reason a qualificd man is able to command a higher position and a higher salary than an

unqualified one was not because of his scientific knowledge or educational attainments, but rather because, by virtue of his qualification, he is legally entitled to retail poisons and to take entire charge during his employer's absence. An examination for qualification is, of course, a necessity, but a stiffer examination appeared to be not only uncalled for by the requirements of the trade, but unjust to the candidate, and accordingly prejudicial to the craft at large. He maintained, therefore, that the educational schemes of the Pharmaceutical Society could not or would not in any way help forward any useful end. Neither did he think that, taking it for granted that the present-day chemist and druggist is sufficiently, if not more than sufficiently, educated for his position and duties, he is likely, in a more or less distant future, to occupy a position in which a higher standard of both elementary and technical education will be the first essential. Elegant pharmacy is now the order of the day, and pills, capsules, plasters, tablets, etc., are turned out quicker, cheaper, and better by large wholesale firms with their up to-date machinery than by the small dispensing chemist with his tin-pot modes of operation. Again, we cannot blind ourselves to the fact that our fellow craftsmen are relying more and more upon commercial enterprise for the bringing in the needful, paying more heed to the front counter than to the dispensing one. Note also the evolution of window dressing during the last twenty years. Where a couple of specie jars used to be the sole adornment we now find small flower gardens, battalions of frogs, and miscellaneous assortments, whose connection with pharmacy it is just a little hard to discover. Things are certainly not what they used to be, for better or for worse the tide has turned, and the wise man is he who takes time by the forelock and quickly acclimatises himself to the new but tolerably lasting state of things. With regard to the two-year-old P.A.T.A., a very large and influential section cordially sympathised with and supported that body, professing to see in the Association's policy the promise of increased incomes and altogether brighter prospects. But apart from all moral reasons, and regarding it as a political question only, he held that as the very name and existence of the P.A.T.A. supports the heretical doctrine of Protection, and is in direct opposition to Free Trade, no real or lasting benefit can come out of supporting it. It appeared only just and right that the public should be able to get any and every thing at the lowest possible price, and if the chemist does not care to sell an article at cost price, he could see no justice in his policy of trying to stop the drug stores opposite from doing so. Apart from the principles involved, what about the *modus operandi* adopted by the P.A.T.A. in furtherance of its ends? All goods on the P.A.T.A. list are sold under condition of their not being retailed below a certain figure. Firms selling these goods below the fixed price are liable on detection to have their supplies cut off, but to carry out effectually that part of the scheme nothing short of a small army of detectives would be of any use whatever. To successfully carry out a scheme like that of the P.A.T.A. it was essential to have a large display of force, so as to compel those black sheep among the trade, whose word is not their bond, to keep to their agreements, if for no higher motive than that of fear of consequences. But the policy of compulsory limited cutting of patent medicines cannot be even temporarily beneficial to the trade at large, nor ought it to tend to give the chemist an interest in, and an incentive to push, that portion of his business which he, as an educated and ofttimes scientific man, should conduct only on sufferance, compelled thereunto by the demands of untoward circumstances. If there were no pickings to be had in the retailing of quack medicines, that fact would stimulate the chemist to larger efforts and a more ambitious policy in the other and higher departments of his business. His straight tip was that the winner of the Pharmacy Stakes is no other than the perennial evergreen old horse, "Brains," which, when ridden by push, and spurred on by perseverance, is absolutely a dead certainty. The wise man who would raise a superstructure to a height limited only by his own ability and ambition must be self-reliant, and not depend on any society or association, expecting it to carry him over the stream of hard times, and land him down on the dry land of a steady income, out of the reach of the surf of keen competition, and to the windward of the drenching spray of company pharmacy. Another point is to be original in whatever line one strikes out; let it be the honest results of one's own brains, not a more or less bad imitation of the fruits of another man's ideas. New occasions teach new duties, and their conduct should be governed by own tact and brains, quite regardless of the opinions of their fellow-craftsmen. There is no calling which gives more scope for thoughtful enterprise than pharmacy. Beyond the ordinary routine of the business there are so many ways of augmenting slender incomes that it is astonishing there are so many lame men in the ranks who are eternally whining and groaning at the badness of the times, when all that they have to do is to take up their bed and walk. Finally, though money is a great factor in the sum of human happiness, when it is procured at the expense of honour and brotherly kindness the exchange is poor indeed. We cannot but admire the motive which actuates those men who stick to old methods and worn-out systems rather than by adopting an up-to-date policy draw custom from their more conservative brethren. But do not imitate them. With brains, push, and perseverance we can remain no outsiders; a fair field and no favour, and may God help the hindermost.—At the conclusion of the paper a general discussion took place, after which Mr. Jeeves was accorded a very hearty vote of thanks.

SHEFFIELD PHARMACEUTICAL AND CHEMICAL SOCIETY.

The annual ball is quite an institution with nearly all the professional and commercial societies in Sheffield, but although the Sheffield Pharmaceutical and Chemical Society has been in existence fully thirty years, the first event of the kind which its members have promoted was held in the Masonic Hall on Thursday night in last week. The function provided so much pleasure to those who were present, and proved such a complete success that the Committee has decided to make it an annual event. The guests numbered 120, and in addition to the pharmacists the medical profession and local public bodies were well represented. The guests included Dr. Hill, Dr. E. Skinner, Dr. Manton, Mr. W. D. Lovedike, Councillor Furness, Mr. G. Squire (President of the Society), Mr. J. B. Pater (Secretary), Mr. G. T. W. Newsholme, etc. Mr. A. R. Fox was the M.C. Mr. Oxley's Band provided the music, and Messrs. T. and J. Roberts carried out the decorations.

EDINBURGH CHEMISTS', ASSISTANTS', AND APPRENTICES' ASSOCIATION.

At a meeting of this Association, held on Friday, February 11, Mr. George Sinclair, President, in the chair, Mr. A. J. Dey read a paper on

Liquid Extract of Taraxacum.

Two commercial samples had been submitted to him which differed so much in appearance that he determined to investigate the subject. In order to fix a standard, a sample was prepared from dandelion root of good quality in strict conformity with the pharmacopœial directions. Seven commercial samples were examined with the following results. Sample A is the standard specially prepared. Copper was found in all the commercial samples.

No.	Sp. Gr.	Alcohol, per cent. by vol.	Extractive from 1 fl. oz. in grains	Copper.
A	1·064	27·95	91·	Absent
1	1·002	35·35	47 5	Distinct
2	0·992	30·65	29·3	,,
3	1 094	27·04	100 5	,,
4	1 088	23·19	121·8	Abundant
5	1·010	19 37	25·	Distinct
6	1·046	40·84	110·8	Trace
7	1·064	30·65	73·	,,

In taste No. 4 was most bitter, the standard sample coming next. All the rest were much alike, except No. 1, which tasted strongly alcoholic. It would seem as if Nos. 1 and 6 were made by the direct percolation process recommended by Squire. A test sample was made by this process, and it was much thicker and darker than any of the samples, but there was not sufficient time to examine it more fully. The results indicate very considerable want of uniformity in this preparation. Some work had been done in the direction of fixing a formula that would yield uniform results, but the experiments had not been completed in time.—Mr. Dey then communicated a

Note on Alcoholic Extract of Belladonna.

A sample which had been standing a few years appeared quite granular, and on examination was found to be full of crystals. A

few of these had been separated and examined, and they proved to be apparently cane sugar. In a paper on this subject (*Pharm. Journ.* [3], xvi., p. 777), Dunstan and Ransom mention that the extract contained much dextrose. But in this case the sugar appeared to be cane sugar because it did not reduce Fehling's solution until after inversion by boiling with dilute sulphuric acid. It had been impossible to trace the history of the sample, and it would be interesting to know if anyone had found cane sugar in any sample previously, and whether it was a natural constituent or added to adjust the percentage of alkaloids.—The same author then read a

Note on Phenacetin.

The author exhibited a sample of phenacetin which, when powdered in a mortar, emitted a strong odour of benzene. The explanation seemed to be that it had been crystallised from solution in benzine, but the odour was so marked as to readily attract the attention of a patient when dispensed in powder form.—The last paper was by Mr. Fred B. Hirst on

The History and Cultivation of the Saffron Plant.

The author gave an interesting *résumé* of the subject and touched upon the uses and adulterations of saffron. The reading of the papers was followed by a discussion taken part in by Messrs. Cowie, Harley, Hill, McBain, McDiarmid, Mackenzie, Reid, Sinclair, and Somerville. In the case of dandelion, it was stated that the official process involved a great waste of spirit. It was mentioned in the case of saffron that Jews purchased it to colour soups, hotel people used it to colour jellies and as an egg substitute. It was used to dye window curtains, and was administered to canaries during moulting. In some parts of the country it was used extensively as a domestic remedy for measles.—On the motion of the Chairman, votes of thanks were awarded to the authors, and the meeting closed.

MIDLAND PHARMACEUTICAL ASSOCIATION.

The Council of this Association held a special meeting on the 9th inst. at Mason University College, Birmingham. Mr. F. J. Gibson (President), was in the chair, and amongst those present were Messrs. A. Southall, J. Poole, F. H. Prosser, F. H. Alcock, C. Thompson, W. C. Scott, and H. S. Shorthouse (Hon. Sec.).—The Chairman pointed out that the business of the meeting was to discuss

The Pharmacy Acts Amendment Bill,

and Messrs. T. W. Chapman, W. R. Selleck, and G. E. Perry, who were unable to attend, had written saying they were in favour of the Bill. In introducing the subject, the Chairman said that the Bill was a good one so far as it went, but he was of opinion that it did not go far enough. Those present agreed with this view, and expressed the hope that the proposed Bill was only an instalment of the more complete statute they required for the proper legal protection of their own and the public interests.—Mr. C. Thompson moved—

> That the Council of the Midland Pharmaceutical Association, having considered the Pharmacy Acts Amendment Bill, are of opinion that it is a step in the right direction, and that it shall receive their support.

—After some further discussion it was thought advisable to wait until it was known when the Bill was likely to be introduced into the House of Commons before appointing a deputation to interview the Members of Parliament for the city and district upon the question of their support to the measure.

LIVERPOOL CHEMISTS' ASSOCIATION.

The usual meeting took place on Thursday evening, the 10th instant, in the Royal Institution, the President, Mr. J. Bain, in the chair. The subject

Maize Oil

was again brought up among the miscellaneous communications, causing a good discussion. Mr. Cowley gave an account of how the Peruvian Indians make an intoxicating drink from maize by chewing it and allowing it to ferment, during which process the oil separates and is used as an article of food, according to his informant, who had resided in the country some time. A method of detecting maize oil as an adulterant of lard might be devised, Mr. Cowley said, on the basis of its high iodine absorption equivalent. A full review of the oil and its various chemical and analytical factors would be found, Mr. Edward Davies, F.I.C., remarked, in a recent number of the *Analyst*, by a townsman of Liverpool—Mr. Smetham, F.C.S., F.I.C. The tale relating to Peru told by Mr. Cowley was very similar to that of the preparation of a drink—kava-kava—in the Pacific Islands.—The President then asked Mr. Edward Davies to read a paper he had prepared (see p. 169) in memory of their late respected ex-President and friend

Mr. Michael Conroy.

At the conclusion the President, Dr. Symes, Messrs. A. C. Abraham, T. F. Abraham, Hornblower, Wardleworth, and Samuel bore feeling testimony to their regret at the loss they as individuals and the Association as a body had suffered by the death of their friend, and it was decided unanimously, on the motion of the President, seconded by Dr. Symes, to instruct the Secretary to convey to Mrs. Conroy and her family the expression of the Association's sympathy in their bereavement. It was mentioned that Mr. Edward Davies at the last meeting of the Council of the Association had been elected an Honorary Member in recognition of his exertions in furthering its work and interests during the thirty or more years he had been connected with it as member, Secretary, Vice-President, and President, and most cordial expression was given generally to the wish that Mr. Davies would long be enabled to take such part in the work of the Association as his advancing years would permit him.—A paper on

Pharmacy in Russia,

was read by Mr. Prosper H. Marsden, at the close of which a few particulars of how to get to Russia, and what was to be seen there in a short visit, were supplied by Mr. A. H. Samuel, who spoke from experience gained by him last autumn, when he attended the Medical Congress at Moscow as a delegate from the Liverpool Chemists' Association. The specimens of labels, price lists, and advertising matter shown by Mr. Marsden were examined with interest by the members, who expressed themselves as being very pleased with the essayist's remarks.

LIVERPOOL PHARMACEUTICAL STUDENTS' SOCIETY.

There was a better attendance at the usual meeting of the above Society at University College on Thursday evening, the 10th instant. The usual routine business having been transacted, the President, Mr. Pierson, asked for

Miscellaneous Communications.

A prescription was shown by Mr. R. H. Mitchell, of which the directions were "Capiat ℥ss, ter die postcibos et post prand.," the proper rendering of which into English was asked for. "A tablespoonful thrice daily after meals" was the result of the general opinion.—Mr. P. H. Marsden wished to draw the members' attention to an obituary notice of their late friend, Mr. Edwin Williams, in the University College magazine, the *Sphinx*.—Mr. H. Wyatt, jun., was then asked to read some

Dispensing Notes.

A good discussion followed, in which most of those present took part.—Mr. Marsden wished to know if it was usual for dilute hydrocyanic acid to be ordered as "drops," unmixed with anything else? He had had an ounce prescribed lately, of which 5 drops in water was ordered for a dose. The prescriber was seen, and the danger of ordering such a powerful remedy in such a fashion was pointed out to him, upon which he ordered a mixture with 5 drops of acid to the tablespoonful.—Mr. Wokes agreed with Mr. Wyatt that alteration of prescriptions was allowable up to a certain point, but that such changes should be always noted on the prescription—a method adopted by Mr. Wyatt he knew, and by the members of the Students' Society generally, but unfortunately rarely by other dispensers. In the case of an ointment of oleate of bismuth containing chrysophanic acid, should heat be used to dissolve the acid or should it be simply rubbed smooth with a little castor oil and then mixed in? Mr. Mitchell thought that bismuth salicylate had the effect of turning the mucilage of acacia made with the powder very acid. As bearing on Mr. Wokes' remarks he would say that he had had to dispense prescriptions which had been previously through Mr. Wyatt's hands, and had found no little benefit from the indications marked by Mr. Wyatt where a departure had been made from the text. He should like to know if a stable solution of salicylate of soda could be made so as to remain colourless or nearly so? In Edinburgh Mr. Harris Burns said it was usual with one prescriber—a

lady—to order quinine and iron mixtures similar to that mentioned by Mr. Wyatt, but without any additional acid. Could Mr. Wyatt say anything as to the solubility of nitrate of silver pills made up with anhydrous wool fat, as he had had a complaint about some recently? Salicylate of soda kept fairly well in a 1 in 2 solution. Weaker solutions soon changed. Bismuth mixtures went best when made with compound powder of tragacanth.—Replying, Mr. Wyatt thought that the practice of ordering potent medicines as "drops" was most reprehensible. English doctors were not by any means the only offenders in this respect, for on the Continent, where most medicines were of such a harmless nature, that prescribers simply ordered them "by spoonfuls," not always specifying whether table or teaspoonfuls were intended, such preparations as "Gouttes de Baumé," containing nux vomica or Ignatius beans, were invariably ordered as drops. Such an ointment as Mr. Wokes mentioned would best be made by dissolving the chrysophanic acid in petroleum ether, or some similar body, and adding to the oleate of bismuth, triturating both in a hot mortar until the solvent was driven off. A fairly stable solution of salicylate of soda could be made as Mr. Burns said, if warm distilled water were used and a suitable glass vessel employed to keep the solution in when made. The iron in the glass, as well as traces of alkali, had more to do with such solutions changing colour than, as many supposed, the much-maligned creosotates had. Lanoline ought to answer well with nitrate of silver in a pill, judging by the results obtained by a member of the Society, Mr. A. C. Shaw, some time since when trying it with permanganate of potash. Mr. Shaw found it answer very well, the pills being easily soluble. He would try and impress on the members the benefit the Society would receive if they would cultivate a few dispensing notes and bring them forward from time to time.

BRADFORD AND DISTRICT CHEMISTS' ASSOCIATION.

On Monday, February 7, at the Bradford Mechanics' Institute, Alderman Henry Dunn in the chair, Mr. W. Lamond Howie gave a lecture, under the auspices of this Association, on

The Scottish Alps.

The lecturer exhibited about 140 photographic lantern slides taken by himself during his own experiences of mountaineering. In the course of the lecture he commented upon the comparative neglect by climbers of the Scottish Highlands during the period of the year when mountaineering can be carried out with the least discomfort and the best results. He recommended from February to May as the period for mountain climbing in this locality.—At the conclusion of the lecture a vote of thanks was accorded to Mr. Howie, who was afterwards entertained at supper at the Victoria Hotel by the members of the Association. After supper the following toasts were proposed:—"Our Guest," proposed by the President, Mr. Hy. Dunn, and replied to by Mr. Howie; "The Pharmaceutical Society"; proposed by Mr. Geo. Rimmington and responded to by Mr. A. H. Waddington; "The Bradford and District Chemists' Association" proposed by Mr. Daniels and responded to by Messrs. Pickard (Hon. Sec.) and Mackay (ex-President); "The Drug Trade," proposed by Mr. Silson, was responded to by Messrs. Wilcock and Newbould; "The President," proposed by Mr. Mitchell, was acknowledged by Mr. Dunn. Messrs. Daniels, Mitchell, and Moulson supplied the musical portion of the evening's festivities, and a very enjoyable evening was spent.

Further Reports on Naphthalan.—Rosenbaum (*Protok. Imper. Kaok. Med Obehch*) states that naphthalan is at one and the same time analgesic, antiphlogistic, antiseptic, and a reducing agent. In therapeutic action it is equal to ichthyol, and it is odourless. It is specially indicated in the treatment of burns, eczema, rheumatism, and acute inflammation of the lymphatic ganglia. It should be applied in the form of a covered dressing, which should be changed daily. On account of the action of air on naphthalan the bottles containing it should be kept well corked. Any stains on the linen which may result from its use may be removed with petroleum or benzene. Joseph (*Deutsch. Med. Woch.*) also reports favourably on this substance, which he has found specially efficacious in the treatment of chronic eczema, particularly that caused by irritating material in certain trades, as among masons, painters, compositors, tanners, etc. In many cases a complete cure was effected by its use in a few days. —*Les Nouveaux Remèdes*, xiii., 567.

LETTERS TO THE EDITOR.

The New Pharmacy Bill.

Sir,—I beg your indulgence to allow me to protest against the action of Mr. F. Pilkington Sargeant in challenging the ruling of the Chairman of the Manchester meeting. The statement from the chair that the majority was in favour of the draft Bill was quite explicit. Those who then neglected to call in question that statement should now abide by their own conduct and take the consequences. To do otherwise is neither courteous nor manly. From the tenour of Mr. Sergeant's letters it is apparent that either he is very simple or imagines other people to be so. How delightful a state of things would ensue if inspired letters to chairmen of public meetings were allowed to count as votes! What a charming and engrossing occupation chairmen would find in speculating upon the "ayes" and "noes" who found it inconvenient to stay until the question was put? If the authors of the said letters were such ardent opponents of the measure why did they not take the trouble to come and record their votes? Perhaps, however, I am doing Mr. Sargeant an injustice. It is possible he is suffering from a disease (*cacoethes scribendi*) which is mildly epidemic in this district just now. If this is so, may I suggest that he should let it run its course in the production of a new 'Chairman's Manual' rather than in impugning the *bonâ fides* of the Chairman of the Manchester meeting?

Manchester, February 19, 1898. William Kirkby.

Sir,—Probably many who, like myself, are merely Minor men would feel some diffidence in pressing their claims to membership, as it "was not in the bond" when they signed articles. Besides, if it is to be grudgingly conceded it will only be lightly esteemed. They have got on very well without it. What to my mind is of much more importance is the way in which many who are legally qualified are throwing away the advantage they possess by dubbing their establishments "stores," and so equalising themselves with the hopeless incapables who sail under that pirate flag. The good old title of "chemist and druggist" has been respectable more years than any other, and is quite good enough for yours truly,

London, February 11, 1898. One of Them (125/30).

Bacteriology for Pharmacists.

Sir,—Will you allow me to make a slight correction in your report of the discussion on my paper? In replying to Mr. Smith, I said horses were inoculated with diphtheria bacillus "toxin" (not the organism), in order to produce "antitoxin serum." The following particulars will make this quite clear. "A diphtheria toxin is prepared by growing a pure culture in alkaline beef broth at 37° C.; this operation takes three weeks. It is then filtered through a Pasteur-Chamberland filter and strength ascertained. This is done by finding the volume required to kill, within twenty-four hours, a guinea-pig weighing 500 grammes. This volume should be at or near 1/10th of a centimetre; if near this standard it is ready to commence immunising animals. Horses are used, as they yield large quantities of serum without injury to health. 10 C.c. is injected into a healthy horse; further injections are made from day to day, until so much as 200 C.c. can be injected without injury. When this point is reached the horse is immunised against the poison to such a degree that it would bear an injection of the living bacillus. All that is necessary is to collect blood from the animal with proper precautions, and reserve the serum for use." It will, I think, be obvious, as I stated at the time, that this is rather outside general pharmacy, and within certain limits this applies also to the physiological effects of formic aldehyde. As a general disinfectant its irritating properties render it objectionable, whilst its specific use for hardening tissues appears to me to supply a sufficient reason against its internal use in even the most dilute condition. From some biological experience and reasoning by analogy, the various mucous linings and delicate villous surfaces in the human body cannot, without injury, be exposed daily to unnatural chemical solutions. My condemnation of "domestic filters" is based on observation, that the average householder who buys a filter considers he has purchased a security against disease contamination, and does not expect (or is he informed?) it is necessary to take the filter to pieces and perfectly re-sterilise at least once a week; "domestic filtration," for manifold reasons, must always be impracticable. The community has a right to insist on the purity of all water delivered for consumption, as well as that milk shall only be drawn from cattle which

have passed the "tuberculin test" and are certified free from tuberculosis. At present it is to the farmer's interest to keep a diseased cow in milk as long as possible, for when killed it would be condemned as unfit for food. There, however, are important questions for general consideration and more likely to ripen when the public become familiarised with the "popular side" of bacteriology. I am obliged to Mr. Baldock for his friendly corroboration, and regret he had not the opportunity he desired of addressing the meeting. He will find I was not unmindful of the conveyance of disease by milk. So far as tuberculosis is concerned, the State can and should provide against it, but the conveyance of typhoid and diphtheria arising from carelessness in cleansing dairy utensils, etc., is beyond legislative control. The public demand "cheap milk," and anything "cheap" means the employment of "cheap labour," with its accompanying dirt, ignorance, and recklessness. A heavy penalty we know is frequently exacted for starvation prices; this argument may be applied with considerable advantage to "cheap pharmacy." Several correspondents I am unable to reply to individually, and will ask them to kindly accept this general explanation, that I did not find it practicable to compress into the time particulars of innumerable culture methods, media, and interesting laboratory experiments. My object was to bring the leading features of bacteriology to the notice of such of my *confrères* who hitherto might have considered this subject outside the province of pharmacy. To those (few in number I hope) who expected a more expansive reposition, I tender apology.

London, February 15, 1898. Leo Atkinson.

The Use of the Metric System by Pharmacists.

Sir,—When I find the editor of the British Pharmacopœia writing so recently as the 19th ult. recommending "*Festina lente*" as the motto for British pharmacists, and adding "that one or two generations will pass before the whole body of medical practitioners will prescribe in terms of the metric system," I think there is some justification for "a prominent Scottish pharmacist" characterising your contemplated action with regard to it as "premature," although I myself should not have chosen so to express my own opinion on the subject, as I think it would be better described as a decidedly forward policy, but one which can scarcely recommend itself to the great majority of your readers, unless you can assure them of the equally strong co-operation of some of the medical journals to endeavour to secure by voluntary means and within a reasonable time the general adoption of the new system in prescribing, for notwithstanding what you maintain, I am unable to see how chemists and druggists as a body can "act as pioneers of the metric system," and individual enterprise in this direction can only have a very limited influence. On the other hand, a very great deal might be done in say three years' time, independently of legislative inactment, by a voluntary and mutual agreement between prescribers and dispensers, and in view of the unpleasantness of working with two such totally different systems of weights and measures, I venture to think that the hearty support of the trade would be assured to any such movement. Then there is a tendency to minimise or to neglect altogether the importance and the urgent need for a full and accurate system of conversion tables for grammes and cubic centimetres. You say quite properly that this is a clumsy method of dispensing prescriptions written in the decimal system, but at the same time it is quite practical, and for many of us most expedient, besides that outside of the Pharmacopœia. In formularies, presciption books, journals, and elsewhere there is a large body of material which it might be desirable or necessary to express in terms of the new system. There is therefore nothing more certain than that proper tables of equivalents will occupy so important a place in the dispensary that their inclusion in the Pharmacopœia itself seems to be the natural corollary to the position the Medical Council have taken up in the matter, an arrangement for which there is abundant precedent in other official publications which deal with factors which are equally difficult of conversion. In connection with this subject I venture to enclose for your inspection the equivalents we have found it necessary to prepare for ourselves. Taken in connection with what precedes they may furnish you with helpful material towards maturing your own projected action, which will I trust be carried out in such a way as to command the interest and support of the whole trade.

Dundee, February 12, 1898. C. Cummings.

Sir,—Your recommendations respecting preparedness in the use of the metric system will doubtless receive the attention it deserves by all who are alive to their own interests. It is very certain educated customers will soon be ordering their goods by the gramme, etc., and it behoves chemists to be abreast of the times. As an ounce of practice is worth a pound of theory, would it not be a great help if you were to print the equivalents in all your reports, and also give test prescriptions with explanations for practice? as old fogeys will need help as much as apprentices, and this would be a great encouragement to work up the subject. Chemists do not like buying the weights and measure before they are stamped, and you might also use your influence, that that might be done at once, without waiting for the inspectors' standards.

February 8, 1898. A Provincial Chemist (125/26).

Public Dispensers' Association.

Sir,—May I, through the medium of your correspondence page, request any public dispenser who does not receive a copy of the rules of the Public Dispensers' Association by February 21 to write to me at this address? All public dispensers are cordially invited to attend the next meeting of the Association at the Bloomsbury Hall, Hart Street, on February 25, at 8 p.m., when Dr. Macnaughton Jones will give an inaugural address.

The Shuttleworth Club, Fye Foot Lane, Queen Victoria Street, E.C., February 15, 1898. G. F. Forster, *Co-Secretary.*

Dispensing Oil of Male Fern.

Sir,—A short report appears in your Journal of last week on a paper read by Mr. F. H. Alcock on "Dispensing Difficulties," in which he comments upon the use of compound tragacanth powder to form an emulsion with oil of male fern; he suggests the substitution of 5 grains of powdered soap in the 2 ounces of water. It would appear that he overlooked entirely the use of fresh mucilage or powdered gum acacia, both of which are recommended in the 'Companion' to which he refers. Acacia was formerly the only substance given in that work for emulsifying oil of male fern, but the use of compound powder of tragacanth could not be ignored, seeing that it has been recommended by several authorities for dispensing this oil, and it certainly answers the purpose, but does not produce quite such a nice looking mixture as acacia, which leaves nothing to be desired. Gum acacia is also distinctly better than powdered soap; it diffuses the oil much better than the latter, keeps it longer in suspension, and does not alter the colour of the product on standing. The best method of making an "elegant" draught with oil of male fern is to use very fresh mucilage made at the time, as in the formula given below, or to use the alternative method given in the 'Companion' under "Acaciæ Gummi," namely to rub the oil with the powdered gum and form an emulsion by the careful addition of water, which must be added in very small quantities at first. Haustus Filicis: Oil of male fern 60 minims; powdered gum acacia, 60 grains; peppermint water to 2 oz.; put the powdered gum into a mortar and make it into a thick mucilage by the addition of 90 minims of water, add the oil and mix thoroughly; whilst continuing the rubbing add carefully the water in small portions at a time until an emulsion is formed, and finally the remainder of the water.

London, February 17, 1898. P. W. Squire.

OBITUARY.

Brown.—On February 10, James Brown, Pharmaceutical Chemist, Birmingham. Aged 52.

Davison.—On February 11, Thomas Davison, Chemist and Druggist, Glasgow. Aged 67.

[Several Letters and Answers are held over.]

COMMUNICATIONS, LETTERS, etc., have been received from Messrs. Addison, Andrews, Atkinson, Baldock, Barker, Bayley, Bullen, Campkin, Carter, Cummings, Currie, Forster, Fox, Gamble, Hill, Holliday, Ingham, Jackson, Jones, Kirkby, Lewin, Lockerbie, Merson, Pearson, Peck, Sharman, Smith, Spooner, Stoke, Taylor, Tocher, Van, Vibert, Warrell, Wyatt.

"THE MONTH."

Artificial Indigotine. Synthetically prepared indigotine, according to O. N. Witt (*Chem. Ind.*, xx., 454), has passed the experimental stage, and is now likely to become a successful rival of natural indigo. It can be produced at a price comparable with good quality indigo and cheaper than refined indigo. There are several points in its favour, such as purity of product, fineness of division, and in its being readily tested; whilst the synthetic indigotine dyes wool equally as well as natural indigo, the former, through lack of impurity, does not answer so favourably with cotton until the cotton fibre has been impregnated with certain substances acting as mordants, such as Turkey red oil, glue, albuminoids, etc., but cotton so treated and dyed has a fine purple shade. For the manufacture of indigo extract and indigo carmine, synthetic indigotine is now exclusively used by one firm of manufacturers in preference to refined natural indigo.—*Journ. Chem. Ind.*, xvii., 41.

Separation of Mercury and Bismuth. The separation of mercury and bismuth salts can be accomplished, according to Vanino and Treubert (*Ber.*, 31, 129), by adding to the slightly acid solution of the mixture of mercuric chloride and bismuthic oxychloride an excess of a solution containing hypophosphorous acid and hydrogen peroxide, 1 drop of the former to 1 C.c. of the latter. The mercury separates in about one hour as calomel, which is filtered off, washed with dilute hydrochloric acid and cold water, then dried at 105°. The filtrate is warmed, after the addition of caustic soda to alkalinity, and the bismuth precipitated as metallic bismuth by the addition of a further quantity of hypophosphorous acid.

Rhodinol or Geraniol? Poleck maintains (*Ber.*, 31, 29), as the discoverer, with Eckart, of the alcohol $C_{10}H_{18}O$ in German and Turkish rose oil, the right to decide that the name rhodinol and not geraniol should be applied to this constituent of rose oil, notwithstanding that Bertram and Gildemeister have shown that the rhodinol of Poleck is identical with the alcohol of geranium oil and called geraniol by Jacobsen several years previously. The reasons for preferring the name geraniol to rhodinol have already been fully discussed in the Journal (see *P. J.*, 59, 417).

Malt Extracts. According to the results obtained by O'Sullivan (*Journ. Chem. Soc.*, 1876), the digestive action of diastase on soluble starch is not increased or diminished by varying the temperature up to and below 70° C. The only difference is in the relative proportions of the products formed. That is to say, at a temperature below 63° C. diastase has the same starch-converting power as at a temperature between 68° to 70° C., and *vice versâ*. The following results of O'Sullivan show this:—

	68-70°		below 63°
Maltose	17·40	..	67·85
Dextrine	82·60	..	32·15
Product	100·0	..	100·0

Therefore, the actual starch-converting power of a malt extract is the same whether tried at 70° or at 60°. It would be erroneous to state that a malt extract is better for yielding 67·85 per cent. of maltose, and 32·15 per cent. of dextrine at 60° than a malt extract giving 17·4 per cent. of maltose, and 82·6 per cent. dextrine at 70° when the starch-converting value of the malt extract is the same at both temperatures. Hence it gives a wrong impression to say that a malt extract forms 2·9 times its weight of maltose at 70°, and three times as much at 60° (see *B. M. J.*, Feb. 5, p. 383), when the potentiality of the malt extract is the same at both temperatures

Albumoses. The usual method of determining the amount of albumoses in meat preparations by precipitating with ammonium sulphate has many disadvantages in the course of the subsequent operations, especially when the amount of nitrogen in the precipitate is ascertained by Kjeldahl's process. Bömer has previously suggested zinc sulphate for the purpose, and Baumann and Bömer now find that the use of zinc sulphate is in every way more advantageous and quite as efficacious for complete precipitation of the albumoses, moreover, the subsequent separation of peptones, meat extractives, and ammonium salts, can be accurately carried out by precipitation in the filtrate with phospho sodic tungstate in the usual manner.—*Zeits. für Untersuchung der Nahrungs und Genussmittel*, 1898, 106.

Determination of Nitrogen. K. Wedemeyer endorses the statement of Gunning and others as to the advantage of the addition of potassium sulphate in the determination of nitrogen by Kjeldahl's method, as the reaction is so accelerated that the operation can be completed within one hour.—*Chem. Zeit.*, xxii., 21.

Romanium. This is the name given to a new alloy of aluminium with tungsten and nickel. It is comparatively light and resists acids well. It is said to have the consistence of good manganese bronze, and is extremely malleable; it contains 95 per cent. of aluminium.—*Scient. Amer.*, lxxviii., 51.

Density of Gases. T. Schlœsing has devised an ingenious method of measuring the density of gases, which is based upon the balancing of two columns in an apparatus consisting of two vertical tubes, each 1 M. long, communicating at their lower ends by a three-way tap. Carbon dioxide or some other easily absorbed gas of known density is passed into one tube and the gas to be examined in the other; after allowing them to communicate by opening the tap, a state of equilibrium between the two gases and the air is set up in about four minutes, and the level of the invisible surfaces of separation is then determined by absorbing the carbon dioxide with potash.—*Comp. rend.*, cxxvi., 476.

Testing Formaldehyde. C. E. Smith describes a modification of Legler's ammonia method for testing formaldehyde, which yields results closely agreeing with those obtained by the hydroxylamine, fixed alkali, and ordinary ammonia methods. The following is the method of procedure:—Dissolve 2 Gm. of pure neutral ammonium chloride in 25 C.c. of water and introduce the solution into a flask provided with a well-fitting stopper. Then add 2.25 Gm. of the sample, run in from a burette 25 C.c. of normal potassium or sodium hydroxide, add a few drops of solution of rosolic acid, and determine the excess of ammonia with normal sulphuric acid. Each 1 C.c. of potassium hydroxide solution used indicates 0·5 per cent. of formaldehyde. The ammonia combines with the formaldehyde nearly as fast as it is liberated, and the final excess is exceedingly small.—*Am. Journ. Pharm.*, lxx., 91.

Laudanum. C. Wolley Dodd asks why the name laudanum was transferred from the gum of the *Cistus* to a tincture of opium? That laudanum, ladanum, labdanum are different ways of spelling the same word there can, he says, be no reasonable doubt. Clusius, writing in the sixteenth century ('Rariorum Plantarum Historia,' p. 81), says "the gum of the *Cistus* is called in Greek and Latin ladanum, and in shops laudanum." Skeat ('Concise Etymological Dictionary,' p. 239) fully discusses the word laudanum, and shows that it is certainly the same as ladanum. Whilst recently reading the "Life of Paracelsus" in the 'Penny Cyclopædia," Mr. Dodd found

that this alchemist, before the middle of the sixteenth century, was the inventor of a wonderful panacea, which he called laudanum. In the dictionary at the end of his biography it is thus described :—"Laudanum Paracelsi est medicina *laude digna*, cx duabus tantum rebus constans, quâ morbos fere omnes curabat." As the same biography tells us that Paracelsus was the first to bring opium into general use as a medicine, and as the composition of laudanum was kept by him a secret, it is highly probable that it was a mixture of opium and the gum of the *Cistus*, which would operate powerfully as an anodyne, and become as universal a popular remedy as chlorodyne at present is in France. The words *laude digna* in the above passage show the probable origin of the absurd derivation *laudandum*, *i.e.*, "to be praised," which will be found given for laudanum in almost all old dictionaries.—*Gardeners' Chronicle*, xxiii., 166.

False Kola Nut.

Two years ago some false kola nuts came into the London market from San Domingo, and were identified as, probably, the seeds of *Mora excelsa* (*P. J.* [4], iii., p. 380). Mr. J. H. Hart, a corresponding member of the Pharmaceutical Society in Trinidad, writes to say that he has compared a specimen received from London and has compared it with the genuine seed of *Mora excelsa*, and finds that the peculiar form of the starch granules is the same in each.

Omphalea Megacarpa, Hemsl.

Mr. Hart also wishes to direct attention to the value of the oil obtained from the seeds of this euphorbiaceous tree as a purgative. The government chemist in Trinidad, Professor Calmody, has obtained from the seeds a beautiful bland, tasteless oil. Half the oil contained in a single seed is a brisk purgative, acting in about three hours, and not causing pain, and the action is of short duration. The seed is described as follows :—The shell of the seed is hard, rough black, and somewhat brittle, whilst the interior is edible and of sweet, nutty flavour, without any prominent characteristic. The fruit in which they are contained is some 3½ in. in diameter, and has a glabrous outside skin, which is a quarter to three-eighths of an inch in thickness, and somewhat pulpy and fibrous. Surrounding the seeds there is found a thin parchment covering, but this is partly aborted. Beneath this is a large quantity of starchy tissue, three-eighths of an inch in thickness. The seed alone weighed only 13·150 grammes, but the starchy pulp surrounding a seed of medium size weighed 31·175 grammes, fully 50 per cent. of which was found to be pure starch, having peculiarly irregular, partly triquetrous, and partly spherical grains, which adhere together in the first instance in masses of 10 to 20 grains, the triquetrous and irregular side inwards, and the rounded side outwards. The nuts are said to be eaten in the woods by travellers and hunters, and are hence known as the "Hunterman's nut." Unless the purgative principle can be driven off by heat, it seems more probable that the starchy part (? arillus) would be the edible portion. Mr. Hart has forwarded a few of these seeds to the Museum of the Society. The seed is without any disagreeable flavour, but has a sweetish taste like an ordinary nut. So prompt and agreeable a purgative, causing no pain and acting for a short time only, seems worthy of attention. Although this new species of *Omphalea* is at present considered to be rare, it may be pointed out that similar properties are attributed to the oil of *Omphalea oleifera* or tambor, a tree found at Acajutla, near Sonsonate, and described by Mr. Hemsley (see *Pharm. Journ.* [3], xiii., p. 301). There can be little doubt, therefore, that the trees of the genus are widely distributed over Central America. The fruit appears to be ripe in February and March.

Hydrocinchonine.

Dr. Hesse has been further investigating hydrocinchonine, which was first obtained by Caventou and Willm by oxidation of commercial cinchonine sulphate with potassium permanganate. It has already been pointed out that hydrocinchonine naturally exists with cinchonine, and can be separated from it in several ways, whilst the einchonine of *Remijia purdieana* has been found by Dr. Hesse to contain it in relatively larger quantity. The two mixed bases are best separated by converting them into platinum salts in a very slightly acid solution, so that the excess of hydrochloric acid does not exceed ¼ molecule HCl, and removing the flocculent hydrocinchonine salt from the granular platinum salt of cinchonine. Hydrocinchonine was then obtained by treating the platinum salt with ammonia and recrystallising from hot alcohol. Hydrocinchonine melts at 268° to 269° C., and has a rotatory power of $[\alpha]_D = + 204°{\cdot}5$ in absolute alcohol at 15° C. The sulphate $(C_{19}H_{24}N_2O)_2H_2SO_4{\cdot}12H_2O$, and sulphates containing 9, 6, or 2 molecules of water have been obtained. They all lose the water of crystallisation at 100° to 120° C. Hydrocinchonine sulphonic acid, $C_{19}H_{23}N_2O,SO_3H$, H_2O was obtained by dissolving hydrocinchonine in sulphuric acid (1·84 sp. gr.), allowing to stand 48 hours, adding water, and nearly neutralising with ammonia. The greater part of the sulphonic acid separates out, and can be recrystallised from boiling water. Dr. Hesse differs in several instances from Skraup's work on hydrocinchonine, and also objects to Skraup substituting the name "cinchotine" for that body.—*Annalen*, 300, 42.

Alkaloids of Lycoris Radiata.

Morishima has isolated two alkaloids from *Lycorisradiata*—lycorine, precipitated by sodium carbonate from sulphuric acid solution, and sekisanine. Lycorine, $C_{32}H_{32}N_2O_8$, forms large colourless polyhedric crystals, which turn yellow at 235° C., and decompose at 250° C. to a deep-brown resinous mass ; they are barely soluble in water, sparingly so in ether, alcohol, and chloroform. The solutions in acids give precipitates with the usual alkaloidal reagents. The gold salt is easily decomposed, and the platinum salt melts at 210°. $K_2Mn_2O_8$ in neutral solution furnishes a brown precipitate, which is dissolved with a fine fluorescence by an excess of hydrochloric acid. The fluorescence is also produced by dilute bromine water. The hydrochloride, $C_{32}H_{32}N_2O_8{\cdot}2HCl + 2H_2O$, crystallised from hot water in colourless bitter shining needles, melting at 208° C. It produces general paralysis on frogs, and death through paralysis of the heart muscles ; on warm blooded animals it gives rise to vomiting, diarrhœa, and finally collapse. No special influence is apparent on the arterial or respiratory organs. Subcutaneous injections produce no irritation. Sekisanine, $C_{34}H_{24}N_2O_9$ or $C_{34}H_{36}N_2O_9$, crystallises from dilute alcohol in long colourless anhydrous columns, which are odourless and tasteless, melting at about 200° C. It is scarcely soluble in boiling water, sparingly in ether, chloroform, and benzol, readily in alcohol. It is only partially precipitated from acid solutions by sodium carbonate and alkaline solutions, being soluble in excess of the latter. The platinum salt melts at 194° C. It gives no precipitates with the usual alkaloid reagents, and no fluorescence with bromine water, or $K_2Mn_2O_8$. Crystallised salts could not be obtained. Physiologically, it is quite inactive.—*Chem. Zeit. Rept.*, xxii., 13, after *Arch. Experiment. Pathol.*, 40, 221.

Peru Balsam.

K. Dieterich has obtained authentic samples of Péru balsam from Honduras which represent the pure natural product of the tree. The author distinguishes three qualities of the product, representing the first, second, and third flow respectively, mixed with a few traces of bark. The three

varieties differ from the commercial products by being much thicker, also much clearer and of darker colour, and having a more intense balsamic odour. The author contradicts the usual supposition that the same tree furnishes balsam of the same quality, since the three samples examined showed different ester numbers. The balsams examined furnished 77 per cent. of aromatic bodies (cinnamein, etc.), and only 13 per cent. of resin ester, while the commercial products never have more than 65 to 75 per cent. aromatic substances. The proportion of cinnamein differs to the same extent, and the residue insoluble in ether was found to be 4·38 per cent., or 1·5 to 3 per cent. more than those of the commercial products. On this basis a balsam having less than 65 per cent. of aromatic substances and more than 28 per cent. of resinous matter should be considered as doubtful quality.—*Berichte d. Pharm. Ges.*, 1897, 437.

Filtration through Cotton.

D. R. Dom strongly recommends absorbent cotton as a filtering medium, the chief advantage claimed for it being its rapidity of action, which renders it of special value in filtering preparations containing volatile or readily oxidisable constituents, such as medicated waters, spirits, and ferrous preparations. The difference in viscosity of preparations requiring filtration must be allowed for by greater or less compression of the cotton plug. As a general rule, however, the cotton should be rolled into a cone-shaped plug, which is then to be pressed down carefully into the neck of the funnel in such a manner that the bulk of the cotton remains in the body of the funnel. A glass rod is then pressed gently on the cotton and the liquid poured down the rod. In the case of fluid extracts and other preparations containing much suspended or sedimentary matter, cotton is not suitable for filtering purposes.—*Bulletin of Pharmacy*, xii., 54.

Glutamin and Ricidin.

E. Schulze has isolated glutamin, $C_5H_{10}N_2O_3$, from the etiolated germinating shoots of the castor oil plant, and also a new nitrogenous body, which he calls ricidin, and to which the formula $C_{12}H_{13}N_2O_3$ is given. It crystallises in small colourless prisms, melting at 193° C. Ricidin is present to the extent of 3·5 per cent. in the cotyledons, and a little over 1 per cent. in the hypocotyl and the root.—*Berichte*, xxx., 2197.

Comparative Structure of Leaves.

J. O. Schlotterbeck and A. Van Zwaluwenburg have undertaken the comparison of the structure of the leaves of *Datura stramonium*, *Atropa belladonna*, and *Hyoscyamus niger*, in the hope of determining their characteristic features, so as to help in their identification in the form of fine powder. Unbroken dried leaves when very brittle were soaked in 50 per cent. alcohol and then spread out, whilst before cutting sections they were transferred to 96 per cent. alcohol. The sections were mounted in chloral hydrate solution, which acts as a clearing fluid. Stramonium leaves appeared smooth, sinuate, unequal at the base, with round perforations, and a prominent midrib underneath; the belladonna leaves were broadly ovate, narrowed into a petiole, and the entire margin is smooth; hyoscyamus leaves were hirsute, deeply sinuous, and clasping at the base. The dry powders from the leaves were mounted in chloral hydrate solution direct. The stramonium powder contained elongated palisade-cells, stellate crystals, a few cubes, and thick-walled, warty hairs; belladonna powder contained large round crystal cells, full of crystal sand or acicular crystals; whilst hyoscyamus powder contained prismatic crystals and, occasionally, some stellate ones. —*Pharm. Archives*, i., 1.

Selective Stain for Fat.

For detecting fatty degeneration of the tissues Herman Rieder reports favourably of the method first recommended by Daddi, of Turin, of staining reactions of suspected organs with "Sudan III." Frozen sections give the best results, or those fixed in Mueller's fluid and glycerin. The tissues must not be hardened with absolute alcohol nor cleared in bergamot oil, cedar oil, or xylol, nor mounted in balsam. Glycerin only should be used. The tissues other than fat may be counter-stained in hæmatoxylin. A saturated solution of "Sudan III." in 96 per cent. alcohol is prepared, which is then diluted with two-thirds of equal volumes of water and alcohol. A few minutes' immersion is sufficient to stain sections, which should then be washed out in 60 to 70 per cent. alcohol. The coarse granules of the oxyphile or eosinphile bodies of the blood do not take the stain, thus affording additional proof that these bodies are albuminoid and not fatty.—*Deutsch. g. Archiv für Klin. Med.*, through *Intern. Med. Mag.*, vii., 59.

Tyrosin and Viper's Venom.

In the course of his researches on the venom of serpents, C. Phisalix has found cholesterin, extracted from biliary secretion, to exert a marked immunising action on the venom of vipers. He has followed this discovery by finding that the same property is shared by tyrosin. He has experimented with the pure substance, obtained by G. Bertrand from a species of *Russula*, and also from that derived from the juice of dahlia tubercles. Although the injection of a small quantity of tyrosin suspended in water allows an animal to subsequently receive a lethal dose of viper's venom without harm, it does not, unfortunately, have the same effect when administered subsequently to the poison; in this case death is merely retarded for some hours. The effect of dahlia juice is remarkable, since it is more markedly antagonistic to the serpent venom than can be accounted for from the amount of tyrosin it contains. It is the first instance in which a vegetable juice has been found serviceable as a vaccine to snake poison.—*Comptes rendus*, cxxvi., 431.

Röntgen Rays and Bullet Wounds.

The eminent German military surgeon, Professor Von Bergmann, does not consider that the Röntgen rays will prove of very great service in the treatment of bullet wounds where the projectile is still left in the wounds, since he points out that the bullet, *per se*, is generally harmless, as it is usually aseptic. The danger of such wounds arises not from the bullet, but from small particles of septic matter, such as cloth, which it carries into the wound in its course. Removing the bullet shortly after an injury would still leave such germ-harbouring substances in the track, and by cutting down upon it the entrance of air into the wound would be facilitated, favouring the growth of pyogenic organisms.—*Med. Rev.*, through *Inter. Med. J.*, vii., 15.

Novel Vacuum Tubes.

Professors Trowbridge and Burbank, in their interesting paper on the source of the x-rays (see *ante*, p. 140), describe a novelty in vacuum tubes depending upon the abolition of the space between the anode and cathode. A continuous wire passes through the exhausted tube, and the tube itself is placed in a circuit containing a spark gap and a Trowbridge rheostatic machine, which is charged by means of a battery of ten thousand storage cells. The condensers of the machine are charged in parallel and discharged in series, the voltage obtained approaching a million. As a result the tubes glow all over with a brilliant phosphorescence, and *x*-rays are freely given off. A beam of cathode rays can be reflected upon the wall of the tube by means

of an aluminium mirror attached to the wire inside, and *x*-rays can then be detected outside the tube, opposite the fluorescent spot caused by the mirror. Moreover, the beam can be deflected by a piece of tinfoil stuck on the tube over the fluorescent spot. There is no distinction apparent between anode and cathode rays at extreme exhaustions. The *x*-rays are given off both when the wire constitutes the cathode of the circuit and when it forms the anode; it is suggested, therefore, that the term electric rays might be a more comprehensive one than either cathode rays or *x*-rays.—*Phil. Mag*, xlv., 185.

Ripening of Cheese.

H. L. Russell and S. M. Babcock consider that profound changes of a physical and chemical nature, which occur in milk from which bacterial fermentations have been excluded, are of a non-vital character and due to the presence of ready formed enzymes in the milk as obtained from the cow. Moreover, they have separated out proteid converting enzymes, and proved that they exert a curdling as well as a digesting function when applied to milk. They believe, therefore, that the ripening of hard cheese is caused by the joint action of bacteria and enzymes.—*Nature*, lvii., 373.

New Hydrostatic Balance.

Dr. B. W. Gerland describes a new hydrostatic balance, the beam of which has two knife-edges of steel working on agate planes, the end one being placed parallel with the central knife-edge. The divisions are sharply cut and the riders have a V-shaped edge, so that they necessarily fall into their true position without loss of time. The horizontal arm of the stand carries a circular spirit level, in addition to a divided arc, and two levelling screws in the feet serve to adjust the position. The end knife-edge supports a stirrup suspender with an agate plane, to which the platinum wire of the sinker is hooked. An instrument provided with a Reimann's sinker, displacing 5 Gm. of water at 150° C., works accurately to the fourth decimal.—*Journ. Soc. Chem. Ind.*, xvii., 13.

Oat Smut as a Pigment.

D. Paterson recommends the use of the deep brown or sepia-coloured spore dust often seen on cereals as an artist's pigment. Twelve heads of smutty oats yielded 6 Gm. of the dust, and this was mixed with gum and water to form a water-colour pigment, after a preliminary moistening with a few drops of alcohol. The pigment is not appreciably affected by light or air, even when exposed for several months, and with mild diffused daylight—such as that of an ordinary, well-illumined room—the colour remains quite fast and unaltered. In its deepest tones it is of a fine sepia shade, deepening to a brown-black, and on diluting with water or Chinese white, pleasing tints of a flat brown, of the pheasant-egg cast, are obtained.—*Nature*, lvii., 364.

Insects and Poisons.

W. A. Dixon records a case in which wheat poisoned with strychnine was devoured by weevils with impunity, his note being called forth by a reference to the caterpillar of the Spurge Hawk Moth, which feeds exclusively on the exceedingly poisonous Sea Spurge. It is suggested in the same paper that the reason certain insects are so little susceptible to powerful poisons is probably the fact that they are less highly organised than animals to which the same substances prove fatal. Dr. T. R. Fraser has shown that the caterpillar of *Deiopeia pulchella* is unaffected by the eserine contained in the kernel of the seed of *Physostigma venenosum*, which it feeds upon, though the same insect is quickly killed by means of hydrocyanic acid. On the other hand, a weevil named *Anthonomus druparum* is alleged to be unaffected by the last-named poison, because it feeds with impunity on the kernel of *Prunus cerasus*. The question arises, however, whether or not hydrocyanic acid enters as a factor into the last-mentioned case.—*Nature*, lvii., 365.

Thyroid as a Galactogogue.

From observations on a few cases Dr. Stawell is inclined to attribute a marked galactogogue action to thyroid extract. In a communication to the *Intercolonial Med. Journ. of Australia*, he states that in certain cases its effect is very marked, and the milk secreted appears to be perfectly normal in character. No alteration in the diet or habits of the patient were made during treatment.—*Therap. Gaz.*, xxii., 49.

Isolation of Bacillus Typhosus from the Soil.

Availing himself of the well-known fact that *B. typhosus* is an extremely mobile organism, Sheridan Delépine has been able to isolate it from the soil of privy pits, an extremely unfavourable source, by the following device. A small quantity of the filth was placed at the bottom of a sterile test-tube, another smaller tube with a pin hole at the bottom was inserted into the larger one, and ten C.c. of alkaline peptone bouillon cautiously introduced. The tubes are plugged with wool in the ordinary way and incubated at 37° C. Drops of fluid from the inner tube were then removed and cultivated. It was found that the motile Erbeth bacillus had the power of penetrating the aperture of the inner tube, and thus a purer culture was obtained from the liquor contained in it.—*Pub. Health*, x., 155.

Prescribing Methylene Blue.

Dr. Harrington calls attention to the importance of care on the part of prescribers when ordering this remedy that the name should be written in full, and not contracted to "methyl. blue." He quotes a case in which poisoning occurred where a prescription was written "methyl. blue, 3 grains" instead of "methylene blue." Pyoctanin, Merck's methyl blue, was supplied, and produced purging and vomiting. Prescribers should be aware that methyl blue and methylene blue are two totally distinct bodies, and that only the latter is suitable for internal use.—*Canad. Pract.* through *Therap. Gaz.*, xxii., 44.

Value of Antiseptic Soaps.

M. Curzio relates his experiments on the value of so-called antiseptic soaps, basing his results on the effect of the soap on *B. pyogenes aureus*. He finds that 1 per cent. *sublimate soft soap* is neither aseptic nor antiseptic even after twenty-four hours' contact with the micro-organism. *Sublimated hard soap* is but little more active. *Carbolic soap*, 10 per cent., has no antiseptic action whatever, but *salicylic acid*, 3 per cent., and *boric acid*, 5 per cent., soaps are aseptic and antiseptic, the former being the most powerful, arresting the development of the micro-organism after a few minutes' contact.—*La Semaine Médicale*, through *Therapist*, viii., 9.

Low Temperature Thermometer.

Kohlrausch has found an easy solution of the difficulty in obtaining a suitable liquid for filling thermometers intended for the measurement of very low temperatures. Alcohol congeals at −100, toluol only a very little lower. Ordinary petroleum ether, however, is stated to be applicable as low as −190, the boiling point of liquid air, without congealing.—*Pharm. Ztg.*, xlii., 772.

Acerdol.

The compound named acerdol, to which Foerster, its discoverer, attributes the formula MnO_2K_2KOH, is obtained by oxidising manganese and potash, and dissolving the resulting compound in water, and crystallising after concentration. Acerdol forms brilliant crystals, which give a green solution with water.—*Petit Mon. P.*, xlviii., 2766.

DAVIESIA LATIFOLIA.

BY J. BOSISTO,
Victoria, Australia.

In directing attention to this plant, as a suitable subject for investigation, I may mention that I have learned from repeated statements by persons resident in the districts where the plant abounds, that its infusion has proved to be a remedy for hydatids, low fevers, etc. Whether this be so or not it is not for me to assert.

The plant being in bloom during the past and present months (September and October) a favourable opportunity was offered for its examination. This I have made, and deeming its characters somewhat out of the ordinary run of vegetable tonics, I have taken upon myself to forward a parcel of the plant to the Pharmaceutical Society's Museum for further examination. It is indigenous to Victoria, Australia, and belongs to the sub-order Papilionaceæ, of the extensive N. O. Leguminosæ. This order, says Lindley, "is not only among the most extensive that are known, but also one of the most important to man, whether we consider the beauty of the numerous species, which are among the gayest coloured and most graceful plants of every region, or their applicability to a thousand useful purposes."

Almost in every part of the known world species of one or other of the sub-orders of this family of plants are to be met with. They appear to be distributed in extremely unequal proportions over the earth's surface. According to the table given by the author just quoted, the far greater number of the species are indigenous to the tropical parts of America, the Cape of Good Hope, and throughout Australia. The species of the genus *Daviesia* belonging to Australia have received but little investigation under phytochemical analysis. We have, therefore, in this genus alone a field for interesting work.

R. Brown, in his 'Prodromus of the Flora of New Holland,' named this genera *Daviesia*, in honour of the Rev. Hugh Davies, a Welsh botanist. The name which this plant commonly bears among the country people in the districts where it is found growing is similar to that given elsewhere to other bitter plants similar in appearance to the present one, as for instance, the Goodenias. It is termed the "Native Hop Bush," not that it resembles the well-known *Humulus lupulus* climber, but possibly derives its name from its bitter taste resembling that of the hop. It is regarded by the selector of land (although a low-growing shrub) as a weed, and being difficult of extermination the land if possible is avoided.

Many species of Daviesia are mentioned in volumes of the late Baron von Mueller's 'Fragmenta Phytographiæ.' The botanical and physical characters may be briefly stated as follow: The shrub grows in height from two to three feet, the leaves are abundant from top to bottom, and are of a bright green colour, each strongly veined and from one to three inches long, rising irregularly from the stem by a petiole of about half an inch in length. The peduncles are axillary, solitary, and many flowered. The flowers are as the sub-order indicates, pea-shaped, very minute, of a bright golden hue on the outer portion of each petal, and of a dark purple in the inner part. The legumes are in shape triangular, containing in each one or two seeds, bean-shaped, very small, and spotted purple and brown. The whole plant is bitter, the leaves and flowers especially, the stem but slightly; the bitter is not unpleasant, but very persistent on the palate. It grows abundantly on lands of a light loamy and sandy character at the foot of the Dandenong Ranges, some twenty miles from Melbourne, and extends into the hilly districts of Gipps Land, Victoria. The late Baron von Mueller mentions that it is to be found in parts of Tasmania and New South Wales, but not in South Australia or Queensland.

The cursory examination of this plant carrics a convincing impression that it should not be left alone in the wild bush without further investigation. The bitter crystalline principle is obtained with remarkable ease, and, together with the semi-volatile oleo-resin remaining, gives the full chemical character of the plant. The crystals are soluble in warm water, also in weak spirit. The method of obtaining these principles is as follows: The leaves (and flowers if in season) are infused in cold water, gradually increasing the temperature up to 190° F., and the infusion allowed to remain in this condition for about two hours, strained, and allowed to cool; the sediment found at the bottom is filtered off and then evaporated very slowly at a low temperature to about one-half; the liquid is then placed in an evaporating dish, and allowed to remain quiescent for two or three days. Crystals will, in the meantime, form on the surface, and fall to the bottom of the dish; these are removed and the liquid evaporated further but slightly; a further crop will be obtained. The oleo-resin remaining will be found to have a bitter taste.

In conclusion, I would like to say that for medical uses (if our bushmen and settlers are any guide) the infusion to the extent of a teacupful two or three times in a day is the best mode for its administration for the purposes herein indicated.

Examination of the Crystalline Substance obtained from Daviesia Latifolia.

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

The crystalline substance received from Mr. Bosisto as representing the bitter crystalline principle of *Daviesia latifolia* was examined primarily to ascertain as far as was possible with the small amount of material at our disposal—1·5 gramme—whether it was a new and definite body, and therefore sufficiently interesting to warrant its extraction in larger quantity for further examination.

It was a bitter neutral substance readily soluble in hot water, crystallising out on cooling in the form of fine white needles, which were rendered anhydrous at 100-120° C. It was insoluble in ether, soluble in boiling chloroform and readily dissolved by weak alcohol, from which it was left as an amorphorus residue on evaporation, but soon crystallised on the addition of a little water. It was soluble in caustic soda, and re-precipitated apparently unchanged by acids. On purification of the original crystals by re-crystallisation from water the substance still retained its bitter taste and had a constant melting point, after having been dried at 120°, of 146° C. Fusion with sodium gave no indication of nitrogen. It did not reduce Fehling's solution until after hydrolysis by boiling with acid. Its aqueous solution was precipitated by ammoniacal lead acetate, but not by neutral lead acetate.

These results point to the crystalline substance sent by Mr. Bosisto being either of a glucosidal character or of the nature of a plant sugar, as many of the above reactions are common to both classes of bodies. The persistent bitter taste, after re crystallisation from water, unless it could be eliminated by further purification, is certainly in favour of the crystalline substance of *Daviesia latifolia* being a glucoside.

From the small quantity of leaves deprived of flower and stem, amounting to 100 grammes, also received from Mr. Bosisto, we were not successful in obtaining the crystalline body by extraction with water in the manner described by him, owing to the fact that water extracted other substances, which always, more or less, hinder crystallisation of many plant principles when operating on a small scale, but no doubt by a more suitable method, which might be suggested by some of the reactions obtained in the course of this investigation, it could be more readily obtained.

The crystalline substance and the plant itself are of sufficient interest to require further investigation, more particularly to determine whether the medicinal action ascribed to the leaves is to be attributed to the crystalline substance or to some other bitter principle, and this inquiry we hope to continue on receiving a larger supply of the leaves.

FLUID EXTRACT OF LIQUORICE.*

BY PETER BOA.

Some months ago I was accidentally led to give consideration to the subject of liquid extract of liquorice. A brother pharmacist in my hearing impugned the efficiency of our pharmacopœial process for its preparation, and said we were behind other countries in our official method. Having a strong conviction that our Pharmacopœia—much abused though it be—is not in its practical aspect second to the corresponding book of any country, I took the liberty of questioning the statement. Since then I have from time to time, as limited leisure permitted, looked into the subject and carried through a few experiments for my own satisfaction. The subject became interesting, although I have not yet gone very deeply into it. I can scarcely hope that you will follow my description with the same interest, experimental work of even the mildest sort being always more entertaining than bare narration of what has been done. Besides, this fluid extract is generally regarded as unimportant.

A look at the official process for its preparation will show that the method is somewhat different from the process adopted for any other fluid extract in the Pharmacopœia. I may be pardoned for reminding you that it is a process of double maceration with cold water, heating to boiling-point, straining, evaporation to a specified gravity when cold, and preservation by spirit. Two points deserve notice as being characteristic of this fluid extract. One is that it has to be evaporated so that, when cold, it shall have a specific gravity of 1·160; the other is that only one sixth of its volume of spirit has to be added, presumably to preserve it. In short, the object is to extract the sweet principle with water, which at the same time takes out albuminous and mucilaginous matter; to coagulate the albumin by heat and remove it by straining, and finally, for preservative purposes, to add the spirit which still further clears the extract by throwing down part of the mucilaginous matter.

Many years ago, at an evening meeting in London, so good an authority as Mr. Charles Umney stated that the process was in principle a sound one, and with this observation my experience leads me entirely to agree. In some respects objection may be taken to it, but these are only matters of detail. In working it is a very "messy" process, and the quantity of spirit is not sufficient in all cases to preserve it. Evaporation to a specified gravity when cold is also a troublesome feature. Percolation naturally suggests itself as a remedy for the trouble of double maceration and expression. If the weather be warm, however, sufficient percolation cannot be accomplished quickly enough to prevent fermentation beginning in the percolate and giving rise to loss of sweet principle. Evaporation to a given gravity is no doubt designed to permit of the manufacturer using any sort of root, some roots being so poor that evaporation to a given volume would yield a very poor extract. The quantity of spirit ordered has always been with me sufficient for preservative purposes, but I have frequently been told that it is not enough. Storage, or climate, or preparation from a root with a relatively large proportion of mucilaginous matter, may account for its failure. Samples of extract that have gone wrong in this way invariably have a very acid reaction, and throw down a deposit. The expressed liquor, previous to evaporation, is not acid, but neutral, and so long as it remains so it does not deposit. If the liquor be allowed to stand until acidity appears, deposition of sweet principle begins. Reference to the processes of other countries shows that some follow our method, while others use ammonia or alcohol, or both together, in the menstruum which they employ. The United States official process orders a menstruum consisting of dilute alcohol, with 3 per cent. of water of ammonia. Having prepared some fluid extract according to this process, I found it compare very unfavourably in taste with our fluid extract. It had a very acrid bitter flavour, which quite overpowered the sweetness; ours, on the other hand, possessed a sweet mellow taste, free from acridity and with only a faint bitterness. If we bear in mind that the root contains, besides the sweet principle, an oleoresinous acrid substance and a bitter principle, both more soluble in alcohol than water, this is only what we might expect. The use of ammonia is based on the circumstance that the sweet principle is a salt (glycyrrhizate) of ammonia, and exists in the root as such. The use of ammonia in the menstruum is presumably to improve upon nature; on what theory the use of alcohol in the extracting fluid is based I fail to apprehend.

Professor Remington ('Proceedings of the American Pharmaceutical Association,' vol. xxvi.) gave in 1878 the result of a series of experiments with different menstrua carried out to "ascertain the best menstruum, and to discover the bearing that an addition of solution of ammonia to the menstruum would have upon the finished product." The results led him to conclude that the addition of ammonia very perceptibly diminished acridity (of a fluid extract made by an alcoholic menstruum), and increased the quantity of glycyrrhizin (in one sample nearly 50 per cent.). Since then ammonia has commanded great respect in connection with liquorice. It is worth noting, however, that the increase of glycyrrhizin and decrease of acridity in Professor Remington's experiments are coincident with the increase of water in the menstrua which he employed.

In order to ascertain how the addition of ammonia to the menstruum used in our Pharmacopœia process influenced the resulting extract I prepared several batches, in the making of which ammonia was used in varying proportions. For convenience I used crushed root, extracted by percolation, heated the percolate to 212° F., strained, evaporated the liquor from 16 ounces of the root to 12 fluid ounces, added 4 fluid ounces of rectified spirit, allowed to stand a day, and filtered. For comparison I made corresponding extracts by percolating with cold water and finishing by exactly the same routine. Both sets were prepared from the same root and care taken to secure impartial treatment during the process. The same amount of percolate was taken from all of them. On estimating the quantity of dry extract obtainable from the percolates previous to treatment, I found that from 10 to 12 per cent. more was afforded by the ammoniacal percolate than by the purely watery percolate. However, after conversion into fluid extract had been completed, and time allowed for "settling," the precipitate or thrown-out matter, resulting from the addition of the spirit, occupied almost double the space taken up by the corresponding deposit from the aqueous extract. This bulky deposit was, moreover, sludgy in character and rendered filtration difficult. The actual yield of finished fluid extract was smaller than that obtained by the other method. Compared as to specific gravity, the two extracts were practically identical, *e.g.* :—

* Read at an Evening Meeting of the Pharmaceutical Society in Edinburgh on Wednesday, February 16.

1	with water and ammonia, specific gravity	..	1·050
2	,, ,, ,,	..	1·050
3	with water only ,,	..	1·052
4	,, ,,	..	1·042

In order to compare the two products as to appearance, flavour, and volume of sweetness, one fluid drachm of each was diluted with water to an ounce. The dilution from the ammonia extract had a much darker and richer colour than that from the aqueous extract. In volume of sweetness, however, it was distinctly inferior, and its flavour thin and wanting in character. In this test I did not depend on my own palate but had the opinion of several other pharmacists, who unanimously confirmed my opinion. The use of ammonia in the menstruum employed in the preparation of fluid extract of liquorice appears to me therefore to be not only unnecessary, but distinctly objectionable. It alters the character of the taste of the extract, while it does not, in my opinion, increase the yield of sweetness. In regard to this latter statement, I can by a very simple experiment bring home to you its reasonableness. I have here a percolator containing a quantity of liquorice root which has been well exhausted with water. On passing through a little more water you can see that it runs almost clear, and it has a very faint taste of sweetness. Now, letting some ammoniated water run through, you see that it comes away quite dark in colour. It must be noted, however, that this dark liquor has not any more sweetness than the clear percolate obtained when water only is passed through the marc.

Ammonia, although objectionable in the liquid used in the process of extraction, may be employed with advantage in another way. I have said that percolation as a means of exhausting liquorice root is open to the objection of not being rapid enough to let exhaustion be sufficiently completed before acidity develops in the percolate. Having observed that ammoniacal percolates did not exhibit the same tendency to throw down a deposit of glycyrrhizin as was shown by the watery ones, it occurred to me to add ammonia to the aqueous percolate just in sufficient quantity to maintain alkalinity while percolation was proceeding. This procedure I found to be extremely convenient. It quite prevented the loss of sweet principle while percolation was going on, and relieved one from anxiety as to hurrying the operation. Later, I carried the use of ammonia still further. The fluid extract prepared by the official method usually gave when finished a faintly acid reaction. I added ammonia just in sufficient quantity to carry it over the border line of neutrality into alkalinity. That, is I do not use ammonia in extracting the sweetness but in keeping it when I have got it. The best extracts which I have prepared have been made in this way. So long as the alkalinity is main tained there is no falling of the dirty-looking deposit which is often seen at the bottom of the fluid extract of liquorice bottle.

In some of my comparative experiments I used a larger quantity of spirit than is directed by the Pharmacopœia for the official extract, and I observed that I obtained a cleaner extract, that is, more free from mucilaginous matter which is more completely thrown out by the increased spirit than it is by the quantity ordered in the official process. Apart from the question of preservation an increase in the quantity of spirit seems advantageous.

My conclusion is that water is the best menstruum for extracting the sweetness of liquorice. If percolation of a rougher powder were substituted for double maceration and expression of the root in No. 20 powder, as directed in the official formula, it would make the process less messy. Ammonia might be judiciously employed in the way I have indicated to prevent loss of sweetness. And a slight increase in the spirit would make sure work of preservation, and produce a cleaner extract.

A NINETEENTH-CENTURY GOLD FACTORY.

BY ADOLF G. VOGELER, PH.G. (CHICAGO, ILL.).

That which but yesterday would have been pronounced the height of absurdity to mention even as a possibility is to-day, in the year of our Lord 1898, on the very threshold of the twentieth century, a solemn fact—there is in existence and in full operation a large, well-equipped manufactory for the making of gold and silver out of baser material. For the benefit of future historians who may be called upon to write the chapters on the history of chemistry and the evolution of psychological phenomena in the nineteenth century it may be profitable to examine and record the facts as they appear on the surface.

Early last year there suddenly came to the surface a man by the name of Edward C. Brice (a Scotchman, and a distant relative of Senator Calvin S. Brice), understood to be a practical metallurgist and prospector, who startled the world by making application in Washington for a patent on a process for making gold by transmutation. The patent was denied on the grounds that by the process described no more of the noble metals could be obtained than was residually present in the material operated upon.* Little further was heard until recently, when in this city (Chicago), at the intersection of 39th Street and Lowe Avenue, there was opened for work a factory for the creation of gold and silver out of antimonial ore; and this factory is in full operation at the time of writing. This interesting spot, armed with a letter of introduction, was lately visited by the writer, accompanied by Professor C. S. Hallberg of the Illinois University School of Pharmacy.

The concern is incorporated as the National Metallurgical Company, with a capital of 75,000 dollars, divided into shares of the face value of 10 dollars each. Mr. Brice himself holds the office of president, while a Mr. E. E. Shaw is secretary and treasurer. The stock has not been placed on the open market, but there is said to be at least one person who is selling shares at 250 dollars, or just twenty-five times the subscription basis. One of the stockholders, an intelligent lawyer, claims to have refused 10,000 dollars for his holdings, representing 1000 dollars, and which in all probability cost him nothing. Mr. Brice professes to discourage this kind of gambling, but report has it that the individual in question seems to experience no trouble in obtaining as much of the stock as he may require for customers. Of the capital stock 40,000 dollars is supposed to be invested in antimony lands in southern Utah, and 25,000 dollars in the factory, leaving 10,000 dollars reserve for incidental expenses. Why the happy mortal possessed of the real philosopher's stone should find it necessary to raise money upon stock certificates is one of those things no fellow can find out—as Lord Dundreary is in the habit of saying.

Entering the front door of the barn-like structure, the visitor stands in a small vestibule and is accosted by a man peeping through a small opening in the partition, at whose right suggestively reposes a glistening repeating rifle. Once inside, a well-appointed smelting works is discovered. There are tons of stibnite just from the mines and a mill for grinding the ore; there are heaps of scrap iron, lead scraps, and charcoal; the centre of the place is occupied by a battery of modern bricks, encased reducing furnaces. All the flues from these furnaces run into an underground tunnel which ends in the factory-yard in a long coil of heavy iron pipe, probably two feet in diameter and at the end of which is located a suction fan, the pipe finally opening into a

* The real reason, according to Mr. Brice, was that the authorities feared a monetary panic. To the writer Mr. Brice has said the patent was not denied, but the application was withdrawn.

dust-proof chamber. The observer also discovers long rows of cupels. The capacity of the plant is given at 10,000 lbs. per day.

As partially witnessed, and further explained by Mr. Brice, the process gone through is briefly as follows:—The ground stibnite is placed into one of the furnaces, whence the volatile constituents pass into the tunnel. In the exposed pipe in the yard the vapours are condensed, and the fine powder is gathered in bags in a closed chamber, or bag-house, at the other end, the carbon dioxide and other gases passing off into the outer air. This powder, chiefly oxide of antimony, is mixed with clay and water, the mass is formed into bricks, and the ore subjected to the heat of a furnace for forty-eight hours. On being broken these bricks show a crystalline structure of variegated colour; and this, the inventor says, is the first stage in the evolution, the result of the intense heat, alleged to be 5000° F. The bricks, after being ground, are shovelled into a furnace, covered with scrap lead, and roasted for thirty minutes. The product is a crystalline metal said to contain whatever noble metals have been created out of the original antimony. Broken into small lumps this metal is packed in graphite crucibles, covered with a charcoal compound, spoken of as a flux, and once more subjected to a temperature of 5000° F. for forty-eight hours. The composition of this "flux," be it said, is the one secret of the inventor which he declines to divulge, and he mixes and applies it personally, "because of its explosive nature and because he knows how to handle it properly." The results are a slag and a brilliant crystalline metal—antimony, which latter is supposed to contain the precious metals in a concentrated form. This goes into scorifying pots with litharge, and, lastly, is treated according to the ordinary refining and cupellation process for extracting gold and silver.

In reality the foregoing is the process as detailed in an article in the *Tribune* which Mr. Brice pronounced to be substantially correct. His verbal explanation differed somewhat. After coming from the bag-house, he said, the oxide of antimony is mixed with sulphur, made into a paste with water, and this is heated in a second furnace; the resulting mass, reduced to powder, is then heated with the flux, then comes the heating with lead, and finally the gold is extracted as before stated.

Mr. Brice was closely questioned as to his theory on the subject, but he failed to commit himself, adroitly evading all these questions, excepting that he claimed that no substance which could be obtained in non-gaseous state is an element, but is a compound, and, further, that he was "not yet prepared to make public his theory of the transmutation of metals and the philosophy of his process." He admitted not being a chemist, and he had not heard of the experiments of Dewar and others in reducing the so-called permanent gases. "If the atmospheric gases have been solidified," he said, "well, then, they must have formed some kind of compound or other." He is not as yet decided as to whether oxygen or sulphur play the more important rôle in the transmutatory process. He further said: "How much gold and silver I succeed in creating out of antimony, and whether the operation is remunerative, concerns the stockholders alone; the only thing of interest to scientists and the public is the fact that I do create these metals."

To newspaper reporters and capitalists not versed in chemistry, our alchemist has expressed himself freely, however. To quote from the *Chicago Sunday Tribune* of December 12 last: "He depends almost entirely upon a decomposition of the atomic properties of the antimony and a radical reconstruction as a new body under the influence of intense heat and the free admission of atmospheric oxygen. This is nature's process, and is exemplified in the volcanic action by which most of the gold existing in a natural state was formed. Long study of Montana mines and careful research of scientific works gave rise to the belief that at some long-ago period tremendous convulsions of subterraneous gases threw up from the earth's interior some metallic substance, which underwent a transmutation into gold. What this may have been is not known, but antimony is selected as a likely material, mainly because it is found in considerable quantity in many forms of gold ores." The strong proof advanced by him that gold is a compound body is the fact that it requires a combination of two different acids to effect its solution. Mr. Brice has made a special trip to Mount Vesuvius "with the hope of being able to reproduce its action in a furnace." In conformity with this theory he calls his furnaces "vulcanic furnaces," and speaks of "vulcanic heat."

According to the *Tribune* a specimen of the artificial bullion, taken by its reporter at random, was assayed by Messrs. Weis and Gibson, professional assayers of this city, and they reported a yield of 3·62 dollars in gold and 13·26 dollars in silver, 16·88 dollars in all, to the ton. This same firm made a test of bullion supplied by Mr. Brice last spring, which indicated 86 dollars in gold and 13,714 dollars in silver to the ton. Mr. Brice claims to produce gold ranging in value up to 3900 dollars to the ton. Mr. Robt. C. Hunt, of the assayer's firm of Hunt and Co., is reported to have said that he has purchased antimony absolutely free from gold and silver, that he has treated this according to Brice's method—laboratory formula communicated to him—and that he has actually found small amounts of the precious metals, as though they had been created.

Mr. Brice claims it to be in his power to interrupt the process at any stage, and so, pure antimony being a saleable commodity, he finds it profitable not to convert all into gold and silver, but to leave some to be sold for use in type metal, Babbitt's metal, Britannia, etc.

Mr. Brice received his visitors hospitably, and displayed an apparent readiness to give all legitimate information in his power. But the close observer found him an unwilling witness, afraid, apparently, to speak in the presence of men whose knowledge of chemistry would readily uncover any attempt at exploiting a pseudo-science, with which laymen are so easily dazzled and bamboozled. He was decidedly guarded in his language, and while speaking in a straightforward manner, there was that peculiarity about his gaze which, in German, is described as a "veiled eye," that something which seems to hide from you the soul and thoughts behind the visual orb.

After taking everything into careful consideration, the writer has arrived at a theory substantially as follows: Mr. Brice, as a prospector, has become acquainted with a mine of antimony ore of very good quality and unusually auriferous. He has worked out an improved process for producing pure antimony. He has found a means, perhaps, of extracting from this ore proportionately more gold and silver than was hitherto practicable. He produces enough pure antimony at a cost to make, apparently, the undertaking profitable. He does not, as alleged, get his precious metals out of the distilled oxide of antimony, but extracts them from the slag of the initial roasting. If a crucial test becomes imperative the secret "flux" furnishes sufficient opportunity for introducing as much gold as the exigencies of the case may require.

No one should presume to pronounce the transmutation of one element into another an impossibility, but it seems an infinite improbability. At any rate, we would expect first to see transmutation accomplished in the case of closely-allied elements, such as nickel into iron, for instance. A far more plausible proposition is that of Emmens, of New York, who pretends to convert silver

into gold by doubling its molecular weight by hammering, the consequent rise of temperature being obviated by appropriate means. This, at least, sounds plausible, even if it be not true as a matter of fact.

After the foregoing was written there has appeared in the *Western Druggist* a lengthy communication from Mr. Brice himself, in which he tries to defend himself and show how he came to make his discovery. He also gives a sort of theory, partially covered, in this paper. And to prove his sincerity he makes public his formula—laboratory formula he styles it—for producing gold from antimony on a small scale. Here is what he says :—

"I herewith give you the formula, which, if you so desire, you can have tested by any responsible and well-known chemist. This formula is incorporated in an application for patent in the United States patent office and elsewhere, and is commonly known as the laboratory formula :—

"Take five (5) parts chemically pure antimony, (ten (10) parts sulphur, one (1) part of iron, and four (4) parts of caustic soda ; place in a graphite crucible, heat these ingredients to a white heat for at least eight hours, but it will be better to heat for forty-eight hours. Take the resulting fused mass, slag and metallic button as well, and powder the whole mass. Mix this powdered mass so that the metal will be thoroughly incorporated with the powdered slag. Combine this with one (1) part of charcoal, five (5) parts of litharge or oxide of lead, add four (4) parts of caustic soda, and fuse the whole until the metallic button is obtained. Scorify and cupel this metallic mass, and the resulting bead will be gold and silver.

"In making the above test every care should be taken to determine that all ingredients used are free from either gold or silver.

"The salient feature in this discovery is combining the sulphur in such a way that it will unite with the oxide of antimony, which is produced and evolved at a white heat. The soda fusing prevents the escape of the oxysulphide. It is in the union of this oxide with the sulphur present that the creation of gold is had.

"To state this process more closely, it consists of forming a sulphide of antimony, next forming a sulphide of iron, and thirdly forming a sulphate of lead. Therefore, the ore produced prior to scorification and cupellation is a sulphide."

THE SELECTION OF PHOTOGRAPHIC APPARATUS.

Now that the days are lengthening, and Spring with its accompaniments of bright weather and sunshine is almost upon us, the amateur photographer will begin to think about unearthing his apparatus from winter quarters and preparing it for work again ; while there will be those who, tempted to investigate the great unknown in photography, will be considering the question of purchasing suitable apparatus with which to pursue this delightful pastime. For the latter this short article is written, offering suggestions and advice in this matter, while a word or two will also be given to those already advanced in the art.

It is so often the case that the beginner, when looking about for apparatus with which to commence photography, purchases a hand camera frequently at considerable expense. This is the worst possible procedure, and is the direct cause of keen disappointment, and often of the abandonment of the hobby altogether. It should be remembered that the successful use of the hand camera can only be accomplished after a complete mastery of the processes of development in instantaneous work has been obtained, and it is courting failure for anyone with practically no knowledge of photography to commence work in this way.

The beginner is, therefore, strongly advised to purchase at the outset a good field camera, for with it instantaneous pictures can always be taken, if desired, by means of a shutter attached to the lens ; while there are makers who construct cameras which, although essentially designed for use on a stand, can with equal ease be used in the hand. As to the size of plate to be carried, that of most general utility is undoubtedly the half plate, because, in the first instance, when the beginner will be experimenting with his apparatus and making preliminary trials, a smaller plate may always be used—and, in fact, is recommended—by means of carriers in the dark slide.

The amateur with a moderate sum at command will naturally require apparatus at as reasonable a figure as possible. There is no advantage in going to the very extreme as regards cheapness, but under such circumstances a complete outfit should be purchased in one set. A thoroughly reliable half-plate set with good camera possessing modern movements, rapid rectilinear lens, book form dark slides, etc., may be obtained through a good photographic house for five guineas, and is capable of turning out really first-class work.

To those budding amateurs possessed of a longer purse, and who are desirous of commencing photography under the most favourable conditions, each piece of apparatus should be purchased separately.

The principal feature of every photographic outfit is the lens, and in selecting this much care should be exercised. A couple of good R.R. lenses may be purchased, one having a focus of about 7 inches, for landscape work, and one of about 4 inches focal length, for wide-angle work or photography at close quarters. Good foreign lenses can be procured at the most reasonable prices, and they are instruments, too, which are capable of doing splendid work, but there is always a certain amount of risk with them. Where price is no object the beginner is recommended to invest in a lens of modern make, such as a Dallmeyer's Stigmatic, which can truly be termed a universal lens ; in fact, as the maker asserts, it is capable of doing the work of four lenses. A lens of this description, covering at its full aperture a quarter-plate can, by inserting a smaller stop, be made to cover a half-plate, thus becoming at once a wide-angle lens ; or, by removing the front combination the focal length is doubled, when it may be utilised as a long-focus landscape lens. Every lens should be kept in a separate chamois leather bag, free from dust and grit, and when cleaned it should be carefully wiped with a very soft old silk handkerchief.

As regards the special form of camera, the best for every purpose is one built with square bellows, and although the beginner may not at first appreciate its value, the time will arrive when, having become proficient, he will find such a camera simply indispensable. Cameras with conical bellows are generally lighter in weight and more elegant in appearance, but when they are being used under extraordinary circumstances, where it becomes necessary to employ the rising front or swing back to its utmost limit, parts of the image are cut off, and troubles soon arise. Then, too, when using a wide-angle lens, it is very seldom that a camera of this description can be satisfactorily and easily manipulated, and in other ways the tapering bellows become a source of annoyance. In the matter of the tripod the principal points are that it should be perfectly rigid when set up, not liable to vibration ; and nothing in it should be sacrificed to lightness.

When the beginner has completed the outfit he should become thoroughly acquainted with the working of every part of the apparatus by setting it up and mastering the details of manipulation ; and if a photographic friend be available, a few lessons should be taken. The preliminary chapters of a work like the

'Ilford Manual' are very useful for conveying information in this respect.

To the amateur who, having made progress in photography, is desirous of purchasing a hand camera, a few words of advice may not be out of place here.

In the first place it should be decided whether roller films, flat films, or glass plates are to be used. The writer still adheres to the latter, but most hand cameras designed to carry plates will admit of the employment of flat celluloid films. When selecting a hand camera the following points should more particularly be considered :—

1. The lens.
2. The method of plate changing.
3. The shutter.
4. The particular form of shutter release (the trigger).

According to the quality of the lens will be the price of the camera. The ideal lens for hand-camera work is one which will give absolutely sharp images to the corners of the plate when used with the full aperture of about F/6, allowing exposures to be made with a quick shutter and in a dull light. Most hand cameras are fitted with lenses of much too short a focus. If possible, one having a focal length of not less than 5 in. for a quarter-plate should be chosen, provided with an iris or revolving diaphragm. The great objection to so many hand cameras is that the lens is built into the body, being extremely difficult to reach for cleaning ; whereas if it be simply screwed into its flange in the ordinary way it can not only be taken out easily and cleaned when necessary, but it may, if required, be used in a stand camera, in which case, of course, an extra flange would have to be provided. There should also be a flap or sliding panel to protect the lens from dust when not in use.

Regarding the method of plate changing, in the writer's opinion there is nothing equal to the changing bag, where the fresh unexposed plate is transferred to the bag by means of a plate-lifter and shifted into position in front. The whole operation is under the worker's control, and there is practically no chance for the plate to become fixed. Dark slides for the hand camera have their good points, but in many respects it is doubtful if they are superior to a well-made magazine. There is one particular, however, in which they are extremely useful, in that they may be filled with plates of different speeds and time and instantaneous exposures made at will, whereas if this were done in a magazine camera there is great danger of losing their whereabouts. Some cameras have an extra chamber, into which each plate falls as it is exposed. Although this is a fairly reliable method on the whole, the size of the camera is somewhat increased.

There is no doubt but that the roller-blind shutter is the best for hand-camera work, and very few are made nowadays without it. Metal shutters actuated by springs are very uncertain. The springs are generally spirals of brass wire, which soon become weak, causing the shutter to work slowly and sometimes to fail altogether. The question of a shutter release may seem so trivial a detail as to be not worth considering, but in point of fact, it has a most important bearing upon the subject, and is more often than not the cause of blurred images and spoilt plates. The proper place for the trigger is undoubtedly in front of the camera, so that it may be pushed backwards towards the lens, thus reducing risk of vibration to the minimum. Some releases are placed on the right-hand side of the camera, and are intended to be pushed downwards with the thumb. This device is not a good one, as often in the excitement of releasing the shutter the camera receives a tilt upwards from beneath. The pneumatic ball, of course, is always good, but it is a question whether the long rubber tube is an advantage in hand-camera work. Of course every worker is prejudiced in favour of his own apparatus, but without in any way wishing to depreciate other makes, the writer has used constantly a Rouch's "Eureka," which is in every way a thoroughly sound and reliable instrument.

LEGAL HINTS FOR PHARMACISTS.

Medicine Stamp Duty.

Exemptions.—These may be classed as statutory, judicial, and departmental, and one may explain the classification by stating that the first is based upon the ordinary interpretation of the words of the Statute, the second on the application given to those words by the Courts of Law, and the third on the practical forbearance of the Commissioners of Inland Revenue in their administration of the law.

At the end of the Schedule to the Act of 1812 (Geo. III., 52, c. 150) there are three saving clauses which, though dignified by the heading of "Special Exemptions," possess the specialty of exempting very little of import to the modern chemist and druggist. In the first place, all drugs enumerated in a 'Book of Rates' dating from the time of Charles II. are free from duty, as are also those referred to in a supplementary 'Book of Rates,' issued by authority when George I. was King. Now these "rates" were merely import duties, and the drugs referred to were crude drugs and drysaltery —the raw material, so to speak, for the manufacture of the specifics chargeable with stamp duty, and it may be that the motive for exempting them was simply the desire to be as just as the Imperial Exchequer would allow, and not to tax an article twice if it could be avoided. Whatever the motive, the special exemption accorded to Sir Harbottle Grimstone's 'Book of Rates' and to Mr. Speaker Compton's supplementary list has survived to this day, though it has long ceased to have any bearing on the daily business of the retail chemist. It may be viewed as an exemption in favour of drysaltery, and its retention is probably desirable to cover one or two articles which might otherwise be held to come within the broad embrace of the stamp charge.

The second clause has at times raised false hopes in the minds of medicine vendors, especially retail chemists. The exact wording of the clause is as follows :—

> "All medicinal drugs whatsoever, which shall be uttered or vended 'entire' without any mixture or composition with any other drug or ingredient whatsoever, by any surgeon, apothecary, chemist, or druggist who hath served a regular apprenticeship, or by any person who hath served as a surgeon in the army or navy under any commission or appointment duly entered at the War Office or Navy Office, or by any other person whatsoever licensed to sell any of the medicines chargeable with a stamp duty."

One feels very much inclined to use the traditional remarks with which the oracular Captain Bunsby was wont to round off his dicta, for it is indeed difficult to discover the bearings of the foregoing. Who are the persons who may not sell "entire" medicinal drugs unstamped? The surgeon, the apothecary, and the chemist may, the regularly apprenticed druggist, and the duly appointed naval and military surgeon (though exempted previously under the word "surgeon"), may also sell, and any person licensed to sell stamped medicines has a similar doubtful privilege. Anyone, then, who desires to be exempt under this clause may purchase the indulgence for five shillings a year. In other words, the exemption is no special exemption in practice, for almost all who aspire to obtain a living by the sale of medicinal drugs must necessarily take out a licence to cover the sale of the stamped medicines they deal in. No one could hope to do much business by confining their operations solely to "entire" substances of a medicinal nature. It may be argued that the grocer or oilman who sold pure glycerin or

vaseline would not be exempt. If that be conceded, what follows? They must stamp the medicine, and, immediately, they become liable for the licence duty; by paying which they not only acquire a right to sell glycerin unstamped, but the privilege of selling any kind of medicinal preparation they choose.

It has been pointed out that the clause draws a distinction between the qualified or professional man and the mere "quack," which is very true, but what privilege does it give the one which it withholds from the other? There is this to be said, a chemist has no need to take out a licence if he does not deal in medicines liable to duty, and though this may appear a barren privilege in the face of the modern mania for medicinal proprietaries, it is worth considering. It means that if a qualified man places more store by his professional services as a dispenser and compounder than by the sale of goods as a tradesman, the Stamp Commissioners will never trouble him. So long, however, as stamped specifics and private remedies form a portion of a chemist's business, and advertisement occupies a place in his business operations, the exemption we are now discussing can have no particle of practical utility for him.

Before proceeding further, attention may be directed, as a matter of academic interest, to the wording of the reference to chemists. At first sight it might be assumed that the exemption, such as it is, did not extend to all chemists, but only to those who had served a regular apprenticeship. It is, however, reasonable to assume that in practice, qualification would presuppose apprenticeship. Moreover, the words "Chemist, or druggist who hath served," etc., etc., may be read as contemplating a distinction, and as classing the chemist with the professional surgeon and apothecary, whilst demanding proof of apprenticeship in the druggist or drug seller. At the time of the passing of the first Stamp Act apprenticeship occupied the place that curricula and examinations do now, and there is probably little doubt that the Courts would read "apprenticeship" as being synonymous with registration. There is on record a case in which a court of first instance took that view. So far as examined men are concerned there would be little difficulty in proving that registration included the production of evidence of at least a three years' term of pupilage, whilst in the older class of pre-Pharmacy Act men "indentures" would probably be the rule rather than the exception.

Now, with reference to the meaning of "entire," what constitutes an entire drug? The statutory definition is a drug "without any mixture or composition with any other drug or ingredient." If the last two words had been omitted there would have been some chance of stretching the application of the exempting clause, for everything would then depend upon the covering power given to the word "drug." But the ambiguities of the Food and Drugs Act in this respect are avoided in the Stamp Act, and nothing but crude, unprepared medicinal agents can fall within the above definition. A good deal of latitude, however, is allowed by the Revenue Department, and more used to be permitted till abuse crept in. Homœopathic medicines, for instance, were formerly regarded as exempt, but now it is found expedient to treat all tinctures alike, and apply all round the dictum pronounced in Smith *v.* Mason, that a tincture is not an "entire" drug, since it is prepared with spirit. A dilution by the addition of water, however, is not held to be an admixture, and, in certain cases, the addition of colouring matter to a pure drug is not objected to. A crude drug which has been purified does not, by the process it has undergone, become a preparation if no ingredient has been added, and it remains exempt. Moreover, a pure drug may be prepared for the market by compression into tablets without forfeiting its right to exemption as an entire drug (*e.g.*, ammonium chloride tablets). Conversely, powdered drugs, such as rhubarb or gentian root, though prepared in a sense, are not preparations, and are not liable to duty.

Medicinal substances exempt under this clause may be recommended for the cure of disease without liability ensuing. But vendors should make sure that what they are selling is an unmixed article. The fact of selling a compound labelled pure this, that, or the other, and fondly imagining it to be what it is represented, will not save a person from the Nemesis of Somerset House, and it ought to be remembered that prosecutions under the Food and Drugs Act in respect of sales of adulterated simple drugs may evoke the attention of the Revenue authorities to possible breaches of the Stamp Act. The necessity for qualified vendors to know what they are selling is therefore not based on ethical grounds entirely.

As an example of articles exempted under this portion of the Statute may be mentioned "menthol cones," "pure pepsin," "corn pencils," "mustard oil," "pure cod-liver oil," "charcoal powder," and other forms of simple substances of a like nature.

We have been asked more than once whether the addition of a preservative to a drug otherwise exempt would take it out of the exemption. There can be no doubt that, according to Statute, it would. But it is almost equally certain that provided no abuse were made of the privilege, the Board would deal with such cases as it does with instances where colouring matter has been used for attractiveness' sake. Then there arises the case of arsenical soap. Whilst the article was innocent of arsenic it could not be reasonably regarded as anything but a toilet necessary, but now that it has become a drug, some anxiety has been experienced as to the attitude the administrators of the Stamp Act might take in regard thereto. It is certainly not an "entire" drug. But soaps have hitherto not been interferred with, even when they have been medicated, so long as they are to be used after the usual manner of soaps.

For example "Cuticura" and similar proprietaries will serve. Yet it must be confessed that a recent case in which a well-known "pine tar" soap was involved, gives some ground for suspicion that some day a "recommended" soap may be held to be a medicine. The soap in question was advertised to cure almost anything from eczema to diphtheria, and the Revenue prosecuted under Section 2 of the Stamp Act, 1812, on the ground that the vendor did not affix a stamp and did not possess a licence. The justices dismissed the case on the ground that no evidence of an offence had been offered. On appeal to the High Court, the decision of the justices was confirmed, not because soaps were exempt from duty, but because it was a question of fact for the Lower Court to find whether the article was a medicine or not, and on that point no evidence had been adduced. Testimony as to the presence of a drug or drugs in the article might have contributed to a different decision.

Up to the present, however, medicated soaps have not been further interfered with.

The Third Special Exemption protects the legitimate practice of pharmacy, and is couched in the following terms:—

> And also all mixtures, compositions, or preparations whatsoever mixed or compounded with or prepared from medicinal drugs, medicated or chemical preparations or compositions, or other ingredients bearing different denominations, or having different properties, qualities, virtues, or efficacies, which shall be uttered or vended by any such surgeon, apothecary, chemist, or druggist as aforesaid, or by any such person who hath served as a surgeon in the navy or army under any such commission or appointment as aforesaid, the different denomination, properties, qualities, virtues, and efficacies of which mixtures, compositions, and preparations as aforesaid are known, admitted, and approved of in the preservation, cure, or relief of any disorder, malady, ailment, or complaint incident to or in anywise affecting the human body, and wherein the person mixing, compounding, preparing, uttering, or vending the same hath not

nor claims to have any occult secret or art for the mixing, compounding, or preparing the same, nor hath nor claims to have any exclusive right or title to the mixing, compounding, or preparing, or to the vending of the same, and which mixtures, compositions, or preparations have not been, are not, nor shall hereafter be prepared, uttered, vended, or exposed to sale under the authority of any letters patent under the Great Seal, nor at any time heretofore have been, now are, or shall hereafter be by any public notice, advertisement, or by any written or printed papers or handbills, or by any labels or words written or printed, and affixed to or delivered with any such packet, box, bottle, pot, phial, or other inclosure aforesaid, held out or recommended to the public by the owners, proprietors, makers, compounders, original or first vendors thereof as nostrums or proprietary medicines, or as specifics, or as beneficial for the prevention, cure, or relief of any such distemper, malady, ailment, or complaint as aforesaid.

Of this long-winded paragraph, the late barrister to the Inland Revenue has written : "It does not take any medicine out of the general charge of duty that would otherwise fall within that charge" ('Handy Book,' p. 106). If that means anything at all, it is difficult to find any ground for Dr. Symes' reading of the Clause. Speaking at a recent Council meeting, Dr. Symes is reported to have said, that "if the Act meant what he thought it said it did a great deal towards bringing the sale of all compound drugs into the hands of qualified persons." However desirable such a consummation may be, the Stamp Acts are hardly likely to be the immediate cause, and the wording of the third clause given above will certainly not lend itself to any such interpretation. The more one reads the clause the more one must be struck by the extremely limited range of relief it confers, and by the infinitesimal amount of practical advantage it possesses for those who wish to sell recommended preparations. On analysis the exemption resolves itself into this. A qualified person, *i.e.*, "a chemist or druggist who hath served an apprenticeship" may sell unstamped medicinal compounds of known and approved virtue or efficacy, whereas persons not qualified within the meaning of the clause must stamp such compounds. But there are a number of considerations to bear in mind. The compound must not be vended as a proprietary ; it must not be either a past or a present "patent," and, unkindest cut of all, it must not be recommended. Where does the exemption come in? As a matter of fact, the Revenue authorities do not interfere with any preparation which is neither a proprietary, a patent, or a recommended article, and the question of the qualification of the vendor does not concern the official mind. Suppose, as a matter of argument, that the Board were urged to give their attention to unqualified persons who sold, say, Tinct. Rhei Co. B.P. unstamped, and that in the result the said vendors had to stamp the article. What advantage could accrue to the qualified man thereby? He could sell the article unstamped, certainly, but he could not recommend it, whereas his unqualified competitor could, under shelter of a three-halfpenny stamp, embellish his label with the smartest of pushful recommendations. The proverb which advises a policy of *laisser faire* in cases of sleeping dogs is peculiarly applicable whenever one is tempted to urge the Board to give a strict interpretation to the words of the Stamp Acts.

Reverting again to the statutory exemption, there is some doubt as to the exact application of "known, admitted, and approved." It may, according to the way one reads it, refer only to preparations known and approved at the time of the passing of the Act—1812—or it may have the wider meaning of "all official preparations." Having regard to the original intention of the Stamp Act as revealed in the parliamentary records of the period, viz., to tax quackery, the balance of probability is in favour of the less restricted interpretation. No judicial pronouncement has, however, yet been requisite on this point, for immediately a qualified vendor steps outside the exemption he is hit by one or more of the definite charges of duty.

The whole of the three clauses of the Schedule may be summarised thus:—I. is a saving clause in favour of drysaltery ; II. may be held to protect simple crude and unmixed drugs uttered by qualified or licensed persons ; and III. removes from the incidence of duty, under certain conditions, official preparations and dispensed medicines when vended by qualified chemists and druggists.

Official Preparations.—It does not seem to be generally understood that the sale of Pharmacopœia compounds may be conducted without the necessity of affixing a medicine stamp, and that in practice the same freedom is accorded in the case of certain medicines in foreign pharmacopœias—Blaud's pill, for instance. So recently as 1889 two prominent associations of chemists passed resolutions urging that steps be taken to secure exemption from duty of any preparation made in accordance with British or foreign pharmacopœias and described and sold as such. Further, the Pharmaceutical Society was asked to use its influence in securing this exemption as well as one which should embrace all medicines for which no exclusive right or secret process was claimed. There was absolutely no need for asking these things, seeing that the exemption existed. Nothing in the recent administration of the Act has touched B.P. preparations if they are not recommended for the cure of disease. Mr. Brown may sell "Brown's compound tincture of rhubarb prepared according to B.P. formula" without fear of transgression. He may even add that it "contains the purest ingredients in the exact proportions which medical knowledge has found to be most efficacious," and he may round off his description by saying that it is "one of the most useful of family medicines." There is surely ample latitude here for description. If the official preparation is to be dispensed, there is no occasion for description and no suspicion of liability. Similarly, with compounds official in other pharmacopœias ; a declaration of the formula on the label or a statement of the fact that it is prepared according to such-and-such a pharmacopœia makes it a medicine "known and approved," and so long as it is not dutiably recommended or otherwise brought within the charge, no stamp is required. With regard to "all medicines" which are not secret or proprietary, we have already shown at some length that considerable freedom is allowed for the proper description of medicines, and that there is really no occasion for a chemist to recommend his preparations in a dutiable manner.

ANALYTICAL NOTES.

Adulterated Insect Powder.—According to the report of Caesar and Lorenz, of Halle, certain insect powders are in the market, which, besides artificial colouring matter, contain finely-ground quillaia bark and euphorbium. These adulterations give the powder a more pungent odour and provoke sneezing. On the insects, however, the admixtures are said to have no effect whatever. —*Pharm. Centr.*, xxxviii., 702.

A Reaction for Santonin.—Jaworowsky identifies santonin as follows : 1 Centigramme to 0·02 Gramme of the substance is mixed with 2 C.c. sulphuric acid, and dissolved carefully by heating. To the warm solution drop by drop 2 C.c. of cerium sulphate solution is added, which contains 2 per cent. of concentrated sulphuric acid, and one per cent. of the cerium salt, stirring constantly. This gives a cherry-red colour with santonin. The solution becomes turbid on cooling, and a violet precipitate results on the addition of 8 C.c. of water. The mixture obtained is shaken with amyl alcohol and set aside. The aqueous layer then appears colourless and the amyl alcohol light brown. The amyl alcohol solution is coloured violet on the addition of phosphorus chloride. Shaken with ether the aqueous layer becomes clear, the ether remaining colourless.—*Ph. Zeit.*, xlii., 738.

The Pharmaceutical Society and its Presidents.

JACOB BELL.—1856-60.

THE Pharmaceutical Society had been in existence for fifteen years when Jacob Bell was at length prevailed upon to accept the office of President. It was at his house of business in Oxford Street that the historic "pharmaceutical tea-party" was held, at which the desirability of establishing the Society was discussed, and he was thenceforth regarded as the chief leader of the movement; later, he became a member of the first Council, and he remained on the Executive until his death, ever taking a most prominent part in helping to advance the interests of the Society.

He was born on March 5, 1810, his father being a member of the Society of Friends and the founder of the historic house in Oxford Street, which dates from 1798. Jacob Bell was noted amongst his schoolfellows for his literary compositions. On entering into business he began his career with no exemption from the regular duties of an apprentice, though in his leisure hours he distressed his surroundings by a not well-regulated attention to comparative anatomy. He was an admirable horseman, passionately fond of animals, and became the intimate friend of Landseer. At one time he desired to adopt painting as a profession, and his artistic tastes found vent in the collection of valuable paintings. He bequeathed his collection of some of the finest productions of the modern school to the nation, the value of the legacy being estimated at £20,000.

JACOB BELL.

At the time of his appearance upon the scene, as a leading pharmacist, Mr. Hawes' Bill for the purpose of amending the laws relating to the medical profession in Great Britain and Ireland had been introduced (1841), and was found to contain clauses vitally affecting the interests of chemists and druggists. The measure was abandoned, but circumstances had revealed the necessity for the formation of a permanent society which might interpose an effectual safeguard for the protection of the interests of the trade. This step was finally decided upon at a public meeting of the members of the trade, held at the Crown and Anchor Tavern, in the Strand, on Thursday, April 15, 1841, and Mr. Bell threw himself into the movement as a leader with life-long enthusiasm. He had recently become a partner in his father's business, the sole management of which was passing into his hands, and as Redwood points out, he had previously taken advantage of all available means to fit himself by study and practical work for the exercise of the responsible duties he had undertaken. He commanded the confidence of the medical profession and the public, and could not be accused of any feeling of self-interest in the matter, for so far as he was individually concerned there was no prospect of any advantage resulting from the measures contemplated for establishing a qualification for the practice of pharmacy, and thus raising the status of chemists and druggists. The Society having been established, the monthly meetings of the body were for some time held at Bell's house, and with the view of recording the proceedings at those meetings he started a monthly publication, which subsequently became known as the *Pharmaceutical Journal*. The first number appeared under his editorship in July, 1841, and the paper remained under his superintendence as a monthly periodical until the completion of the eighteenth volume. Not the least of the benefits conferred by him upon the Pharmaceutical Society was the transfer to that body of the copyright of the Journal shortly before his death. Early steps were also taken to secure for the infant Society a permanent habitation and a Charter of Incorporation, both of which desiderata were soon forthcoming. Not so readily, however, were parliamentary powers obtained, as it was not until eleven years had elapsed that the first Pharmacy Act was passed, after Bell—tired of seeking in vain for a member of Parliament who could pilot a Pharmacy Bill through the House of Commons — had himself entered Parliament, purely in order to advance the interests of chemists and druggists.

In June, 1851, he moved for leave to bring in a Bill to regulate the qualifications of pharmaceutical chemists. It had varied fortunes. In 1852 he again moved for permission, and on the second reading refuted the erroneous impression that the measure was designed to create a trade monopoly. The Bill was referred to a select committee, when innumerable alterations, technically called amendments, were introduced, as described in the account of Thomas Herring's presidency (last vol., p. 492). In this denuded form the Act passed both Houses of Parliament and finally received the royal assent on June 30, 1852. It would be difficult to convey an idea of Mr. Bell's bitter disappointment at the result, but as he said, it was that or nothing, and so far he was content.

Four years after the Pharmacy Act was passed Jacob Bell became President, and—when the termination of the litigation about the new Bye-laws at last permitted the machinery of the Society to go on working as smoothly as of yore — the first annual list of members, associates, and apprentices was published, showing 2223 members, 274 associates, and 226 apprentices. Bell pointed out at the time the great importance of such a register, the identification of the members of a society being necessarily the primary step in organisation. For securing the privileges of membership, the claims of each member must be established and recognised, and all must comply with the conditions which their own laws impose on themselves and on each other. Then, as now, difficulty was experienced in inducing everyone entitled to registration as a pharmaceutical chemist to respond to the official circulars issued by the Secretary, and those who thus

excluded themselves from the privileges of membership were warned that they might, in all probability, have cause to regret their lukewarmness. The Society was acquiring greater influence from becoming known and recognised by the public.

Moreover, new members were coming forward and, by passing the Society's examination, raising the average standard of qualification. This reacted upon the character of the Society and increased the value of membership. The work of the body in promoting improvement in the quality of medicines was another reason urged by Bell why it should include all persons engaged in the craft, and he claimed that there existed a direct connection between their commercial interests and their status as members of the Society, which would in future be manifested in a still more marked degree. The protection of voluntary qualification, which was the sole outcome of the recognition accorded by the Legislature in 1852, was defended by Bell as being a very obvious preliminary step, having obtained which, it depended on chemists to substantiate their claim to further confidence and to an enlargement of the benefits which it was hoped would ultimately result to the profession and the public from the establishment of the Society.

A Government Bill introduced into Parliament to restrict and regulate the sale of poisons, in May, 1857, met with vigorous opposition on the part of pharmaceutical chemists. That measure provided that no poison should be sold to persons under full age and without the presence of a witness of full age, and insisted on the production of a certificate signed by a clergyman, medical practitioner, or justice of the peace, justifying the use for which the poison was required. A complete record was to be kept of the sale of all poisons; soot, indigo, or archil was to be added to all colourless poisons: and the restrictions proposed in respect of the labelling, storing, and dispensing of poisons went into almost inconceivable minute details. In addition, no person other than a legally qualified medical practitioner was to be allowed to sell poisons without a licence to vend drugs, and to obtain that it would have been necessary to pass an examination, other than that conducted by the Pharmaceutical Society, in the conduct of which the College of Physicians and the Society of Apothecaries were to take an equal part with the Pharmaceutical Society, whilst external examiners were to be appointed by the Government. In fact, the promoters of the Bill overreached themselves by the unreasonable nature of its provisions, and prompt action on the part of the Society resulted first in the modification of the obnoxious measure, and subsequently in the withdrawal. But this was not effected without trouble, as the Bill actually passed its third reading in the House of Lords in spite of the determined opposition manifested by the Society.

As Redwood graphically relates, however, within two hours from the time at which the third reading had been carried by the Lords, circulars were in the printer's hands convening a meeting of members of the Society. Other circulars were as expeditiously printed, informing the local secretaries of the critical position of affairs, and suggesting means for opposing the Bill in the Commons. "In twenty-four hours the symptoms of a coming storm were manifest. Petitions began to come in, Members of Parliament received earnest letters from their constituents, and in the course of two or three days the entire House of Commons was sensibly influenced by the pressure brought to bear upon it." Deputations from the country and members of the Council clustered in the lobby of the House to meet their representatives, and within a very short period the Bill was withdrawn, the Minister in charge explaining that communications had been sent to him from every quarter, almost from every village, stating that the chemists had serious objections to the Poisons Bill. This constituted a great victory for the Society, the more especially as the Bill was a Government measure, and its defeat indicated that the means of organisation capable of being exerted by the Society throughout the country were far from insignificant, and not to be despised even by Governments. A similar experience befell early in 1859, when another Poisons Bill was introduced and successfully opposed, the value of the Society's organisation being thus fully evinced. The power the Society possessed in supporting or opposing parliamentary bills was referred to in Jacob Bell's last address as President, which he was unable to deliver in person on account of failing health, and he also referred at length to the varied obstacles that he had encountered in endeavouring to advance the Society's interests.

Meanwhile, the Medical Act of 1858 had been passed and arrangements made for preparing the first British Pharmacopœia. As previously mentioned, the Society had assisted in preparing the last London Pharmacopœia and a request was now made by the newly-constituted British Pharmacopœia Committee that the Council of the Society should appoint a member to co-operate with the London sub-committee. Mr. Peter Squire was selected for this position, and the Pharmaceutical Society was full recognised by the General Medical Council as a body competent to assist in the compilation of a national pharmacopœia. Arising out of this matter, some consideration was devoted at the time to the feasibility of adopting the metric system of weights and measures, or some alternative decimal system, in connection with the Pharmacopœia, but the great diversity of the propositions made, and the differences of opinion expressed regarding them, probably tended as much to perplex as to convince the Committee of the General Medical Council, which had the matter in hand, and the result was that the use of the old weights and measures was continued. The only other question of note that assumed any great degree of prominence during Bell's term of office was the adulteration of food and drink, but nothing definite was effected by the Legislature in that direction as yet.

Bell's office as President and general organiser was far from being a sinecure in those early days of the Society's work. Amongst other evidences of his activity it may be stated that he paid "domiciliary visits" to Bath, Bristol, Exeter, Clifton, Plymouth, Devonport, Birmingham, Liverpool, Manchester, Newcastle, Leeds, Nottingham, Norwich, Dover, Brighton, and other places, in the Society's interest. Those visits were attended with great success, and perhaps all that has since been lacking to ensure the completeness of that success has been the existence of a sufficient number of single-minded enthusiasts like himself.

To give even a sketch of his further efforts would be to write the history of the Society during his lifetime, for—ably seconded by Dr. Redwood and a tried circle of associates—he was continually originating and organising measures tending to the furtherance of the general interest of the body. Daniel Hanbury thus summarises his character. "Let us recollect that Jacob Bell was a member of the Council from the commencement of the Society to the day of his death, and that hardly any engagement was allowed to interfere with his attendance at its meetings. As a member of committees and at the Board of Examiners, and as an attender of the Evening Meetings, his diligence was equally unfailing." The hospitalities of Langham Place, so gracefully dispensed, materially promoted the cause which Bell had at heart; his cheerful pleasantry was contagious, and he was a strange example of the very gaiety of amusement combined with an enviable capacity for work. On leaving that luxurious drawing-room, the walls of which

were hidden with pictures, and a house where the whole appointments suggested ample means, it was pleasant to know that none of these things had turned the possessor from the task he had set himself to perform, namely, the consolidation of British pharmacy and the advancement of the calling which was his own deliberate choice. Jacob Bell was an honorary member of various foreign scientific societies and Fellow of many of the learned societies, and his long friendship with Sir Edwin Landseer must be specially recorded. Towards the end of his career, a painful ulceration of the larynx, a malady to which he had long been subject, recurred with alarming symptoms, accompanied by great weakness. The disease made rapid progress, and to the grief of all who had been associated with him either in public or private life, he died on June 12, 1859; the event occurring during his term of office.

PERFUMERY FOR PHARMACISTS.

In ancient times the manufacture of perfumes was a part of the apothecary's art (Exodus, xxx., 23-25 [O.V.]) During the present century it has become a special business, and pharmacists, who, by reason of their superior knowledge of organic chemistry, are specially fitted to prepare perfumes, have as a rule been content to simply buy and sell ready-made perfumes on the same footing as the hairdresser, draper, stationer, or general stores, instead of preparing special perfumes as proprietary articles of their own, and thus increasing their profits. The knowledge of perfumes is gradually being reduced to a science, and it behoves the pharmacist not to neglect this collateral source fo income but to keep himself abreast of the progress that has been made. For a long time essential oils were regarded as almost simple bodies, and as it was almost impossible to ascertain their purity except by such rough tests as their odour, and their solubility in alcohol of definite strengths, there were few chemicals so much sophisticated as the essential oils. It is even now not many years since it was practically impossible to obtain really pure otto of rose or essence of lemon, and the purer grades of the latter were known as "perfumers."

Recent researches have shown that the volatile oils are in reality very complex bodies, and that the different constituents are normally present in definite proportions and can be separated by fractional distillation, freezing, or by the use of chemica reagents, and consequently definite standards of purity have in many cases been adopted. Some of the constituents have been found to occur in many different oils, in which their odours are modified by the presence of small proportions of other constituents. It has been observed that perfumes may be arranged in groups, in which the type is thus variously modified. The odour of the rose is evident in the Damask, Maréchal Niel, Gloire de Dijon, General Jacqueminot, Maiden's Blush, and other roses, yet each differs from the other in odour. The flowers of *Pæonia alba*, the leaves of Ginger grass, and of the rose geranium have all an odour of rose. Wherever this odour is found in plants it is more or less modified by other odours. It is the same with nearly every other plant perfume in nature. It is by imitating nature, therefore, in this particular that the most satisfactory results are obtained. In other words, every perfume made to imitate the fragrance of any flower must have a basis, and the perfumes that are auxiliary must not be so strong as to overpower it. Odours are like musical notes—they can be combined in an infinity of ways. Artificial perfumes which do not convey the scent of any flower in particular should have a somewhat different character. In them no special odour should be recognisable; they should possess sweetness and diffuse an agreeable but not oppressive odour, and should leave a lasting fragrance when evaporated. The chemical examination of essential oils has confirmed the above view. The fractional distillation of essential oils obtained from plants has shown that they consist of a nearly odourless vehicle, which usually consists of one or more hydrocarbons of the terpene class, a principal odorous constituent which may be an alcohol, phenol, aldehyde, ketone, ether, or ester, accompanied by small quantities of various compounds which have not all been as yet determined. These modifying constituents may vary even in different parts of the same plant. Thus cinnamon bark oil contains cinnamic aldehyde, eugenol, and phellandrene; cinnamon leaves contain in addition saffrol, and cinnamon root oil camphor. Oil of cassia, which also contains cinnamic aldehyde, owes its different odour chiefly to the presence of the ester, cinnamyl acetate.

These differences in the varieties of essential oils of commerce must be borne in mind in mixing perfumes, and care be taken that one commercial variety of oil is not substituted for another. It is also necessary to remember that the amount of the principal ingredient in essential oils often varies. In some cases this is due to the fact that in distilling a large quantity of oil, the earlier and therefore more volatile products are not mixed with the later distillates so as to secure uniformity, and sometimes for less authentic reasons. In many cases the normal amount of the principal odoriferous ingredient has been carefully ascertained by chemists, and essential oils can now be obtained with a guarantee as to the proportion present. There have also been introduced into commerce a number of essential oils which have been deprived of their vehicle or terpene, by distillation *in vacuo* or other means, and are known as terpeneless oils. The principal odorous ingredients of volatile oils can also be obtained in a comparatively pure state from the oil by chemical means or by freezing. These are not as a rule so satisfactory as the terpeneless oils, which usually contain in addition the modifying constituents present in the natural oil. This is so much the case that it has been found necessary to distil geraniol or rhodinol off rose leaves to give it the modifying constituents, when the geraniol has been derived from other sources than the rose. The same is the case with the oil of lemon, citral, its chief constituent, does not wholly represent the flavour of the fresh lemon, and the terpeneless oil is therefore preferable. The chief advantage of employing the terpeneless oils is that they are more likely to be free from adulterants than the natural oils.

In artificial perfumes the natural law is followed. The vehicle used is generally grape spirit for the finer class of perfumes, as it is less apt to contain traces of amyl or other offensive alcohols. If in imitation of a flower, the essential oil of the flower, such as orange blossom, is used, if procurable, but in such cases as the violet, jasmine, and a few others, from which the volatile oil cannot be procured by distillation, an artificial product is substituted; a list of these is given below. If the odour itself is faint or easily passes off, a degree of permanence is given by the addition of a very small quantity of a persistent substance. In some cases where the leading perfume is naturally sweet, as lilac or honeysuckle, an aromatic persistent substance is added, or in cases where the leading odour is aromatic the persistent substance must give sweetness. In the former case, the lasting aromatic odour is given by one or more of the following: ladanum, clove, patchouli, vetivert, sandal wood, almonds, vanilla, tonka bean, verbena, and ylang ylang. In the latter case, liquid storax, musk, civet, bergamot, civet, ambergris, and ambrette or musk seed are the substances chiefly employed. In many cases a tincture is preferable as a separate product, since a small amount of resinous matter tends to make the perfumes more lasting. In using the more powerful

odours, such as patchouli, almonds, cloves, verbena, etc., it is best to use a dilute solution of the oil, so as to add a very little at a time, until the required modification of the principal odour is effected.

In endeavouring to imitate a flower or a perfume, the best time to analyse the constituents by means of the sense of smell is in the morning after being in the open air (*P. J.* [4], iii., p. 12). At that time of the day the olfactory nerve is more sensitive and the difference in odour more readily perceived. To ascertain the mixed odours in a flower, the curious physiological law must be taken advantage of, viz., that it is possible to tire some of the minute terminations of the olfactory nerve—just as those of the eye—so that after fixing the eye upon one colour for some time, the eye becomes temporarily blind to it and can only see the complimentary colours. Thus, after smelling a flower for a few seconds, a different odour is perceived. In the wallflower an odour resembling cassie flowers (*Acacia farnesiana*) is first perceived, then an odour of tonka beans, then a violet odour and an aroma recalling faintly that of cloves. Or in smelling heliotrope, the odour recalls at first that of vanilla and coumarin, and then almonds.

In examining a spirituous perfume a little is rubbed on the back of the hand, and smelt at intervals of a few seconds, inhaling pure air between each interval. In this way, after a little practice it will be comparatively easy to detect the constituent odours Sometimes the addition of a little water to the perfume will render some of the odours more pronounced, or slightly heating the mixture in a test tube and noticing the odours as they are given off, according to their greater or less volatility. It must be further remembered that perfumes in many cases will become mellowed by keeping, and that some aldehydes, like heliotropin and citral, are altered by heat and light or prolonged exposure to air. It may be useful to direct attention here :—

1. To the known constituents of some of the principal oils used in perfumery.

2. To some of the more important artificial synthetic perfumes, and

3. To the more recently introduced natural perfumes.

1. Principal Oils Used in Perfumery.

Bergamot.—The chief constituents are linalool and acetate of linalol

Bay (*Pimenta acris*).—Citral, methyl-chavicol, chavicol, methyl-eugenol, eugenol.

Cassia.—Cinnamic aldehyde and acetate of cinnamyl.

Cinnamon.—Bark : Cinnamic aldehyde and eugenol. Leaves : In addition, saffrol, a larger proportion of eugenol, and benzoic acid. Root : In addition, camphor.

Citronella.—Citronellal, geraniol, and methyl-heptenone.

Clove.—Eugenol, furfurol, amyl, methyl-ketone.

Geranium Oil ; Indian or Turkish : Geraniol, geranyl acetate and caprcnate, methyl-heptenone. Rose Geranium Oil : Geraniol, geranyl tiglinate, and citronellol.

Lavander.—Linalool, linalyl acetate, geranyl acetate, and cineol.

Linaloe.—Linalool, geraniol, methyl-heptenone.

Lemon.—Citral, citronellal.

Neroli.—Linalool, linalyl acetate, geranyl acetate.

Rose.—Geraniol, citronellol.

Rosemary.—Cineol, camphor, borneol.

Sandalwood.—Santalol and santalal.

Verbena.—Geraniol, citral, methyl-heptenone.

Ylang-Ylang.—Linalool, geraniol, and their acetic and benzoic esters, para-kresol-methyl-ether.

It will be seen from the above list that many of these oils contain the same constituents, but, of course, in different proportions and this suggests the idea that many other combinations might be formed artificially. It may be noted here that the odour of Russia leather in perfumes is given by the enpyreumatic oil of *Betula alba*, but a purer odour could probably be obtained by heating betulin, the crystalline principle contained in it.

2. Synthetic Perfumes.

Anisic Aldehyde.—Known commercially as "Aubepine." It possesses the odour of hawthorn flowers, but requires mixing with other odours to render it agreeable.

Benzyl Cinnamate, has the odour of balsam of Peru.

Bornyl Acetate has the odour of fir trees.

Carvacrol has a thyme-like odour.

Cinnamyl Alcohol has an odour of hyacinths.

Citral or Geranic Aldehyde has the odour of lemon, and is more readily soluble in alcohol than essence of lemon.

Cumarin has the odour of new-mown hay.

Eugenol has the odour of cloves.

Geraniol.—Also called rhodinol and limonol. It has the odour of rose. Geranyl acetate has a lavender odour ; geranyl formate is also made.

Ionone.—A ketone obtained from citral. It has a very powerful odour of violets.

Linalool and Linalyl Acetate have an odour between that of bergamot and French lavender. The latter is the "Bergamiol" of commerce (Schimmel). Linalyl formate resembles the odours of petitgrain and bergamot.

Methyl Benzoate.—The "oil of Niobe" of commerce.

Methyl Salicylate.—Artificial oil of wintergreen.

Saffrol has the odour of sassafras.

Salicylal or Salicylic Aldehyde has the odour of meadow sweet.

Terpineol has the odour of lilac.

Vanillin has the odour of vanilla.

There are also to be met with in commerce the synthetic oils of jasmin and neroli (Schimmel), and artificial musk (Baur).

3. Recently Introduced Natural Perfumes.

Canada Snake Root Oil —*Asarum canadense.*

Champaca Oil (Schimmel).—*Michelia champaca* and *M. longifolia.* Has an aromatic odour.

Champaca Oil (Haensel).—Guaiacum wood oil, Schimmel derived, according to Haensel, from *Bulnesia sarmienti*, Lorenz. Used with otto of rose to give the odour of the tea rose, etc.

Costus Oil.—*Aplotaxis auriculata.* It has a violet odour.

Frejar Oil (Haensel).—Botanical source unknown.

Kuromoji Oil.—*Lindera serica.* Has a pleasant, spicy odour.

Ladanum Oil.—*Cistus creticus*, very persistent odour, somewhat like ambergris.

Nagkesar Oil (Haensel).—*Mesua ferrea.* Odour of a violet character.

Nigella Oil.—*Nigella damascena.* It has an odour like raspberries.

Opoponax Oil—*Balsamodendron kafal.* Obtained from the gum resin (Bissa-bol). Odour somewhat aromatic.

Peru Balsam has the odour of the balsam, but less empyreumatic.

Sandalwood Oil, African, has an odour resembling sandalwood.

Spicewood Oil.—*Laurus Benzoin.* Odour somewhat spicy.

Storax Oil has the odour of liquid storax.

Tolu Balsam Oil has a hyacinth odour.

Numerous oils available for culinary essences are also now procurable in commerce, *e.g.*, angelica, basil, celery, cherry-laurel marjoram, parsley, parsnip, sage, summer savory, tarragon, thyme

walnut leaves, etc. Further details concerning essential oils may be found in Sawer's "Odorographia," in the past volumes of the *Pharmaceutical Journal*, and in a handy form in Power's 'Descriptive Catalogue of Essential Oils and Organic Chemical Preparations,' published by Fritsche Bros., of New York.

Those who have sufficient chemical knowledge to form new esters from aromatic acids and various alcohols will find a wide field of possibly new perfumes before them.

THE MEDICINAL PLANTS OF THE WORLD.

Die Heilpflanzen Der Verschiedenen Volker und Zeiten, Ihre Anwendung, wesentlichen Bestandtheile und Geschichte. Dr. med. et phil. Georg Dragendorff. Stuttgart: F. Enke. Large 8vo. Lieferung I. Preis 4 Mark. 1898.

There is no work in the English language which exactly corresponds to the one commenced by Professor Dragendorff. It is practically an enumeration of all the medicinal plants (Heilpflanzen) of all countries and all ages, with references to their uses, chief constituents, and history. It is to be completed in five parts. The first part, which is just issued, contains 160 pages. It commences with the Schizomycetes, as the lowest of the Cryptogams, and extends onwards in the accepted order of development of plants, through the vascular Cryptogams, Coniferæ, and Monocotyledons to the Juglandaceæ, in the apetalous Dicotyledons. In the arrangement of nomenclature of the natural orders, Engler and Prantl's work 'Natürlichen Pflanzen familien' has been followed as far as possible, the 'Genera Plantarum' of Bentham and Hooker, and other works being utilised in some instances.

The work may be regarded as an extended form of Rosenthal's 'Synopsis Plantarum Diaphoricarum,' published in 1862. That work contains about 10,700 plants, whilst Professor Dragendorff's is to include, according to the preface, over 12,700 plants, of which 11,790 are Phanerogams and 915 Cryptogams. The title Heilpflanzen is made to include dietetic and food plants. To extend such a work as Rosenthal's to one-fifth more requires no little research, and an almost encyclopædic knowledge of botany. This is evident under algæ, where *Acrocarpus crinalis* of Kützing, one of the Rhodophyceæ, is enumerated under the Phœophyceæ. Names now out of use are not unfrequently employed, many of the algæ not being placed in the genera given in Engler and Prantl's work. Indeed, the whole list of algæ should have been revised before publication by an expert in this subject. Even some of the statements concerning their uses are open to question. Thus, "*Griffithsia corallina*, Ag.—Küsten England und Schottland.—wie Carragheen gebraucht," is certainly not true of this country. A number of species are mentioned as found in agar agar and Corsican moss, which are certainly merely accidental admixtures, and by no means possess the properties of the articles with which they are mixed, scarcely deserving a place in the list of Heilpflanzen, whilst a number of edible species, forming articles of large consumption in Japan and of commerce between Japan and China, are not mentioned at all.

Under the fungi a large number consist of merely names, with no statement of their uses or properties. On the other hand, however, about twelve of those which are used in pharmacy, such as *Polyporus officinalis* and *Claviceps purpurea*, have very useful bibliographical references attached to them. The identification of ancient plants is in many cases given too positively and without reference to the authority who has identified them. Under lichens the need of expert revision is noticeable. Thus, three lichens, *Pertusaria communis*, *P. discoidea*, and *P. faginea*, which possess different chemical reactions, are given as varieties of one species and are said to afford litmus, which might be possible of *P. faginea*, but could certainly not be true of the other two. The lichens which yield orchill and litmus appear to have been confused by the author, and the names in several cases exhibit incorrect spelling, probably due to uncorrected printers' errors. Except for the references to scientific papers, the cryptogamic part of the work does not do credit to the high reputation of the learned professor.

Under the Coniferæ much more information is given, and references are numerous. Exception must, however, be taken to identifying dammar as a product of *Dammara orientalis*. The resin that appears in European commerce as dammar possesses, as Wiesner has indicated, the properties of a Dipterocarpaceous resin. The resin of *Dammara orientalis* approaches more nearly to kauri. The reference of dragon's blood to a *Pterocarpus* is an error that should not be continued in a work of this kind. The seeds of *Amomum granum-paradisi* and *A. melagueta* appear to have been confused, since the reference to Thresh's paper on the seeds of *Amomum melagueta*, is given under *Amomum granum-paradisi*, which has very different seeds. This is probably due to the fact that the term "grains of Paradise" is given in English text books to the seeds or *Amomum melagueta*. The source of the Ceylon cardamom is erroneously given as *Amomum aromaticum*; but such errors are comparatively few, considering the immense amount of research necessary in a work of this kind, and are only worth notice in order to enable the reader to correct them. So far as printers' errors are concerned, allowance must be made for the fact that the majority of words must almost of necessity be unknown to the compositor. It would perhaps have rendered them less difficult to correct if an alphabetical arrangement of the names had been adopted in each family. In such case it would be recognised at once that *Limethis* was an error for *Simethis*, etc.

Anyone using the work would probably want to know the use of a drug or to identify it from its native name, and it is a waste of time to have to turn first to a botanical work on systematic botany to find out in what section of a natural order the plant is, and then, as in the case of the grasses, to turn over thirteen pages to find out on which the section is, and subsequently to look through perhaps one or two pages for the particular name, unaided by an alphabetical arrangement. The work will need a very full index, including the sub-orders as well as orders. It is also to be regretted that the author has not had the courage to indicate all the natural orders by the termination "aceæ." It is rather puzzling, for instance, to find Hordeaceæ, Festucaceæ, etc., under Gramineæ, and to find that the almost equally large order next to Gramineæ is called Cyperaceæ, with a sub-order Scirpoideæ. It is also equally undesirable to alter the appropriate name of an order long in use. Anyone wishing to find the natural order Palmaceæ would never think of looking for *Principes*—at least, in this country. The chief value of the work is in the bibliographical notes given under the principal drugs, which will be extremely useful to workers in scientific pharmacy, and the more of these that can be introduced into future numbers the more valuable the work will be, although, unquestionably, it would take a large amount of the author's time to do so, even if Just's 'Jahresbericht' of botany alone were consulted. But the information given would have far more practical value than the often doubtful identification of some drug used by the ancients and mentioned by Dioscorides or other old author. It should be mentioned that the bibliographical references given are not merely references, but very frequently contain the pith of the paper quoted in the fewest possible words, and for this readers whose time is limited will be exceedingly grateful. As a work of reference no pharmaceutical library can afford to be without the work.

The Pharmacy Acts Amendment Bill, 1898.

Memorandum.

The Object of the Bill is—

1. To render persons who have passed the "First" or "Preliminary" Examination required by the Pharmacy Acts, and who are consequently registered as "Apprentices or Students," eligible to become "Student-Associates" of the Society instead of "Students" as heretofore. The majority of the "Students of the Society" were not educated in the Society's School, and the term is therefore incorrect and misleading.
2. To render every person whose name appears on the Register of Chemists and Druggists eligible to become a Member of the Society. Two-thirds of the persons entitled to keep open shop as Chemists are ineligible to become Members, and they consequently have no direct representation on the Council of the Society.
3. To provide for the retirement of one-third of the Council every year by rotation instead of by ballot, as is provided by the Charter. The existing procedure makes it possible for a Member of the Council to be balloted out every year.
4. To enable the Secretary to receive voting-papers for the election of Council up to and on the day of election.

A BILL

TO AMEND

The Pharmacy Acts, 1852 *and* 1868.

1. Interpretation.—In this Act the term "Chemist and Druggist" shall have the same meaning as in the Pharmacy Act, 1868; and "The Society" shall mean the Pharmaceutical Society of Great Britain.

2. "Apprentices or Students" Eligible to be Elected "Student-Associates."—Every person who at the time of the passing of this Act shall have been duly registered as an "Apprentice or Student," and who, under the provisions set forth in Section X. of the Pharmacy Act, 1852, has been admitted to and at that time remains in the Society as a "Student," shall be registered as a "Student-Associate" of the Society; and every person who at the time of the passing of this Act shall have been duly registered, or who thereafter shall become registered as an "Apprentice or Student," shall be eligible to be elected a "Student-Associate" of the Society according to the Bye-laws thereof.

3. Registered Chemists and Druggists Eligible to be Elected "Members."—Every person who at the time of the passing of this Act shall have been registered as a Chemist and Druggist or who shall hereafter become registered as a Chemist and Druggist shall be eligible to be elected a "Member" of the Society according to the Bye-laws thereof.

4. Retirement of Members of the Council by Rotation.—Notwithstanding anything in the provisions contained in the Royal Charter of Incorporation of the Society, whereby it is provided that two-thirds of the Members of the Council shall in every year go out of office, the following provisions shall, after the passing of this Act, have effect:—

(1.) On the ordinary day of election of members of the Council in every year seven members of the Council shall go out of office, and the vacancies shall be filled by election, the retiring members being eligible for re-election.

(2.) The seven members who go out shall be the members of the Council who have been longest in office without re-election.

(3.) If and whenever the number of the members of the Council who have been longest in office without re-election shall exceed seven, the members of the Council to retire shall be determined from these by lot.

5. Voting Papers for Election of Officers.—At all Meetings of the Society, at which votes shall be given for the Election of Officers, all or any of the votes may be given either personally or by voting papers, in a form to be defined in the Bye-laws of the said Society, or in a form to the like effect, such voting papers being received by the Secretary, under cover, not later than twelve o'clock noon on the day on which the election takes place.

6. Extent of Act.—This Act shall not extend to Ireland.

7. Short Title of Act.—This Act may be cited as the Pharmacy Acts Amendment Act, 1898.

8. Repeal.—The enactments mentioned in the Schedule to this Act to the extent specified in the third column of that Schedule are hereby repealed.

Schedule.

Enactments Repealed.

Session and Chapter.	Short Title.	Extent of Repeal.
15 and 16 Vict. c. 56	Pharmacy Act, 1852	In Section ten the words, "and every such person duly registered as an Assistant shall be eligible for admission as an Associate of the said Society."
31 and 32 Vict. c. 121	Pharmacy Act, 1868	Sections eighteen, nineteen, twenty and twenty-one.

Explanatory Notes Respecting Clause 3.

The Pharmaceutical Society was founded in 1841 by Chemists and Druggists in business, who voluntarily associated themselves for the promotion of pharmaceutical education and for the protection of common interests.

The Royal Charter of Incorporation, 1843, gave official recognition to the voluntary body, and empowered the making of bye-laws regulating the admission of Members, Associates, and Apprentices. Membership was open to all persons established in business on their own account, also to those who, after examination, should be certified to be competent to carry on business. Associateship was specifically confined to the Assistants of Chemists and Druggists. (Charter, lines 78 and 91.)

The Statute of 1852 created a means of ascertaining the names of persons of known competency, by providing for the maintenance of a Register of Pharmaceutical Chemists. Penalties were imposed on unregistered persons who assumed the title of Pharmaceutical Chemist or Pharmaceutist. The Register was not a register of Members of the Society, and the practice of Pharmacy was not restricted to registered persons. Associateship was confined by the Statute to Assistants. (Pharmacy Act, 1852, Sec. X.)

The Act of 1868 declared it expedient for the safety of the public that "persons known as Chemists and Druggists should possess a competent practical knowledge of their business." (Pharmacy Act, 1868, Preamble.)

A Register of such persons was created, and the following were eligible for registration:—

I. All persons in business on their own account before the passing of the Act. (Pharmacy Act, 1868, Sec. III.)
II. All persons registered under the Statute, 1852.
III. All persons who should obtain from the Statutory Boards of Examiners certificates of competent skill and knowledge.

Connection with the Society continued to be optional, as it ever had been. (Pharmacy Act, 1868, Sec. XVIII., XIX., and XX.)

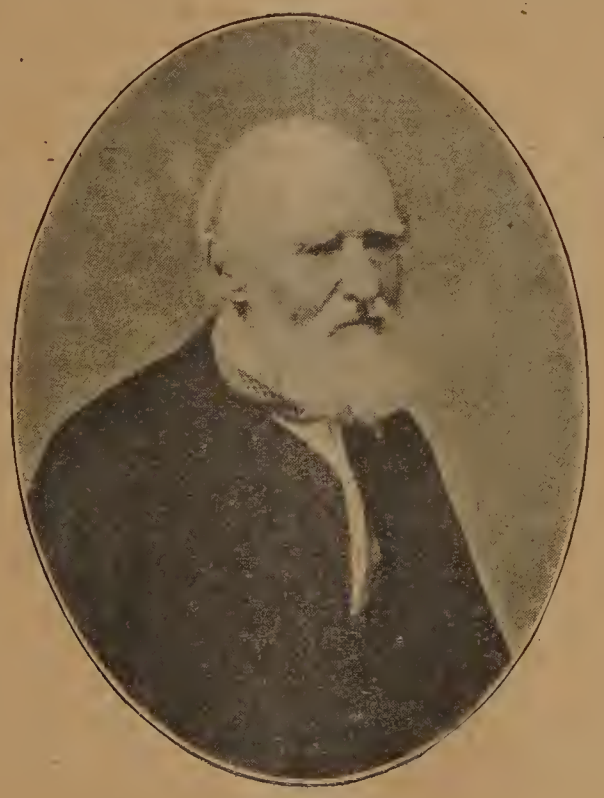
The Act of 1868 thus created a class of persons who are entitled, after passing the requisite Examination, to establish themselves in business on their own account, but who are not eligible for membership of the Society, and can have no representation on the Council of the Society. The Act only provided for their admission to the grade of Associateship, which from the foundation of the Society until 1868 had been exclusively reserved for Assistants. (See Pharmacy Act, 1868, Sec. XX.)

The legal qualification to carry on the business of a Chemist and Druggist is registration under the Pharmacy Act, 1868. Over 15,000 persons possess that legal right in common, but at the present time about two-thirds of them are debarred from membership of the Society and representation on the Council. (Pharmacy Act, 1868, Secs. XIII. and XV.) The present Bill, by Clause 3, proposes to remedy this anomalous condition by seeking for powers to render all registered persons eligible for election as "Members."

THE BENEVOLENT FUND OF THE PHARMACEUTICAL SOCIETY OF GREAT BRITAIN.

BENEVOLENCE is a virtue which it concerns all mankind to cultivate and to practise. That members of the pharmaceutical calling possess in a highly respectable degree the altruistic attributes of virtuous citizenship is revealed in the history of the uninterrupted progress of their own Benevolent Fund. Benevolence occupied a prominent place in the unwritten charter conceived by the founders of the Pharmaceutical Society, and it found honourable mention in the incorporating charter granted to the Society in 1843. But in those early days the first necessity was self-preservation; so much so, indeed, that the first ten years or so of the Society's life may be said to have been passed in fighting hostile Bills, and the infant Benevolent Fund was necessarily to some extent neglected. True, from time to time substantial nourishment in the shape of £500 grants were administered from the Society's General Funds, but no special exertions were officially made to direct the attention of members and Associates to the claims of the Fund until the year 1848. The Council had, in its first Bye-laws, fixed £300 as the minimum annual income upon which the full operation of the Fund could be justifiably inaugurated, and as the necessary capital was slow in accumulating, it became desirable to devise means of hastening the day of awakening. The device, naturally enough, took the form of a Dinner, for, as a writer of the day pertinently remarked, "no undertaking of the kind can flourish until the parties concerned have eaten salt together." This lack of pence, and the difficulty of acquiring it, was the exciting cause of the first Benevolent Fund Dinner which took place on May 16, 1848, at the Albion Tavern, Aldersgate Street – a hostelry still existing under the same name, but modernised out of recognition. Some particulars of the Dinner may be of interest to our readers to-day. The chairman was Mr. T. N. R. Morson, the Vice-President, who officiated for the President, Mr. Savory, and the company seem to have been few but enthusiastic. The usual toasts, loyal and pharmaceutical, were given and responded to, as well as one which is now unusual—"The Ladies"—which seems to indicate that our forefathers appreciated the value of securing the co-operation of the fair sex in the work of extending the influence of the Fund. The forty odd dinner stewards have all passed hence, the last survivor disappearing with the death of Edward Horner a year or two back; but of those who attended the Dinner some are happily still with us; for instance, Mr. A. S. Hill, Mr. A. B. Hill, Mr. T. Morson, and Mr. E. H. Moscrop. The special effort of which the Dinner was the outward and visible sign resulted in an addition of £800 to the resources of the Fund, most of which, say the records, was contributed by the London members of the trade. This accession of comparative wealth, and the removal of the restrictive bye-law which caution had led the Council to enact in 1843, permitted the Fund to commence its noble mission of practical benevolence, and we find that £10 was expended in casual grants during the year 1848. That may be said to be the year in which the Benevolent Fund came into active being, and it is a curious coincidence that on the morning of the very day of the Dinner above referred to, the President presented the sessional prize in materia medica to a "Square" student who is now an annuitant on the Fund.

Enthusiasm, however, is apt to die out quickly if not judiciously promoted occasionally, for the human heart conserves virtuous zeal as the flint bears fire. It is not surprising therefore to find that nothing much was done in the way of organised development of the Fund till the early sixties. Then appeared the individuality to which the trade owes the present splendid position of the Benevolent Fund.



DAVID PEART.

The First Annuitant on the Benevolent Fund.

When Mr. Elias Bremridge became Secretary the Fund was practically living on the interest on its investments, and limiting its operations to small grants amounting in the aggregate to £30 or £40 a year. When he retired in 1886 the annual subscriptions had risen to £1635, whilst the invested capital had grown to £20,433, and the record of good work for the year included the relief of 87 cases at an expenditure of £1870. The example he set of charitable importunity has been maintained to this day, and even improved upon, and no serious backsliding has occurred since the inauguration of Mr. Elias Bremridge's forward policy nearly forty years ago. Dinners became permanent institutions, and instead of one at very irregular intervals, decennial festivals were established, at which the well-meaning but slow-acting chemist might be induced, under the melting influence of presidential oratory and fraternal amiability, to include one or two "back payments" in his donation or subscription. The success of these Festival gatherings culminated in that which took place last year, and which yielded the magnificent sum of £2260 for the benefit of the Fund. Chemists ought to be proud of their Benevolent Fund, and ought to make it their especial concern to extend its influence and advance its work. Since 1848 some £52,000 has been expended in alleviating the distress of those who have been forced to "fall by the way." Imagination reels at the attempt to conceive the amount of human pain assuaged, of human sorrow solaced, represented by that sum of money, for it must be remembered that the distribution of grants has never been recklessly conducted or left to hazard. Is it nothing to registered men that so much has been accomplished? Is it nothing that so much yet remains which they might help to do? If any think it nothing, let him spend half an hour with the Secretary and learn at first hand the nature of the work which his father did so much to develop.

Up to 1865 the practice of granting permanent relief in the form of annuities was not possible, owing to financial reasons, but in that year a bold bid for popularity was made by instituting two annuities of £30 each. At that time the benefit of the Fund was restricted to members and associates of the Society, their widows or orphans. The first pair of annuitants therefore had to come within that category. We are enabled to give in this issue a very excellent portrait of the first male annuitant, David Peart, who was in business at Ewell for many years. The Council had the satisfaction of paying him the annuity for twenty-three years, and of knowing that that period was without that canker of financial worry as to ways and means which had harassed him during the later portion of his business life. He died in June, 1888, at the ripe age of 91. From two annuitants at £30 the permanent relief bill mounted in 1878 to 25 who received £768—that is to say, 13 at £35, and the rest at £30—and a further advance was made when in 1891 Mr. Carteighe raised the pension to the more adequate sum of £50 for those over sixty-five and £40 for those under that age. There are now 34 persons receiving the higher amount and 9 receiving the lower amount, and the total expenditure for 1897 in respect of annuities reached the record sum of £2570.

In 1868 all needless restrictions to practical usefulness were removed, and each chemist who has been registered under the Act is now entitled to participate, if necessity should rise, in the benefits of the Fund. Every registered man should therefore regard the Benevolent Fund as standing between him and possible penury—a joint-stock provision against the unexpected, and as a shareholder in so good a concern he ought to be prepared, nay, he is under a moral obligation, to give consideration for his share in the shape of an annual subscription. Members of the Society have done their part nobly and well, but the Benevolent Fund is neutral territory where pharmaceutical policy and contention have no place, so that all sorts and conditions of chemists may associate with perfect amity in the practical exhibition of benevolence, without regard to the virtues or supposed shortcomings of the Society. The administration of the Fund is beyond reproach, and the cost of distribution is almost entirely borne by the Society, hence there can be no excuse for withholding one's support. Some thousands of registered men still refrain from subscribing, but it is hoped that as the objects and the work of the Fund become more and more recognised that reproach will be gradually removed.

THE BENEVOLENT FUND ALBUM.

The following is a list of past and present Annuitants on the Benevolent Fund whose portraits are not in the above album. The Secretary will be glad to receive copies of photographs in those cases. They should be addressed to him at 17, Bloomsbury Square.

Anderson, Chas. T.
Atherton, Wm.
Barber, Joseph
Barker, John
Bellingham, H. J.
Bensley, George D.
Bowen, Margaret S.
Brunton, Sophia
Brown, Eliza
Chapman, Richard Jos.
Collins, J. Richard
Cooke, John
Davies, Henry E.
Dixon, Mary E.
Eastes, Thomas H.
Farrow, Martha J.
Fife, George
Gason, Elizabeth J.
Gilbert, Edward
Gilkes, Mary
Goadsby, Elizabeth
Godden, Sophia
Greaves, Hannah
Hellowell, Mary A.
Henson, Sophia P.
Higgs, John S.
Hollinworth, Chas. F.
Horncastle, Anne
Jones, Augusta
Kennett, George B.
Kennett, Louisa
Linging, Bine
Markland, Edwin
Moss, Mary
Mumbray, Henry G.
Novis, Thomas
Parkes, Ellen
Pitman, Emma
Phillips, Dorothy
Potts, Thomas
Pownall, Sarah
Robinson, Samuel
Rogers, John
Sanders, George L.
Snowdon, Hester
Skoulding, William
Slater, William Hy.
Spendelow, Mary E.
Stevens, Elizabeth J.
Stephenson, Thomas
Stone, Thomas W.
Sutterby, Catherine M. A.
Taylor, Henry
Trumper, Richard
Trumper, Susan
Tucker, Charles
Wavell, John
Whitehead, Annie
Wick, James
Wick, Sophia
Wilson, Sarah
Yates, W. L.

PARLIAMENTARY NOTES.

The Pharmacy Bill, 1898, is no doubt being introduced to the House as we go to press. The Hon. W. F. D. Smith (Strand) gave notice on Tuesday last that he would move for leave to introduce the Bill on Thursday, and there is nothing to lead one to suppose that such leave will not be accorded. Mr. Smith has associated with him as supporters Mr. E. Boulnois (E. Marylebone), Colonel Brookfield (E. Susx.), Mr. E. B. Hoare (Hampstead), Dr. Farquharson (W. Aberdeen), Mr. T. Shaw, Q.C. (Hawick Burghs), Mr. C. E. Schwann (N. Manchester), and Mr. H. E. Kearley (Devonport). The full text of the Bill, its objects, and an explanatory statement of its chief clause is printed on page 200 of this issue. It is one of the most modest of "stepping-stones to higher things," and, as such, should receive the cordial support of all who desire the Society to be strengthened and made more thoroughly representative of the pharmaceutical calling.

Food and Drugs.—Mr. Kearley's amendment to the address was duly moved at midnight on Friday, 18th, and speedily disposed of. It has not disturbed the *statu quo ante* to any appreciable extent, and only afforded ministers an opportunity of showing how wicked obstruction is when such excellent measures as the Government Food and Drugs Bill are awaiting attention. The amendment was rejected by 171 to 66, the voting generally following party lines. Sir Walter Foster and Sir J. T. Brunner were among the Ayes. The hon. member for Devonport does not propose to let matters rest or to wait till the Session is half over before attempting to secure attention for his own Bill.

Early Closing had its chance on Tuesday, when Sir John Lubbock's local option and Sir Charles Dilke's compulsory closing schemes were respectively first and second orders of the day, and, what is more, were both unopposed. But alas! Parliament is as fickle as Fortune, and the uncertainty of parliamentary moods is every bit as proverbial as the unstability of human affairs. In fact, the private member who does not happen to represent an Irish constituency, or to have a numerous following, has to be prepared for "counts out" when everything appears satisfactory and serene. Such a "bolt from the blue" fell on Tuesday at 8 p.m., and practically ruined the prospects of early closing. Sir John was in his place, but even his many-sided individuality could not induce thirty-nine persons to stay with him to make a quorum. Perhaps the weight of Mr. Samuel Smith's Indian motion had crushed out all political ardour in the House.

In the House of Lords the Lord Chancellor introduced the University of London Commission Bill, and it was read a first time. Next Monday it will probably pass its second stage, and will be speedily passed into the arena of political strife, politely

referred to as "another place." The Bill is precisely similar to that introduced last year. It appoints Commissioners (who, by the way, are not yet named) to effect what the London University authorities have declined to do, viz., the reconstitution of the University on the lines recommended by the Gresham Commissioners. They have power to make statutes and regulations for the University in accordance with the scheme, or with such modications as expediency may suggest—a wide power. But there is a safeguard. All such statutes or regulations must be submitted to Parliament, and must be approved by the Queen in Council before becoming operative, and Parliament may, within forty days after the presentation of the Statutes, pray Her Majesty to withhold consent thereto. The minority, therefore, are provided with ample means of obstructing the work of the Commissioners, and the objectors to the whole scheme will no doubt use those means in the event of the Bill becoming law. There is, in schedule form, a series of standing instructions to guide the Commissioners in making regulations, and one of them insists that "University teachers" shall be "members of the teaching staffs of public educational institutions," within thirty miles, "who have been recognised as teachers of the University." There is thus some hope of one day seeing the Pharmaceutical Society's educational work in pharmacy associated with and recognised by London's great Teaching University.

Copyright Amendment will occupy the attention of a Committee of the House of Lords on Monday next.

The Companies Bill (H.L.) is awaiting consideration by the Select Committee, to which it has been referred. The Committee has been constituted, but no day has yet been fixed for the first meeting. We regret that we are not at present able to give the text of Mr. Faithful Begg's attempt at company legislation. The Bill he introduced has not yet been printed, and is not likely to trouble the House much this Session.

The Chemical Compounds Bill is also a delayed measure, owing to the illness of its introducer, Mr. Wootton Isaacson. We regret to have to announce that the honourable gentleman died on Tuesday last of influenza. Second reading of the Bill was down for Monday, but was deferred till Thursday. It has not been printed officially,

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LEGAL INTELLIGENCE.

PROCEEDINGS UNDER THE PHARMACY ACT.

The Council of the Pharmaceutical Society of Great Britain v. Sutton.

On the 17th instant at the Portsmouth County Court, before His Honour Judge Gye, the Council of the Pharmaceutical Society of Great Britain sued George Sewell Sutton, of 31, Stoke Road, Gosport, to recover a penalty of £5 for keeping open shop for the retailing, dispensing, or compounding of poison contrary to the provisions of the Pharmacy Act, 1868.

Mr. R. E. Vaughan Williams, instructed by Messrs. Flux, Thompson and Flux, appeared for the Society. Defendant appeared in person.

Mr. Vaughan Williams, in opening, said the proceedings were brought under the provisions of the Pharmacy Act, 1868, for the recovery of a penalty of £5. The 1st Section provided that unqualified persons should not sell poisons, and he also referred to various other sections which had a bearing on the case. The 13th Section made the Register evidence, and the 15th Section imposed penalties for offences, and in this case he charged the defendant with keeping open shop for the retailing of poison, not being a duly registered pharmaceutical chemist or chemist and druggist. The 16th Seotion reserved the rights of certain persons, and it might become necessary to direct further attention to that section.

The purchase upon which he relied was made on September 27 last by Mr. Partridge, who was sent by the Registrar of the plaintiff Society. He purchased some drugs, among which was laudanum. Over the shop he found the name George Sewell Sutton, and under those circumstances it would be for the defendant to show that he was not keeping open shop.

Before instituting proceedings the Society's solicitors wrote defendant for the penalty, and the reply sent by defendant indicated that he was going to set up the defence that he was a person entitled to the benefit of one of the reservations contained in Section 16, as the executor of a deceased chemist.

Inquiries were made, and the conclusion come to that defendant was not *bonâ fide* carrying on business as the executor of his father, and it would be for defendant to establish that he was such executor. Defendant had tried to pass an examination, and there could be no doubt that he was fully aware of the requirements of the statute.

His Honour (to defendant): Do you admit the sale?

Defendant: I do.

Mr. Vaughan Williams: I think it is requisite that I should give formal evidence of the offence.

Mr. Partridge, examined: I went to 31, Stoke Road, Gosport, on September 27 last. I made a purchase of twopennyworth of laudanum and twopennyworth of soap liniment. Defendant's name was over the premises.

Cross-examined: The name up was "G. S. Sutton." I made inquiries in the neighbourhood as to defendant's Christian names.

His Honour (to defendant): Was your name up?

Defendant: Yes, on the door.

His Honour: When this stuff was bought was there any other person of that name in the business?

Defendant: No.

His Honour: Are you a chemist and druggist?

Defendant: No, sir.

Mr. Ernest John Eastes, examined: I am an analyst. I analysed the contents of the bottle handed to me by Mr. Partridge. I found it to contain 1 oz. and 3 drachms of a fluid which proved to be laudanum and soap liniment. I found the amount of morphine to be 1·05 grain, equivalent to 10½ grains of opium.

Mr. Vaughan Williams: I put in a print of the Annual Register. Defendant's name is not to be found in it, and he has admitted that he is not a chemist and druggist. I also put in the file of proceedings in the defendant's bankruptcy, as it may be necessary to refer to certain information given by the defendant to the Official Receiver, and appearing on the said proceedings. I submit that I have established my case, and it is for the defendant to establish the defence which he has put forward.

Defendant: My answer to this action is that I come under Clause 16 of the Pharmacy Act, 1868, reserving the rights of certain persons, as the executor of my father, who was a chemist and druggist.

His Honour: How do you propose to do that?

Defendant: By production of my father's will.

Mr. Vaughan Williams: I object to that form of proof. There are decided cases that production of a will is not sufficient proof of executorship.

His Honour, after reading Section 16 to defendant, asked him how he brought himself within any one of the reservations in that section.

Defendant: I am executor or trustee of my father.

His Honour: Have you proved the will.

Defendant: No; I produce the will.

His Honour: I can't look at it. It is not the slightest use keeping up this case further. The only way in which you can establish that you are executor of your father is by production of probate of his will. I have no evidence before me that you are entitled to that position. I must give judgment against you. You have been doing a very wrong thing, and you have no right to carry on the business of a chemist and druggist. The plaintiffs are entitled to judgment against you for the penalty claimed, with costs.

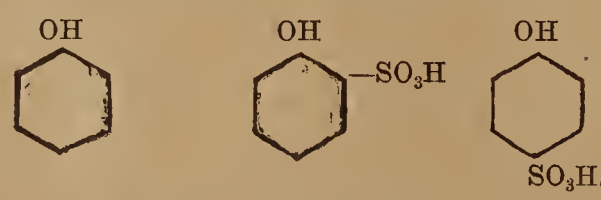
THE STUDENTS' PAGE.

EXPLANATORY NOTES ON THE B.P.

Sodii Citro-Tartras Effervescens.—This compound, as wel as the other effervescent salts described in the B.P. Appendix may be made very well on the small scale by careful manipulation The mixture to be granulated should be placed in a flat-bottomed porcelain basin—a photographic dish answers very well—and the basin heated over a saucepan of boiling water. The basin should be large enough to well cover the saucepan, the water being boiled very gently so as to minimise as much as possible the absorption of moisture during granulation, and consequent loss of effervescent properties. In making effervescent preparations from salts containing water of crystallisation, which is partly or wholly expelled at the temperature of granulation, it is obviously necessary to remove this water by a preliminary application of heat. Otherwise the water would bring about the reaction between the added acid and bicarbonate, and the finished granule would be devoid of effervescent properties.

Sodii Sulphocarbolas.—When phenol is dissolved in strong sulphuric acid a substitution product is obtained, phenol sulphonic acid, which has the constitution $SO_2<^{C_6H_4(OH)}_{OH}$. This may be regarded as a di-substitution product of benzene, and consequently can exist in the three isomeric forms known as the ortho, meta, and para varieties, according to the relative position of the two substituting groups (in this case hydroxyl (OH) and the sulphonic group, SO_3H) in the benzene nucleus. When a mono derivative is thus converted into a di-derivative, the variety of the latter compound obtained depends upon the nature of the substituting group already present in the mono-substitution derivative, and not upon the nature of the second substituting radicle. Although it is difficult to give in any simple manner the general laws which govern the course of the reaction in these cases, the following statement will enable the student to grasp broadly the facts of the case. If the compound formed by adding hydrogen to the radicle already present is readily oxidisable, then the second entering radicle will take up the meta position relatively to the first. This, therefore, applies, for example, to nitro ($\mathbf{H}-NO_2$) carboxyl ($\mathbf{H}-COOH$) and sulphonic ($\mathbf{H}-SO_3H$) derivatives, since nitrous, formic, and sulphurous acids are all oxidisable substances. As a matter of fact, nitro-benzene, $C_6H_5(NO_2)$, benzoic acid, $C_6H_5(COOH)$, and benzene sulphonic acid, $C_6H_5(SO_3H)$, when converted into di derivatives, form the meta variety, no matter what the nature of the second substituting radicle may be. On the other hand, if the compound obtained by adding hydrogen to the first radicle is not easily oxidisable, then the second entering radicle takes up the ortho and the para positions, although the para compound usually predominates. For example, hydroxyl, chlorine, and amidogen derivatives yield ortho and para derivatives, because water ($\mathbf{H}-OH$), hydrochloric acid ($\mathbf{H}-Cl$), and ammonia ($\mathbf{H}-NH_2$) are bodies only oxidised with difficulty.

In the case of phenol and sulphuric acid ortho- and para-phenol sulphonic acids will consequently be obtained—



It must be remembered that this rule is only broadly true, as a *small* quantity of the variety contrary to the rule is obtained in most reactions. Note, in passing, that sulphonates are isomeric with sulphites. In the former the radicle is directly connected with the sulphur, while in sulphites it replaces the hydrogen in a hydroxyl group, as shown by the three following general formulæ :—

Compare in your text-book the difference between the behaviour of sulphites and sulphonates, noting the formation of the latter by oxidation of the thio-alcohols or mercaptans RSH. The phenol sulphonic acids are separated from the excess of sulphuric acid by neutralisation with barium carbonate, barium sulphate being precipitated while the barium phenol sulphonate is readily soluble. By adding now sodium carbonate to the filtrate barium carbonate is precipitated, while the sodium phenol sulphonate, known commercially as sulpho-carbolate of sodium, remains in solution.

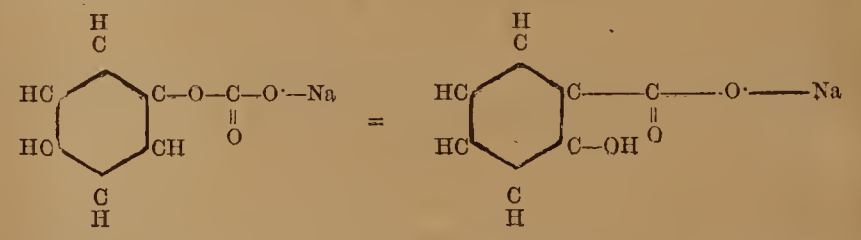
Sodii Salicylas.—The Pharmacopœia recognises both the natural salicylic acid and the synthetic product obtained from phenol. The latter is made by passing carbon dioxide into sodium phenate, C_6H_5ONa (obtained by reaction between sodium hydroxido and phenol) under pressure when phenyl sodium carbonate results—

$$CO_2 + C_6H_5{\cdot}O{\cdot}Na = CO<^{ONa}_{OC_6H_5}$$

This is precisely analogous to the action of carbon dioxide on sodium oxide—

$$CO_2 + Na{\cdot}O{\cdot}Na = CO<^{ONa}_{ONa}$$

By heating the phenyl sodium carbonate it undergoes an intramolecular transformation into the isomeric sodium salicylate, $C_6H_4(OH)COONa$—



Comparison of the two formulæ shows that the change involves the transfer of an oxygen atom from the carbonic radicle to the adjacent carbon atom in the benzene nucleus, with the production of a hydroxyl group. The compound so produced is hydroxybenzoic acid, which, being a di-substitution product, can exist in three forms, ortho, meta, and para, according to the relative positions of the two substituting groups. Salicylic is the ortho variety, as shown above. The meta- and para-acids are well known, and some of the latter is produced in the manufacture of salicylic acid if the temperature be allowed to rise too high. The artificial salicylic acid formerly produced doubtless contained an appreciable quantity of impurities derived in part from impurities present in the phenol—chiefly homologues, like cresol, $C_6H_4(CH_3)OH$, for example, which produces homologous cresotic acids, $C_6H_3(CH_3)OH{\cdot}COOH$. These impurities were said to cause unpleasant symptoms when salicylic acid was administered in large doses. Owing to improvements in manufacture, the artificial salicylic acid can now be obtained practically pure and is consequently used almost to the exclusion of the natural acid obtained from winter-green oil, on account of the high price of the latter. The meta- and para-hydroxy benzoic acids differ from salicylic acid in giving no violet colour with ferric chloride and in not volatilising with steam. In the official tests for sodium salicylate, sulphates and chlorides are detected by the precipitation of barium sulphate and silver chloride in presence of nitric acid, the salicylic acid precipitated by nitric acid being redissolved by the addition of alcohol. Solution in cold sulphuric acid without effervescence excludes the presence of carbonates, while many forms of organic impurity, sugar, for example, will be detected by the more or less charring on the addition of sulphuric acid, with which salicylic acid forms a colourless derivative.

Spiritus.—The official spirits are solutions of various substances for which alcohol forms a convenient solvent and diluent. In most cases the alcohol promotes the action of the remedy dissolved in it, for the official spirits are chiefly stimulants or carminatives. Many of the tinctures might with more justice be called spirits, for instance, tinctura iodi, which is merely an alcoholic solution of iodine.

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METRIC UNITS AND VOLUMETRIC SOLUTIONS.

At a meeting of the International Commission on Weights and Measures, held in Paris last year, Mr. Chaney, the British representative member of the Commission, drew attention to the practice adopted by chemists and pharmacists of graduating measures of capacity in such a manner as to have reference to the temperature of 15°·5 C. Thus, for instance, a flask for measuring 100 C.c. that would contain 100 grammes of water at 15°·5 C. would contain at the temperature of 4° C. about 100·16 grammes of water. At the request of the General Medical Council, conveyed through the editor of the British Pharmacopœia, Mr. Chaney wished the Commission to express an opinion as to the directions proposed to be given in the Pharmacopœia for the preparation of volumetric solutions in the manner above referred to. One of the directions submitted to the Commission was as follows :—

"A glass flask which when filled to a mark on the neck contains exactly 1000 grammes of distilled water at 60° F. (15°·5 C.). This measure would represent 1 litre or 1000 C.c."

After discussing the subject the members of the Commission were unanimous in their conclusion that it is necessary to avoid any alteration of the fundamental definitions of metrologic units, and that a measure described as a litre should always conform to the conditions for representing that unit, that is to say it should represent the volume of a kilogramme of water at the point of maximum density or 4° C. In like manner, when measuring water at a different temperature, allowance should be made for the expansion of the water and for the difference between the air it displaces and that displaced by the weights used. It was also agreed at the suggestion of M. Mendeleeff that a further correction should be made if the pressure differs from the normal. On these grounds objection was taken to the definition of the litre, and 1000 C.c. proposed by the Medical Council as involving an alteration of the value of those measures.

But provided that the conditions are borne in mind which are indispensable from the metrological point of view, it was considered admissible that measures of capacity might be adjusted at other temperatures than 4° C., for example, at 15°·5 C. But in such cases it is necessary that a litre measure adjusted for a temperature other than 4° should bear an indication of the temperature at which it has been adjusted and at which it will measure the unit without correction.

The objection made by the Commission appears to have been caused by the last sentence of the passage quoted above and representing the volume of 1000 grammes of water at 15°·5 C. as being a litre, whereas it would be something more than a litre. That is an addition to the description in the present Pharmacopœia (p. 488), which is incorrect, and is quite unnecessary in regard to the preparation of volumetric solutions, as they do not require to be prepared with vessels having the exact capacity of the metric units of volume, but only to have a definite and constant relation to each other and to their subdivisions. In practice metric units of volume are nominally used, but the adjustment of measures, burettes, etc., is made—without regard to metrologic relation between the litre and the kilogramme—at the normal temperature of 60° F. (15°·5 C.), at which analytical operations are conducted.

Another point in the proposed definitions of the new Pharmacopœia to which the International Commission took exception was the statement that the standard cubic centimetre is the volume of one gramme of water at 4° C., 1000 C.c. representing one litre. That statement is not in accord with actual knowledge, since the volume of a cubic decimetre is not identical with the volume of a kilogramme of water at the maximum density or the equivalent of the prototype kilogramme. The difference has not been exactly determined, but it amounts to something near 1/10,000th, and the determination of the exact difference is now engaging the attention of the International Bureau.

A WORD WITH CHEMISTS AND DRUGGISTS.

Sixty years ago chemists and druggists in Great Britain were without organisation of any description; anyone could assume their title and practise their art without let or hindrance, and a craft that contained within itself all the elements required to constitute a professional body was in a condition that can only be described as chaotic. A few individuals in London and the larger towns conducted business on lines that have never been surpassed; but the majority were nondescript dealers in almost everything except what they professed to sell and dispense. The leaders had reached the highest rungs on the ladder that any pharmacist can expect to attain to, but the rank and file followed them at such a distance apart that it is almost impossible they could have conceived they were pursuing the same route. What natural development was slow to effect, however, the incidence of danger quickly brought about. Threats of restriction and control by medical bodies caused the heterogeneous fragments to unite for self-defence with marvellous unanimity, and for a time there was a fair prospect of a body existing in pharmacy which should include all, or nearly all, those who practised the art. With that hope ever in mind, Jacob Bell, a sketch of whose life-work is published this week (see p. 195), struggled on manfully through many weary years, rendered doubly trying by acute personal suffering. On more than one occasion his wonderful personality

attracted the bulk of those whom he had grown to regard as his constituents and kept them in touch with each other temporarily until the work in hand had been accomplished. The original idea was that the Pharmaceutical Society should be a purely democratic body, including as members, all chemists and druggists in business on their own account, on an equal footing, with identical privileges, the same title — pharmaceutical chemist — and everything else in common, so far as the body corporate was concerned. But later the awakening came, and, thirty years ago, the passing of the Pharmacy Act of that day revealed a degree of selfishness on the part of some pharmaceutical chemists, and a lack of interest on the part of chemists and druggists, that together tended to dissipate any idealistic notions that may have influenced Jacob Bell and his friends and fellow-workers in their endeavours to consolidate pharmacy as a profession. A fancied superiority led some of the earlier members to protest against the admittance to their ranks of a large number of worthy practitioners whom reason urged the desirability of including in the Society. The influence of the objectors, weak though their arguments were, sufficed unfortunately to weigh down all that could be said on the other side, and the apathy of the chemists and druggists of 1868 could not be sufficiently shaken off to induce them to overwhelm the opposition by force of numbers and a united claim for justice. The result has been that, ever since, those who have passed the examination to qualify as chemists and druggists have occupied an invidious position in the Society of which they now constitute the main strength, and never during all the years that have elapsed have they combined properly to seek redress.

To-day a further opportunity is thrust upon them, but the prospect of better things is clouded, as in 1868, by threatened opposition on the part of a few pharmaceutical chemists. Possibly obstacles may not actually be interposed in the path of the new Pharmacy Bill, but it is none the less necessary to face the possibility that they may be interposed and become veritable stumbling-blocks. Measures must be taken, then, to repel attacks, and organised defence appears to be a special need of the moment. If, for every objector to the Pharmacy Bill of 1898 who puts himself in communication with his Parliamentary representative, a dozen or a score of chemists and druggists make it their duty to explain to the same representative the reasonable nature of the measure, the harm attempted will be at least neutralised, and perhaps a slightly greater effort might secure a zealous advocate and supporter in the House of Commons. The majority of pharmaceutical chemists are in favour of this Bill for admitting all registered chemists to equal privileges as members of the Society, and many are working steadily and persistently to ensure it becoming law. The text of the measure is printed at page 200, with full explanations of the changes it is intended to effect, and why, after considering these, anyone should go out of his way to protest against what is desired by and due to so many it is very difficult to see. But the key to the situation is now with the chemists and druggists whom it is proposed to benefit, and if they will only take the matter up as it deserves, success is assured. Let each one whose hands this number of the Journal reaches at once sit down and write to the local Member or Members of Parliament, urging unqualified support of the Pharmacy Acts Amendment Bill, and that which the founders of the Society strove after so many years, without avail, will be secure of realisation at last.

ANNOTATIONS.

Criticisms of the Pharmaceutical Society from Without are not uncommon, and usually prove to be as baseless as they are frequent, but criticism from within the ranks does not so readily find expression, though it is always desirable that feelings of dissatisfaction when existent should be manifested on the earliest possible occasion. In Mr. Sharman's letter on page 225, utterance is given to feelings such as are known to exist, though in most instances the grievance felt is so intangible that the individuals concerned cannot be prevailed upon to come into the open. But what is the gist of Mr. Sharman's complaint? Taking the alleged shortcomings of the Society in order, we are asked what steps it has taken to secure fair profits? The answer is: None; and it may be added that it is impossible it ever can take such steps. Mr. Glyn-Jones, of the P.A.T.A., is foremost amongst those who declare that. Coming to the next point, better relationships betwen medical men and chemists have been steadily cultivated by the Pharmaceutical Society for some fifty-seven years, and if those relations are not yet all they might be, the reason is in great measure supplied by the perverse conduct of many of those who grumble most at the Society. The protection of public dispensers, as such, is no more the duty of the Society than the protection of the South Sea Islanders. A certain proportion of those dispensers are registered chemists and druggists. The Society protects their title, and has untiringly urged upon the public authorities the desirability of putting an end to the unfair competition that is manifested by the appointment of unregistered persons as public dispensers. A still smaller proportion of the body referred to consists of supporters of the Society, and they enjoy all the privileges that are available to those of equal rank in the body corporate. As regards frivolous prosecutions, it seems necessary that critics should specify what is to be classed under that head. Is the Society to waste money and lose credit by defending chemists who may have carelessly or wilfully sold medicines lacking in strength or quality, or who have gone outside their proper sphere to act as apothecaries, or what is it to defend? A little more definiteness may reasonably be expected by the Council of the Society before it can be expected to initiate any scheme of protection of trade interests, differing from what has already been done without adequate recognition or support by the greater part of the craft.

The Metric System is, or ought to be, employed by every registered chemist in his scientific work, and as soon as the new Pharmacopœia is issued, and properly stamped metric weights and measures can be procured, the system ought equally to be employed in connection with all compounding work in the pharmacy, as well as in any other way that the pharmacist can introduce it without disadvantage. On a recent occasion the suggestion was offered in these pages that, under the circumstances shortly about to prevail, pharmacists should neglect no opportunity of familiarising themselves with the metric system, and the intention was announced of encouraging and assisting the reform indicated by proceeding at an early date to give all quantities in the *Pharmaceutical Journal* in accordance with the metric system. That intention has so far been generally approved by English pharmacists, and the only objections that have been intimated hail from Scotland, a most incomprehensible fact. But we quite fail to see any good reason for objecting, the more especially as arrangements are being made to facilitate the more general adoption of the metric system of weights and measures, that will reduce the trouble involved to a minimum. A first instalment of useful time-saving tables of

equivalents is published this week (see p. 209, *et seq.*), and others will appear at convenient intervals.

The Tables of Equivalents published this week are partly based on the excellent series printed in the 'Pharmacopœia of the United States,' but as the fluid measures in use across the Atlantic differ from those current here, it has been rendered necessary to compile tables of equivalents for measures of volume entirely afresh. To anticipate criticism of the table printed on pages 211-12 it may be well to state that the metric equivalents given are based strictly on the latest list of equivalents published by the Board of Trade. Those, therefore, who are accustomed to regard "gramme" and "cubic centimetre" as practically interchangeable terms are warned that the matter has already been fully considered. Theory would give the equivalent of the pint as 566·990 millilitres (or cubic centimetres as it is customary to regard them), and that of the fluid ounce as 28·350 millilitres. The equivalents recognised by the Board of Trade, however, are 568·245 Ml. and 28·412 Ml. respectively, and as the Board of Trade is the responsible authority in the matter in this country, whilst the equivalents that body adopts will alone be recognised in stamping weights and measures, it has been thought desirable to give the practical equivalents rather than those indicated by theory. The discrepancy is partly due to the fact that, in determining the equivalents, the weight of water contained in the litre at 4° C. is compared with the weight contained in the gallon at 16°·667 C.

A Simple Conversion Rule, for use when it is desired to express a formula stated in terms of grains and fluid ounces, in terms of grammes and cubic centimetres (millilitres), is given here in the hope that it may prove useful to readers. Since the fluid ounce (437·5 fluid grains) equals 28·412 cubic centimetres, and that number multiplied by 15·432 (the number of grains in 1 gramme) equals 438·5 cubic centimetres, formulæ by which solids are expressed in grains and liquids in fluid ounces may readily be expressed in terms of the metric system, with sufficient accuracy for all practical purposes, by regarding the grains as grammes and each fluid ounce as equivalent to 440 cubic centimetres, the product obtained being then approximately fifteen and a half times that of the original formula. Thus, for example—

Liquor Iodi, B.P.

Iodine,	22 gr.	× 15·432 =	22 Gm.
Potassium Iodide,	33 gr.	× 15·432 =	33 Gm.
Distilled Water to	1 fl. oz.	× 15·432 =	440 C.c.

But an even simpler plan than the above may be based on the following facts :—1 Grain = 1/15·432 Gramme ; 1 Avoirdupois Ounce or 437·5 Grains = 438·5/15·432 Grammes ; 1 Fluid Grain = 1/15·432 Cubic Centimetre ; 1 Fluid Ounce or 437·5 Fluid Grains = 438·5/15·432 Cubic Centimetres. That is to say, the number of grains in the ounce (437·5), or of fluid grains in the fluid ounce (437·5), is practically identical with the number of grammes (438·5) or cubic centimetres (438·5) resulting when we multiply by 15·432, the number of grains or fluid grains in a gramme or cubic centimetre respectively. Accordingly, as in small operations the difference between 437·5 and 438·5 may be ignored, we find that a formula stated in terms of grains and fluid grains may be stated in terms of grammes and cubic centimetres, without any calculation being required. Thus—

Liq. Potass. Permang. B.P.

Potassium Permanganate,	88 gr.	× 15·432 =	88 Gm.
Distilled water, 1 pt. or	8750 fl. gr.	× 15·432 =	8750 C.c.

Ounces and fluid ounces must always, of course, be reduced to grains and fluid grains, as in the last example, but that frequently involves nothing more than substituting the word grain for ounce, as in the formula for

Ung. Hyd. Nit., B.P.

Mercury	4 oz. or 4 gr. ...	× 15·432 =	4 Gm.
Nitric Acid.....	12 fl. oz. or 12 fl. gr.	× 15·432 =	12 C.c.
Prepared Lard ...	15 oz. or 15 gr. ...	× 15·432 =	15 Gm.
Olive Oil.....	32 fl. oz. or 32 fl. gr.	× 15·432 =	32 C.c.

Possibly some of our readers may be able to suggest similarly convenient rules. Any suggestions in this connection, or with regard to the tables of equivalents, will be gladly considered, as it is desired to simplify matters as much as possible.

In Mr. McMillan's Letter, published this week (p. 224), the whole question is raised of the comparative value of the metric system. But it is much too late in the day to do that, and pharmacists ought not to be amongst those who would put back the clock. What is done in Germany and elsewhere has nothing to do with the case, and we are not aware that anyone is contemplating the adoption of the plan of weighing both solids and liquids in dispensing operations. Nor is the question of the use of the metric system in dispensing of primary importance. Even now, medical practitioners throughout the whole of Great Britain order quantities in prescriptions in terms of the practically obsolete Apothecaries' Weight, and it is not likely that they will change their habits in that respect, unless under legal compulsion. It is the much wider question of the public interest and the pharmacist's convenience that is involved, and pharmacists will be adopting an extremely short-sighted policy if they interpose any obstacles in the way of the general adoption of a system of weights and measures that possesses undoubted advantages as compared with any other extant.

The Imperial Institute Myth is gradually ceasing to be regarded as a reality, and the publication of the announcement that the colony of Victoria has decided to withdraw its annual contribution to the "glorified Aquarium" at South Kensington has once more directed attention to the ineptitude of those who were expected by some people to lead the way to Imperial Federation. The *Daily Chronicle* asks what is the value of the Imperial Institute —"the great permanent record of the true Victorian Jubilee?" For a long time, it is remarked, it has been sadly to seek, and every attempt to galvanise the Institute into popularity has failed, even the instrumental music and coloured lights having been unsuccessful in drawing the expected millions to the centre, that was to be, of Imperial unity. "The fact is, and it is no use any longer shirking it, that as a museum the Imperial Institute is, and was from the first, doomed to be a failure, while as a place of resort for jaded folk desiring a gleam of brightness across their lives it could not be said to be 'in the same street' with other attractions in the same quarter. . . . . In the expressive American phrase, we 'have no use for' the Imperial Institute."

Mr. Chamberlain, in the House of Commons on Tuesday, was questioned about the reported withdrawal of the Victorian contribution, and whilst confirming the report, he stated that no reason had been assigned by the Victorian Government for the discontinuance of its subscription to the Imperial Institute. The *Daily News*, therefore, expresses the hope that Victoria may finally vouchsafe some explanation of the matter as "it might furnish critical enlightenment to many who are thoroughly dissatisfied with the management of the Institute, and not a little ashamed of the way in which it has failed to live up to its opportunities in Royal patronage and in bricks and mortar." "What is wrong

with it?" asks this critic. "Will Victoria kindly let us know? It is impossible not to feel that there has been something quite wrong from the first, when we see it condescending to 'entertainment items' as a substitute for its proud programme of dignity and public usefulness. It was not designed for these futilities of a glorified Aquarium. It was meant for a great union of heads and hearts for the promotion of the prosperity of the Empire, and it has wholly failed of its object. Nobody prophesies against it, but nobody minds it; and that is much worse." But extreme bathos is only attained when a writer in the *Pall Mall Gazette* quotes Sir Frederick Abel's opinion on the great value of the work done in the laboratory of the Institute, where many colonial barks have been "scientifically examined and reported upon." The pathetic nature of his remark to the interviewer, that if he did not heartily believe in the high utility of the work carried on at the Institute, he should not have devoted himself to it, "without fee or reward," after forty years of public life, might make angels weep, but is, we fear, much more likely to cause mere mortals to scoff.

The 'Pharmaceutischen Zeitschrift für Russland,' published during the last thirty-six years by the Pharmaceutical Society of St. Petersburg, in the German language, was discontinued at the end of last year, and it will in future be published in the Russian language. But in order to maintain relationship with other countries where that language is not generally understood, a quarterly issue of the *Zeitschrift* in German will be published as a supplement and supplied gratis to subscribers.

The Midland Pharmaceutical Association is actively supporting the Pharmacy Acts Amendment Bill, having addressed a letter to the Members of Parliament for Birmingham and District, signed by Mr. F. J. Gibson, President of the Association, in which, as representing the pharmaceutical chemists and chemists and druggists of the Midland District, they draw attention to the Bill, and ask that it should be kept in mind and receive favourable support. An offer is also made in the letter to arrange for a deputation to wait upon the parliamentary representatives to explain details if it be desired. As we go to press we learn that similar steps have been taken by the chemists of Northampton.

A Chemists' Association has been formed at Scarborough, a meeting having been held at the Albemarle Hotel on Tuesday evening, February 15, to make the necessary arrangements. Mr. John Whitfield occupied the chair, and on the proposition of Mr. E. R. Cross, seconded by Mr. Geo. Whitfield, it was unanimously agreed to form an association to be called "The Scarborough Chemists' Association," having for its object the advancement of chemistry and pharmacy, the discussion of trade questions, and other purposes. All registered chemists engaged in business in the town are eligible for membership, and the annual subscription has been fixed at half a crown. Rules were adopted and the following office bearers elected:—President, Mr. John Whitfield; Vice-President, Mr. Henry Chapman; Hon. Secretary, Mr. R. Gilchrist, 73, Newborough. The committee will consist of the above officers, together with Messrs. F. Foster, George Whitfield, E. R. Cross, and T. W. Longden.

The Chemists' Assistants' Association will hold its twentieth Annual Dinner at the Holborn Restaurant (King's Hall), London, on Tuesday next, March 3, at 8 p.m., when the chair will be taken by the President, Mr. T. Morley. Those who have not yet secured tickets and desire to be present on this occasion, must apply at once to the hon. Secretary, Mr. George Roe, 283, Lillie Road, Fulham, S.W.

DENTAL NOTES.

A Unique Method of Backing a Tooth.

Dr. W. A. Siddall, in describing his method of backing a tooth in the *Ohio Dental Journal*, says he cut out the backing, made holes for the pins, cutting them short, placed the backing on the tooth, and laid the tooth buccal side down on a piece of soft pine. He then took a piece of car spring rubber an inch thick, placed it on the tooth, and struck it two or three sharp blows with a hammer. He found that the porcelain was not fractured, and that the backing was driven to fit quite well. The next time he placed the tooth on a steel anvil, placed rubber over it, and could then strike it with a heavy hammer without fracturing the porcelain, the backing fitting well. It is safe, he says, to lay the tooth on an anvil or hard board if it be a thick tooth, and if there is much convexity of the buccal surface; but if the facing is thin, and the buccal or labial surface is quite convex, place it on soft wood, or even on another piece of rubber. The rubber may vary somewhat in elasticity, but a little experience will enable one to ascertain what strain a porcelain will stand, and the amount of force required to make the backing fit.

Gold Retaining Bands.

Bands that do away with the ugly effect of exposing too much gold (which is often the case where pressure is exerted on the labial side) may be made by taking a band of spring gold, about 1/8th of an inch wide, and forming it to the lingual surface of the teeth, to be retained or regulated, forming a clasp hook at either end. After trying it in the mouth and fitting to position, mark with a fine point the spaces between the teeth. At the places marked solder at right angles to the band strips of spring gold, about ¼ inch in length; these are then divided and turned to right and left, forming hooks. The overlap of these hooks should not be more than 1/8th of an inch; as the tooth comes into the true line, pressure may be increased or diminished to suit the case.—Dr. W. Bryant, in the *Stomatological Gazette*.

Submarine Gold.

According to M. R. Thaile in *L'Odontalgie*, this is the latest invention of Dr. Herbst. It is made in the form of pellets. Proximal as well as crown cavities can be filled with it providing the walls are strong. The instruments used are simple. First, a large polishing bur; second, same as first but unpolished; and two pluggers for soft gold complete the outfit. The use of submarine gold does away with annoyance arising from the presence of saliva. Dr. Herbst recommends dipping the pellet to be used in water so as to facilitate its introduction and increase the density of the filling. The manner of filling is very similar to that used with other soft golds, but the finishing is done with burnishers on a dental engine, and afterwards with carborundum wheels.

Retaining Appliance.

A simple, easy, and accurate method of making a stay appliance for holding two or three teeth that have been moved by regulating appliances is to take an impression in modelling composition and a model with Teague's impression material, burnish thin platinum to accurately fit the teeth, trim it up to where it is required, and while still on the model flow solder over the entire outer surface as thick as desired. This makes a neat and closely fitting appliance.—*Dental Weekly*.

Adjusting Logan Crowns.

There are many ways recommended for adjusting Logan crowns, both practical and otherwise. Of the former, that recommended by Dr. Harper in 'Items of Interest' appears to possess many good points. He writes:—"The root for crowning should be trimmed as desired, bevelling the canal a little at the end; take an impression (I use a cartridge shell), from it make a die and counter die, swage a piece of gold between them, put on root and burnish close. This will form a ferrule, protecting the entire end of root. Leaving the cap on root, take a crown and burnish over its end a piece of gold to fit perfectly as a cap; now put soft wax over it, and adjust to root, placing the crown in exact position. Let the wax harden, remove, trim as you would have it look when finished, remove both caps from crown, invest and flow solder in place of wax; place on crown and soft solder to pin, polish, and crown is ready for adjustment, perfect at all points."

The Metric System for Pharmacists

AS has already been announced, it is proposed henceforth, as far as possible, to state all quantities in these pages in terms of the metric system, and tables of equivalents are now published, in order that the task of conversion, when required, may be rendered as simple as possible to readers. Several of the tables, notably those referring to length and weight, are taken more or less completely from the Pharmacopœia of the United States, but those referring to measures of volume have been specially compiled for the *Pharmaceutical Journal*. The fundamental units of the metric system of weights and measures are, as is well known, the metre, the litre, and the gramme, being the measures of length, volume, and mass respectively, but it is not so generally understood that each of those units has both an ideal value and a practical value.

THE METRIC EQUIVALENTS of the more common Imperial weights and measures as recognised by the Board of Trade in a recent report are the following :—

MEASURES OF LENGTH.

1 Inch.....	=	25.4 Millimetres.
1 Foot (12 in.) ...	=	304.8 Millimetres or 0.3048 Metre.
1 Yard (3 ft.) ...	=	914.4 Millimetres or 0.9143992 Metre.
1 Mile (1760 yds.)	=	1,600,000.0 Millimetres or 1.609 Kilometre.

MEASURES OF MASS.

1 Grain.....	=	0.648 Gramme or 64.8 Milligrammes.
1 Scruple (20 grains)	=	1.296 Gramme.
1 Drachm (60 grains)	=	3.888 Grammes.
1 Troy Ounce (480 grains)	=	31.104 Grammes.
1 Avoirdupois Ounce (437.5 grains)	=	28.343 Grammes.
1 Pound (7000 grains)	=	453.592 Grammes or 0.45359243 Kilogramme.

MEASURES OF VOLUME.

1 Minim	=	0.059 Millilitre (or C.c.).
1 Fluid Drachm (60 minims).....	=	3.552 Millilitres.
1 Fluid Ounce (8 fluid drachms)	=	28.412 Millilitres or 2.84123 Centilitres.
1 Pint (20 fluid ounces)	=	568.245 Millilitres or 0.5682454 Litre.
1 Gallon (8 pints).....	=	4545.963 Millilitres or 4.5459631 Litres.

Measures of Length.

THE METRE (M.) equals 39·370113 inches, and was originally supposed to represent the ten-millionth part of the quadrant of a meridian ; the actual standard is the distance determined, at 0° C., between two points on a bar of iridio-platinum, a copy of which is in the possession of the Board of Trade.

The subdivisions of the metre are the

Decimetre (Dm.).....	=	0·1 M. (3·937 inches).
Centimetre (Cm.) ...	=	0·01 M. (0·3937 inch).
Millimetre (Mm.) ...	=	0·001 M. (0·03937 inch).
Micron (μ)	=	0·001 Mm. (0·00003937 in.).

The multiples of the metre are the

Decametre (Dam.) ...	=	10·0 M. (10·936 yards)
Hectometre (Hm.)...	=	100·0 M. (109·36 yards).
Kilometre (Km.).....	=	1000·0 M. (0·62137 mile).
Myriametre (Mym.)	=	10,000·0 M. (6·21371 miles).

CONVERSION OF METRIC TO IMPERIAL UNITS.

Millimetres	×	0.03937	= Inches.
Millimetres	÷	25.4	= Inches.
Centimetres	×	0.3937	= Inches.
Centimetres	÷	2.54	= Inches.
Metres	×	39.37	= Inches.
Metres	÷	0.0254	= Inches.
Metres	×	3.281	= Feet.
Metres	÷	0.3048	= Feet.
Metres	÷	0.9144	= Yards.
Metres	×	1.094	= Yards.
Kilometres	×	3280.7	= Feet.
Kilometres	×	0.621	= Miles.
Kilometres	÷	1.6093	= Miles.

CONVERSION OF IMPERIAL TO METRIC UNITS.

Inches	÷	0.03937	= Millimetres.
Inches	×	25.4	= Millimetres.
Inches	÷	0.3937	= Centimetres.
Inches	×	2·54	= Centimetres.
Inches	÷	39.37	= Metres.
Inches	×	0.054	= Metres.
Feet	÷	3.281	= Metres.
Feet	×	0.3048	= Metres.
Feet	÷	3280.7	= Kilometres.
Yards	÷	1.094	= Metres.
Yards	×	0.9144	= Yards.
Miles	÷	0.621	= Kilometres.
Miles	×	1.6093	= Kilometres.

Equivalents of Measures of Length.

IMPERIAL AND METRIC.

Inches.	Centimetres.	Inches.	Centimetres.
59.06	150	21.65	55
57.09	145	21	53.3
55.12	140	20	50.8
55	139.7	19.69	50
53.15	135	19	48.3
51.18	130	18	45.7
50	127.0	17.72	45
49.21	125	17	43.2
47.24	120	16	40.6
45.28	115	15.75	40
45	114.3	15	38.1
43.31	110	14	35.6
41.34	105	13.78	35
40	101.6	13	33.0
39.37	100	12	30.5
39	99.0	11.81	30
38	96.5	11	27.9
37.40	95	10	25.4
37	93.9	9.84	25
36	91.4	9	22.9
35.43	90	8	20.3
35	88.9	7.87	20
34	86.4	7	17.8
33.46	85	6	15.2
33	83.8	5.91	15
32	81.3	5	12.7
31.50	80	4	10.2
31	78.7	3.94	10
30	76.2	3.54	9
29.53	75	3.15	8
29	73.6	3	7.6
28	71.1	2.76	7
27.56	70	2.36	6
27	68.6	2	5.1
26	66.0	1.97	5
25.59	65	1.57	4
25	63.5	1.18	3
24	61.0	1	2.54
23.62	60	0.78	2
23	58.4	0.39	1
22	55.9		

IMPERIAL AND METRIC LENGTHS.

Inches.		Millimetres.	Inches.		Millimetres.
In decimal fractions.	In 32ds.		In decimal fractions.	In 32ds.	
1.	32/32	25.4	0 43	...	11
0.98	...	25	0.39	...	10
0.94	...	24	0.37	12/32	9.5
0.94	30/32	23.8	0.35	...	9
0.90	29/32	23	0.34	11/32	8.7
0.87	28/32	22.2	0 31	...	8
0.87	...	22	0·31	10/32	7.9
0.83	...	21	0.28	9/32	7.1
0.81	26/32	20.6	0.28	...	7
0.79	...	20	0.25	8/32	6.4
0.75	24/32	19.1	0.24	...	6
0.75	...	19	0.22	7/32	5.6
0.71	...	18	0.20	...	5
0.69	22/32	17.5	0.19	6/32	4.8
0.67	...	17	0.16	...	4
0.63	...	16	0.13	4/32	3.2
0.62	20/32	15.9	0.12	...	3
0.59	...	15	0.09	3/32	2.4
0.56	18/32	14.3	0.08	...	2
0.55	...	14	0.06	2/32	1.6
0.51	...	13	0.04	...	1
0.50	16/32	12.7	0 03	1/32	0.8
0.47	...	12	0.0039	...	0.1
0.44	14/32	11.1			

Measures of Mass.

THE GRAMME (Gm.) equals 15·432 grains, and was originally the mass of one-thousandth part of a cubic decimetre of water at 4° C. ; it is now equal to the mass of one-thousandth part of a solid cylinder of iridio-platinum 39 Mm. high and the same in diameter, a copy of which is in the possession of the Board of Trade.

The subdivisions of the gramme are the

Decigramme (Dgm.) = 0·1 Gm. (1·543 grain).
Centigramme (Cgm.) = 0·01 Gm. (0·154 grain).
Milligramme (Mgm.) = 0 001 Gm. (0·015 grain).

The multiples of the gramme are the

Decagramme (Dcgm.) = 10 0 Gm. (5·64 drachms).
Hectogramme (Hgm.) = 100·0 Gm. (3 53 oz.).
Kilogramme (Kilo.) = 1000·0 Gm. (2 234 lbs.).
Myriagramme (Mygm.) = 10·0 Kilo. (22 lbs.).
Quintal (Q.) = 100·0 Kilo. (1·968 cwt.).
Millier or Tonne (T.) = 1000·0 Kilo. (0·9842 ton).

CONVERSION OF METRIC TO IMPERIAL UNITS.

Grammes	×	15.432	=	Grains.
Grammes	÷	0.0648	=	Grains.
Grammes	÷	1.296	=	Scruples.
Grammes	÷	3.888	=	Drachms.
Grammes	÷	31 1035	=	Ounces (Troy).
Grammes	÷	28.35	=	Ounces (Avoirdupois).
Grammes (water)	÷	28.4	=	Fluid Oz. (approx.).
Kilogrammes	×	35.3	=	Ounces (Avoirdupois).
Kilogrammes	×	2.2046	=	Pounds.
Kilogrammes	÷	0.4536	=	Pounds.

CONVERSION OF IMPERIAL TO METRIC UNITS.

Grains	÷	15.432	=	Grammes.
Grains	×	0.0648	=	Grammes.
Scruples	×	1.296	=	Grammes.
Drachms	×	3.888	=	Grammes.
Ounces (Troy)	×	31.1035	=	Grammes.
Ounces (Avoir.)	×	28.35	=	Grammes.
Ounces (Avoir.)	÷	35.3	=	Kilogrammes.
Fluid Oz. (water)	×	28.4	=	Grammes (approx.).
Pounds	÷	2 2046	=	Kilogrammes.
Pounds	×	0·4536	=	Kilogrammes.

Equivalents of Measures of Mass., IMPERIAL AND METRIC.

Imperial Weight.						Metric Weight.
Grains.	Troy.		Avoirdupois.			
	oz.	grains.	lbs.	oz.	grains.	grammes.
15432.4	32	72.4	2	3	119.9	1000
15360	32	...	2	3	47.5	995.312
15046.6	31	166.6	2	2	171.6	975
14880	31	...	2	2	5	964.208
14660.7	30	260.7	2	1	223.2	950
14400	30	...	2	...	400	933.105
14274.9	29	354.9	2	...	274.9	925
14000	29	80	2	...	...	907.185
13920	29	...	1	15	357.5	902.000
13889.1	28	449.1	1	15	326.6	900
13562.5	28	122.5	1	15	...	878.635
13503.3	28	63.3	1	14	378.3	875
13440	28	...	1	14	315	870.898
13125	27	165	1	14	...	850.486
13117.5	27	157.5	1	13	430	850
12960	27	...	1	13	272.5	839.794
12731.7	26	251·7	1	13	44.2	825
12687.5	26	207·5	1	13	...	822.136
12480	26	...	1	12	230	808.691
12345.9	25	345.9	1	12	95.9	800
12250	25	250	1	12	...	793.787
12000	25	...	1	11	187.5	777.587
11960.1	24	440.1	1	11	147.6	775
11812.5	24	292.5	1	11	...	765.437
11574.3	24	54.3	1	10	199	750
11520	24	...	1	10	145	746.484
11375	23	335	1	10	...	737.087
11188·5	23	148.5	1	9	151	725
11040	23	...	1	9	102.5	715.380
10937.5	22	377.5	1	9	...	708.738
10802.6	22	242.6	1	8	302.6	700
10560	22	...	1	8	60.	684.277
10500	21	420	1	8	...	680·388
10416.8	21	336.8	1	7	354.3	675
10080	21	...	1	7	17·5	653.173
10062.5	20	462.5	1	7	...	652.039
10031.0	20	431	1	6	406	650
9645.2	20	45.2	1	6	20.2	625
9625	20	25	1	6	...	623.689
9600	20	...	1	5	412.1	622.070
9259.4	19	139.4	1	5	71.9	600
9187.5	19	67.5	1	5	...	595.340
9120	19	...	1	4	370	590.966
8873.6	18	31.4	1	4	123.6	575
8750	18	110	1	4	...	566.990
8640	18	...	1	3	327.5	559.863
8487.8	17	327.8	1	3	175	550
8312.5	17	152.5	1	3	...	538.641
8160	17	...	1	2	285	528.759
8102	16	422	1	2	227	525
7875	16	195.1	1	2	...	510.291
7716.2	16	27.2	1	1	278.7	500
7680	16	...	1	1	242.5	497.656
7437.5	15	237.5	1	1	...	481.942
7330.4	15	130.4	1	...	330.4	475
7200	15	...	1	...	200	466.552
7000	14	280	1	...	...	453.592
6944.6	14	174.6	...	15	382.1	450
6720	14	...	...	15	157.5	435.449
6562.4	13	322.5	...	15	...	425.243
6[illegible]5 8	13	318.8	...	14	433.8	425
6240	13	...	...	14	115	404.345

IMPERIAL AND METRIC WEIGHTS.

Imperial Weight.						Metric Weight.
Grains.	Troy.		Avoirdupois.			
	oz.	grains.	lbs.	oz.	grains.	grammes.
6172.9	12	412.9	...	14	47.9	400
6125	12	365	...	14	...	396.893
5787.1	12	27.1	...	13	99·6	375
5760	12	...	...	13	72.5	373.242
5687.5	11	407.5	...	13	...	368.544
5401.3	11	121.3	...	12	151.3	350
5280	11	...	...	12	30	342.138
5250	10	450	...	12	...	340.194
5015.5	10	215.5	...	11	203	325
4812.5	10	12.5	...	11	...	311·845
4800	10	...	...	10	425	311.035
4629.7	9	399.7	...	10	254.7	300
4375	9	55	...	10	...	283.495
4320	9	...	...	9	382.5	279.930
4244	8	404	...	9	306.5	275
3937.5	8	97.5	...	9	...	255.146
3858.1	8	18.1	...	8	358.1	250
3840	8	...	...	8	340	248.828
3500	7	140	...	8	...	226.796
3472.3	7	112.3	...	7	409.8	225
3360	7	...	...	7	297.5	217.724
3086.5	6	206.5	...	7	24	200
3062.5	6	182.5	...	7	...	198.447
2880	6	...	...	6	255	186.621
2700.7	5	300.7	...	6	75.7	175
2625	5	225	...	6	...	170.097
2400	5	...	...	5	212.5	155.517
2314.9	4	394.9	...	5	127.4	150
2187.5	4	267.5	...	5	...	141.748
1929	4	9	...	4	179	125
1920	4	...	...	4	170	124.414
1720	3	310	...	4	...	113.398
1543.2	3	103.2	...	3	230.7	100
1440	3	...	...	3	127.5	93.310
1388.9	2	428.9	...	3	76.4	90
1312.5	2	352.5	...	3	...	85.049
1234.6	2	274.6	...	2	359.6	80
1157.4	2	197.4	...	2	282.4	75
1080.3	2	120.3	...	2	205.3	70
960	2	...	...	2	85	62.207
925.9	1	445.9	...	2	50.9	60
875	1	395	...	2	...	56.699
771.6	1	291.6	...	1	334.1	50
617.3	1	137.3	...	1	179.8	40
480	1	...	...	1	42 5	31.1035
462.9	...	...	...	1	25.4	30
437.5	...	...	...	1	...	28.350
385.8	...	...	...	...	...	25
308.6	...	...	...	...	...	20
154.3	...	...	...	...	...	10
74.2	...	...	...	...	...	5
15.4324	...	...	...	...	...	1
1	...	...	...	...	...	0.06479

Measures of Volume.

THE LITRE (L.) equals 1·7598 pint, and was originally the volume of a cubic decimetre of water at 4° C., its point of greatest density; the Board of Trade standard litre is the volume of a kilogramme weight of water at 4° C., and the millilitre or cubic centimetre (C.c.) is the volume of a gramme weight of water at the same temperature.

The subdivisions of the litre are the

Decilitre (Dl.) = 0·1 L. (0·176 pint).
Centilitre (Cl.) = 0·01 L. (0·0176 pint or 0·07 gill).
Millilitre (Ml.) = 0·001 L. (0·0352 fl. oz.).
Microlitre (Mcl.) = 0.001 Ml. (0·0169 minims).

The multiples of the litre are the

Decalitre (Dcl.) = 10·0 L. (2·2 gallons).
Hectolitre (Hl.) = 100·0 L. (2·75 bushels).
Kilolitre (Kl.) = 1000·0 L. (3·43712 quarters).

METRIC TO IMPERIAL UNITS.

Millilitres × 16.9	= Minims.	Litres × 35.196	= Ounces (fluid).
Millilitres ÷ 0.059	= Minims.		
Millilitres ÷ 3.552	= Drachms (fluid).	Litres ÷ 0.028	= Ounces (fluid).
Millilitres ÷ 28.412	= Ounces (fluid).	Litres × 1.7598	= Pints.
		Litres ÷ 0.586	= Pints.
Millilitres × 0.35	= Ounces (fluid).	Litres × 0.22	= Gallons.
		Litres ÷ 4.54	= Gallons.

IMPERIAL TO METRIC UNITS.

Minims ÷ 16.9	= Millilitres.	Ounces (fluid) ÷ 0.35	= Millilitres.
Minims × 0.059	= Millilitres.		
Drachms (fluid) × 3.552	= Millilitres.	Ounces (fluid) × 0.028	= Litres.
Ounces (fluid) × 28.412	= Millilitres.	Pints ÷ 1.7598	= Litres.
		Pints × 0.586	= Litres.
Ounces (fluid) ÷ 35.196	= Litres.	Gallons ÷ 0.22	= Litres.
		Gallons × 4.54	= Litres.

Equivalents of Measures of Volume, IMPERIAL AND METRIC.

Imperial Measure.				Metric Measure.	
Minims.	Fluid Ozs.	Fluid Minims.	Fluid Ounces and Fractions.	Fluid Grains.	Millilitres or Cubic Centimetres.
16894.1	35	94.1	35.196	15398.3	1000
16800	35		35	15312.5	994.429
16471.7	34	151.7	34.317	15013.3	975
16320	34		34	14875	966.017
16049.4	33	209.4	33.436	14628.3	950
15840	33		33	14437.5	937.605
15627	32	267	32.556	14243.4	925
15360	32		32	14000	909.193
15204.7	31	324.7	31.676	13858.4	900
15000	31	120	31.249	13671.9	887.883
14880	31		31	13562.5	880.780
14782.3	30	382.3	30.796	13473.5	875
14400	30		30	13125	852.368
14359.9	29	439.9	29.916	13088.5	850
13937.6	29	17.6	29.037	12703.6	825
13920	29		29	12687.5	823.956
13515.3	28	75.3	28.157	12319	800
13440	28		28	12250	795.544
13092.9	27	132.9	27.277	11934	775
12960	27		27	11812.5	767.131
12670.6	26	190.6	26.397	11548.7	750
12480	26		26	11375	738.719
12248.2	25	248.2	25.518	11153.7	725
12000	25		25	10937.5	710.307
11825.8	24	305.8	24.637	10778.8	700
11520	24		24	10500	681.895
11403.5	23	363.5	23.757	10393.8	675
11040	23		23	10062.5	653.482
10981.2	22	421.2	22.877	10008.9	650
10560	22		22	9625	625.070
10558.8	21	478.8	21.879	9623.9	625
10136.4	21	56.4	21.118	9238.9	600
10080	21		21	9187.5	596.658
10000	20	400	20.833	9114.6	591.922
9714.1	20	114.1	20.239	8854	575
9600	20		20	8750	568.245
9291.7	19	171.7	19.358	8469	550
9120	19		19	8312.5	539.833
8869.4	18	229.4	18.478	8084	525
8640	18		18	7875	511.421
8447	17	287	17.598	7699.1	500
8160	17		17	7437.5	483.009
8024.7	16	344·7	16.718	7314.2	475
7680	16		16	7000	454.596
7602.4	15	402.4	15.838	6929.2	450
7200	15		15	6562.5	426.184
7179.9	14	459.9	14.958	6544.3	425

Imperial and Metric Measures.

Imperial Measure.				Metric Measure.	
Minims.	Fluid Ozs.	Fluid Minims.	Fluid Ounces and Fractions.	Fluid Grains.	Millilitres or Cubic Centimetres.
6757.6	14	37.6	14.078	6159.5	400
6720	14		14	6125	397.772
6335.3	13	95.3	13.198	5774.3	375
6240	13		13	5687.5	369.360
5912.9	12	152·9	12.319	5389.4	350
5760	12		12	5250	340.947
5490.6	11	210.6	11.439	5004.4	325
5280	11		11	4812.5	312.535
5068.2	10	268.2	10.559	4619.5	300
5000	10	200	10.417	4557.3	295.961
4800	10		10	4375	284.123
4645.9	9	325.9	9.679	4234.5	275
4320	9		9	3937.5	255.711
4223.5	8	383.5	8.799	3849.6	250
3840	8		8	3500	227.298
3801.2	7	441.2	7.919	3464.6	225
3378.8	7	18.8	7.039	3079.7	200
3360	7		7	3062.5	198.886
2956.5	6	76.5	6.159	2694.7	175
2880	6		6	2625	170.474
2534.1	5	134.1	5.279	2309.7	150
2400	5		5	2187.5	142
2111·8	4	191.8	4.399	1924.8	125
1920	4		4	1750	113.649
1689.4	3	249.4	3.520	1539.8	100
1604.9	3	164.9	3.344	1462.8	95
1520.5	3	80.5	3.168	1385.8	90
1500	3	60	3.125	1367.2	88.788
1440	3		3	1312.5	85.237
1435.9	2	475.9	2.992	1308.9	85
1351·6	2	391.6	2.816	1231.86	80
1267	2	307	2.639	1154.9	75
1182·6	2	222.6	2.464	1077.9	70
1098.1	2	138.1	2.288	1000.9	65
1013.6	2	53.6	2.112	923.9	60
1000	2	40	2.083	911.5	59.192
960	2		2	875	56.825
929.2	1	449.2	1.936	846.9	55
844.7	1	364.7	1.759	769.9	50
760.2	1	280.2	1.584	692.9	45
750	1	270	1.563	683.6	44.394
720	1	240	1.500	656.3	42.618
675.8	1	195.8	1.408	615.9	40
591.3	1	111.3	1.232	538.9	35
506.8	1	26.8	1.056	461.9	30
500	1	20	1.042	455.7	29.596
480	1		1	435.7	28.412
422.4		422.4	0.879	384.9	25
420		[7 ℥	0.875	382.8	24.861
360		[6 ℥	0.750	328.1	21.309
337.9		337.9	0.704	307.9	20
300		[5 ℥	0.625	273.4	17.758
253.4		253.4	0.528	230.9	15
250		250	0.521	227.9	14.394
240		[4 ℥	0.500	218.8	14.206
180		[3 ℥	0.375	164	10.655
168.9		168.9	0.352	153.9	10
120		[2 ℥	0.250	109.4	7.103
100		100	0.208	91	5.919
84.5		84.5	0.176	76.9	5
60		[1 ℥	0.125	54.7	3.552
30		30	0.063	27.3	1.776
20		20	0.041	18.2	1.184
16.9		16.9	0.035	15.4	1
10		10	0.021	9.1	0.592
8.5		8.5	0.018	7.7	0.500
5		5	0.011	4.5	0.296
4.2		4.2	0.009	3.8	0.250
2.1		2.1	0.004	1.9	0.125
1		1	0.002	0.9	0.059

MEETINGS OF SCIENTIFIC SOCIETIES

CHEMICAL SOCIETY.

At a meeting held on Thursday, February 17, Professor Dewar, F.R.S., President, in the chair, an announcement was made by the President on behalf of the council relative to the memorial recently submitted by Messrs. Harden and Hartog, desiring that an alteration in the bye-laws should be made so as to allow voting by proxy. Having received the reply of the council stating that they had no power to make such an alteration under their existing charter, Messrs. Harden and Hartog wrote further, inquiring whether steps would be taken by the council in the near future to obtain a supplemental charter that would grant this power. They stated that a similar supplemental charter had recently been obtained by the Institute of Civil Engineers. In reference to this matter Professor Dewar pointed out that it was not yet known whether a majority were in favour of it, and the Chemical Society had a very different object from that of the Institute of Civil Engineers, and was accordingly differently constituted, more resembling the Royal Society. The inducement leading the Government to grant the charter of the Institute of Engineers, which did not exist for the advancement of mechanical science, would not be the same for a purely scientific society. The opinion of Mr. Cozens Hardy, Q.C., had been taken as to the ground upon which a supplemental charter could be sought, who replied that it was improbable that the Government would consent to an alteration unless the Society were unanimous; the value of voting by proxy was open to question; and that the case of the Institute of Civil Engineers formed no precedent. A paper by W. A. Shenstone and W. T. Evans, on the

Influence of the Silent Discharge on Atmospheric Air,

was read by Mr. Shenstone. In a publication by Andrews on the influence of nitrogen on the production of ozone from oxygen, it was stated that after the formation of ozone ceases, if the gases are exposed to sulphuric acid, the production of ozone is continued. If, also, the silent discharge is passed after sparking, no ozone is formed. Both these phenomena had been attributed to the action of oxides of nitrogen. Berthelot and others had confirmed these facts, but the oxides of nitrogen had not been actually found. The author had sought proof of the existence of nitrogen peroxide, and for this purpose had availed himself of the new test for nitrites described by Riegler, which depends on the formation of diazo naphthalene-sulphonic acid, and the conversion of this to a red dye, having first verified the hypothesis that nitrogen peroxide could be distinguished from ozone by this reaction. In the first experiment, after the formation of ozone had been carried to a certain point, the gases expanded again with the decomposition of ozone. On testing the residue, nitrous acid was found present. The experiments were continued with the object of determining the influence of moisture. In three experiments with damp air very high percentages of the oxygen were converted into ozone, one of these amounting to ninety-eight. The formation of nitrogen peroxide was also traced. An experiment with dry air, being stopped when 63 per cent. of the oxygen was ozonised, on applying the test no nitrite was found. A similar experiment with moist air gave the same result. When, however, the air was fully ozonised it was found both when dry and moist to contain nitrogen peroxide. Evidence was also given that the formation of nitrogen oxides is retarded by the presence of water, and that the latter are not formed unless ozone is present. The conclusion was therefore drawn that they are not formed directly, but only by the action of ozone. Since also 98 per cent. of the oxygen in moist air could be converted into ozone, it was evident that the presence of moisture did not further the decomposition of the latter by nitrogen oxides. An experiment upon air containing nitrogen peroxide confirmed the statement of Andrews, that little or no ozone is formed in its presence.—Dr. Armstrong remarked that the experiments should be carried further before exact conclusions were drawn, and he would suggest the taking into account of the electrical conditions. The discussion was also taken part in by Professor McLeod, Dr. Scott, Mr. Walker and the President, who referred to the formation of ozone by the sudden cooling of oxygen heated to the point of dissociation and to the explosive character of liquid ozone under the action of light.—Mr. Shenstone also described two lecture experiments by J. Tudor Cundall,

B.Sc., one of which illustrated the principle of the conservation of mass, the second being a demonstration of Graham's law of diffusion.—"A Note on the Preparation and Properties of Orthochlorbrombenzene," by J. J. Dobbie, M.A., D.Sc., and F. Marsden, M.A., Ph.D.; "The Ultra-violet Absorption Spectra of some Closed Chain Compounds," by W. N. Hartley, F.R.S., and J. J. Dobbie, M.A., D.Sc.; and a "Note on the Absorption Bands in the Spectrum of Benzene," by the same authors, formed the titles of papers briefly summarised by Dr. Dobbie. The conclusions drawn from the two last-named papers are that the absorption bands bear an important relation to the linking of the molecule, as in general, substances of the fatty series show no absorption, while closed chain compounds give strongly defined bands. Many benzene derivatives have been examined, and also other ring compounds, of which thiophene shows a strong absorption. Benzene was described as possessing six absorption bands, of which four were persistent. A series of photographs of these were exhibited. A paper was then communicated by W. R. Dunstan, F.R.S., and T. A. Henry, on the

Constituents of Indian and American Podophyllum.

Podwyssotzki, it was stated, had isolated four substances from *Podophyllum peltatum*—podophyllotoxin, to which the activity of the drug is attributed; picropodophyllin, podophyllic acid, and podophylloquercitin. The authors have examined the properties of podophyllotoxin obtained from the Indian drug, and find it to be identical with that described by Podwyssotzki. It has the formula $C_{15}H_{14}O_6$, and is described by Dr. McKenzie of St. Thomas's Hospital, who has experimented upon it physiologically, as a powerful purgative and intestinal irritant. Podwyssotzki states that this substance is a compound of picropodophyllin and podophyllic acid, but it has been found by the authors to bear a different relation to these substances. When heated with alkalies it takes up water, becoming podophyllic acid, and this on drying loses water again, forming a substance isomeric with the first, which is picropodophyllin. Thus the last-named is the anhydride of podophyllic acid. Attempts to pass from either of these substances back to podophyllotoxin have hitherto been unsuccessful. Among its decomposition products oxalic and acetic acids have been isolated, and the presence of two methoxyl groups in the molecule have been determined. The authors believe it to have the constitution of a hydrogenated pyrone. The colouring matter of both plants is the same, and has been proved identical with quercitrin from quercitron bark, while yield of medicinal podophyllin from the Indian is greater than that from the American variety. It was remarked by Mr. Millard that the resin from *podophyllum emodi* is less soluble than that from *P. peltatum*. Another paper, by the same authors, dealt with the

Volatile Constituents of Goupia Tomentosa.

The wood of this tree, which it has been proposed to use for mechanical purposes, is imported from British Guiana. It has an odour partly resembling that of rancid butter and partly that of valerian. A number of fatty acids were extracted, among which formic, isovaleric and lauric acids, as well as a small quantity of succinic were identified. In answer to a question by Mr. Chapman, Professor Dunstan replied that the wood contained resin, but it was not known that these acids resulted from the oxidation of it; and in reply to a question by Dr. Bernard Dyer it was stated that the smell existed in the fresh wood, and the acids were probably produced as such in the tree, as no glycerides had been found.—A third paper was given by the same authors, on

Oxycannabin from Indian Hemp.

By oxidising extract of Indian hemp with nitric acid a substance is obtained crystallising in yellow needles, to which Bolas and Francis have ascribed the formula $C_{20}H_{20}N_2O_7$. The authors find the composition to agree with the formula $C_{10}H_{10}NO_4$. In the course of investigation the probability was suggested that the substance was derived from cannabinol, a supposition which on experiment proved correct, a large yield being obtained by oxidising the latter. A nitro-compound has been prepared which on reduction yields an amine. Among the decomposition products normal butyric acid has been identified. Cannabinol, it was mentioned, formed an acetyl compound that crystallised well, thus affording an easy method of obtaining it pure, which would otherwise be difficult, as the cannabinol itself does not crystallise. — A ballot was taken, the following being elected members of the Society: Messrs. E. L. Allhusen, B.Sc., W. M. Bailey, C. E. Brittain, B.Sc., C. J. Brooks, B. S. Bull, M.A., B.Sc., Ph.D., C. H. Burge, W. A. Caldecott, B.A., M. J. Cannon, A. J. B. Cooper, J. Cooper, B.Sc., W. R. Cooper, M.A., B.Sc., F. Cowling, F. R. Dodd, J. R. Don, D.Sc., M.A., F. W. Dootson, M.A., W. T. A. Edwards, F. Gilderdale, W. S. Gilles, J. Glaister, M.D., T. H. Hills, D. Homfray, B.Sc., A. F. McEwen, W. H. Mills, B.A., G. T. Morgan, W. E. Moss, H. Poole, T. H. Pope, J. B. Reid, F. F. Renwick, W. C. Reynolds, W. Richards, H. C. Sayer, A. J. Walker, B.A., E. C. Weissmüller.—The following papers were taken as read: "On the Condensation of Formaldehyde with Ethyl Malonate," and on "Cis and Trans Tetramethylene Dicarboxylic Acid," by E. Haworth and W. H. Perkin, jun., F.R.S.; "The Formation of Ethylic Dihydroxy-di-nicotinate from Ethylic Cyanacetate," by S. Ruhemann, Ph.D., and K. C. Browning, B.A.; "The Interaction of Magnesium and Copper Sulphate," by E. Divers, M.D., F.R.S.

CANADIAN LETTER.

(*From our Special Correspondent.*)

I wonder how many of your readers have anything like a correct conception of Canada, its location, geography, or the customs of the people who inhabit it. So many cases of crass stupidity come under one's notice that one cannot but marvel at a people who are essentially a colonising nation knowing so little of the characteristics of their chief possession abroad (as we claim Canada to be). The part taken by Canada in the Jubilee pageant, the visits of the British Association for the Advancement of Science and of the British Medical Association, appear to have failed in disseminating that correct information which such important events should have furnished. I give you three instances which, to my mind, demonstrate the necessity of the "schoolmaster being abroad in your country."

The advertisement of a leading London house in the *Pharmaceutical Journal* mentioned an article which I was anxious to procure, and for which I am convinced there could be found a good sale in Canada. I accordingly wrote asking them for prices and terms. Imagine my disgust on receipt of a reply—addressed to Toronto, United States of America—containing the information that the sales agent for Canada for said article was a firm in Baltimore (a city in the States some 700 miles distant from me)! What would be your thoughts on being informed that the sales agent in England of an article was a firm in Madrid, and the letter containing such information was addressed to "London, Spain"? One case is no more ridiculous than the other.

Again, there is now teaching in the Normal School in this city a young Englishman who, when contemplating the project of coming to this country, was solemnly informed that it would be necessary for him to have the hob-nails removed from his boots, as by their means the Indians would be enabled to trace him and possibly take his life, and, believing such stuff, he actually had the nails removed.

There is at present in the city of Vancouver, B.C., a party of young Englishmen on their way to the Klondyke. A detachment of this same party procured several tons of hay in London, England, had it neatly baled up and shipped to this country for the use of horses which they intended purchasing at Edmonton. It cost them 70.00 dollars per ton to land it at its destination, and when they arrived on the scene they discovered that a better article could be had for less than one-tenth the cost. "Carrying coals to Newcastle" pales into insignificance as a comparison beside such asinine stupidity as this displays. Why, there are grazing and hay-lands enough in the Canadian North-West to make three or four Great Britains, and still have enough to feed the "cattle on a thousand hills." Now, apart from the ignorance displayed in such instances as the above is the more serious business considerations. It should be borne in mind by your foreign merchants that this continent is a hot-bed of protective custom tariffs, and for me to have procured the article that I wished would have meant the paying of two duties on it—first into the United States and from there into Canada. This fact should be kept in view when appointing sales agents for this country. British merchants are seeking after extended trade connections; would it not be well for

them to give some attention toward acquainting themselves with the conditions which prevail in Canada? This country is without a doubt entering upon a period of prosperity and great commercial expansion. Our vast territories of agricultural lands, unsurpassed for productiveness on the earth's surface, are just being opened up; our mountain ranges of "Ophir" richness but await the "Midas touch" to turn to gold. The men are even now with us, or have their faces turned toward the setting sun, who are destined to transform these millions of acres of idle lands into waving fields of golden grain, or unlock the portals which lead to Nature's treasure. house, so jealously guarded through the circling ages of the past. These toilers of the field and mine will require the product of laboratory and factory to supply their multifarious needs; we are not a manufacturing people as yet, but must look abroad for such supplies. Why not Briton rather than Yankee fill the want? But I linger on these topics after starting out to write on matters pharmaceutical. As a beginning, I may say that in Canada each of the provinces is supreme within its own domain in the matters of education and the regulation of the learned professions. This fact is necessary to be borne in mind, as I may refer to events transpiring in different provinces which might appear contradictory, or not be understood, if the different conditions prevailing were not stated. Thus, while we in Ontario have been "fighting with the beasts at Ephesus" to secure the removal of unjust restrictions placed upon us by the legislature a year ago, our *confrères* of Quebec have had to "lock horns" with their enemies in that province to prevent a repeal of their model Pharmacy Act, at the instance of the Grocers' Association acting as cat's-paw for the departmental stores chestnuts, yet in neither of these struggles were the pharmacists of other provinces interested.

In glancing back over the year that has just closed, to ascertain "just where we are at," it is noticeable that, if no marked advance has been made, at least no retrograde movement requires to be chronicled; we have safely held our own. During the year the trade generally recovered from the panic into which it had been thrown by the price-cutting epidemic which threatened to sweep over the country in the closing months of '96. In Canada, as elsewhere, that pernicious practice was established by the departmental stores: its introduction caused a feeling of nervous apprehension to spread amongst the pharmacists, a few of whom showed a disposition to follow the lead. Better counsel, however, prevailed, and the disaster was averted. For this good result credit is due to the Ontario Society of Retail Druggists, an organisation formed much on the same lines as that of your own Proprietary Articles Trades' Association. Coincident with this movement among the retail men, and as part of the plan to save the trade from utter destruction, the wholesale jobbers also formed an association, and an agreement for mutual protection and benefit was entered into between the two. These associations, acting in harmony, were able to secure the consent of nearly all the leading manufacturers to confine their sales to such parties as maintained prices. The carrying out of that agreement was instrumental in checking the spread of the evil, but was not successful in eradicating it where it had already taken root, so that we are still wrestling with the grievance in some of the larger centres of trade. Most of the cutting is confined to the province of Ontario, and as a result the trade is more prosperous in all the other provinces. In view of the good work done under the above arrangements, it is regrettable that the wholesale association decided at their last meeting, held in Montreal on February 1, to disband; this decision was arrived at on account of the withdrawal of Messrs. Evans and Sons from the association. The reason given by this firm was "the lack of good faith on the part of some members of the association, that by violation of their agreement some houses had secured an unfair advantage over their competitors who had been more careful to adhere to its conditions." What effect this action of the wholesale men will have on the trade generally remains to be seen. The retailers are not greatly exercised over the prospects; they are more determined than ever to stand together in defence of their rights. As an evidence of this the Council of the Ontario College of Pharmacy at its last meeting practically assumed the work done in the past by the Ontario Society of Retail Druggists, and appointed an extra standing committee to take charge of it. This will assure permanency to the work, as the resources of the college will be behind it, and this institution is a wealthy body.

Pharmaceutical Transactions.

SCHOOL OF PHARMACY (LONDON).

The annual dinner of the students of the School of Pharmacy took place on Wednesday, February 16, the Dean, Professor Henry G. Greenish, occupying the chair. The gathering was attended by many former students and by Professors, members of the Council, and Board of Examiners. Among those present were the President, Mr. Walter Hills, Mr. Michael Carteighe, Professor Norman Collie, F.R.S., Dr. Attfield, Dr. Lapworth, Messrs. W. Martindale, Joseph Ince, W. M. Holmes, C. B. Allen, Edmund White, W. Arkinstall, G. S. Taylor, F. Ransom, Richard Bremridge, Gwilym Evans, F. H. Lescher, and J. S. Ward.—The Royal toast was followed by the toast of

The School of Pharmacy,

proposed by Mr. M. Carteighe, who said he did not know why he was always asked to speak among his fellow pill-rollers, but the task this evening was a pleasant one. The School of Pharmacy of the Pharmaceutical Society was a name that had not so high-sounding a character as similar institutions with the title of Institute or College in the United States. The founders of the School were practical men who believed in calling a thing what it was. In this country a college is a training institution in which the student not only works but lives, and there were difficulties in the way of establishing such. It was an astounding fact that the richest and most populous city in the world was without a teaching university. The founders of the School, who were good, sturdy men, many of them Quakers, wished to make affairs as simple as possible in matters of money and of respectability. They resolved to join together to provide education for the rising generation. Mr. Morson at that time was closely in touch with French pharmacy, and it was following the example of the École de Pharmacie that the School was instituted. There were now two classes of people, one of which said there ought to be thousands in the School, while the other maintained that it mattered less whether the institution was a select one than that it should be able to turn out men more capable and better than all others. The work of the world is done by a few people, and as in other things so it had been with this. In 1852 Jacob Bell left £2000, which was used to render the School efficient. Yet that was the smallest thing that he did. He went to Parliament on the plea that a man once educated should be able to command respect. In 1868 there was much political talk and there were difficulties to be faced, but after much fencing the then President, Mr. George Webb Sandford, succeeded in obtaining recognition. There was then a genial fellow, Mr. Thomas Hyde Hills, who induced his friends in Parliament to pay a visit to Bloomsbury Square and inspect the School, with the result that, seeing the sacrifices being made in the interest of education, these men were forcibly convinced of the respect due to pharmacists, and, in fact, the School of Pharmacy was the *raison d'être* of the powers they have. The feeling of many during the following few years, 1869, 1870, and 1871 was *cui bono?* A great number of candidates came rushing up for examination without any preparation, and it was during that time that he (Mr. Carteighe), being a member of the Board of Examiners and responsible for the weeding of many unfit candidates, became regarded as a monster. After this rush they were more settled, and people learnt that it pays to have a good education. A few years ago when the system of technical education under the county councils was instituted it was said they were doing great things. Mr. Gwilym Evans would tell them what is being done in Wales. Elementary science is taught and the general education is so good that if pharmacists do not advance they will soon be ploughed by the boy who comes to buy a pennyworth of pills. If they were to escape the criticism of their educated customers they must not only prepare for the Board of Examiners, but aim at a higher standard. Education was slower in his younger days, but what is wanted now is a general knowledge reaching above the ordinary. In the School of Pharmacy was an association for learning to talk. There was a little one in his own time, but it had grown since. His advice to them for speech-making was this. Every member there had in him the material for making a good speaker, but the

thing most wanted was pluck. "Never begin with a prologue, but go straight to the subject and finish without an epilogue." One should not be discouraged by having a weak voice; by practice a low voice can be made audible in the largest room, and it is as easy to overcome nervousness by pluck as to go into a football scrummage. It was very gratifying to know that the School was now full, a fact that expressed the credit due to the professors and teachers. They had had brilliant men in the teaching staff before—a respected former professor, Dr. Attfield, was present that night—but his business was to refer to the present individuals and the appreciation of their worth throughout, from the Dean downwards.—Professor Greenish, in responding to the toast, said he was going to show Mr. Carteighe how soon they could learn a lesson, as he should follow the principles laid down for speech-making. It was a great pleasure to see so large a gathering. Mr. Carteighe had referred to the desire of the founders to provide a good education; it was not for him (Professor Greenish) to speak of the quality given, but he would say that the teaching staff would do the best they could. Deficiencies there might be; he would not suggest that there was perfection, for the good reason that when imperfections are seen they may be remedied. It was gratifying to know that, among men who passed the last examination, no fewer than four out of every five returned to take the advanced course. This shows pre-eminently that they know the value of what they are getting, and as evidence of the flourishing state of the School, he pointed to the fact that applications for admission had had to be declined for want of accommodation. A short time ago the course of tuition had been materially changed, with a result that, although not at first evident, has since proved highly satisfactory. He hoped the Students' Association would take Mr. Carteighe's words to heart. The Association was also useful in bringing the members into contact, and when their meetings had a social character he hoped Mr. Carteighe and other members of Council would be present. It would give everyone pleasure to note the presence among them of Dr. Attfield and Mr. Ince. He thanked Mr. Carteighe for the kind and encouraging way in which he had proposed the toast, and he hoped and believed that the School had a long and prosperous career before it. The toast of the

"Pharmaceutical Society"

was proposed by two of the Bell Scholars, one of the seniors, Mr. H. Matthews, and a junior, Mr. H. Payne.—Mr. Payne said he had great pleasure in proposing this toast, and coupling therewith the name of the President, Mr. Walter Hills. Much had been done by the Society, yet much remained to be done. Evidence of the vitality of the Society was seen in the Bill that was being brought into Parliament, which it was hoped would consolidate the members of the craft.—Mr. Matthews hoped that those present who would shortly be fully-fledged pharmacists would have fully realised the objects for which the School was founded and would afterwards do their part in keeping it up and educating those coming after.—Mr. Hills, replying, said as it was now late he would have wished for the sake of the guests to content himself with thanking the proposers of the toast, but, speaking on behalf of the Society at that moment, he felt there were a few things he ought to say. For the encouragement of those interested in Mr. Carteighe's speech he would say that he was nervous himself as a beginner, but was no longer so. It gave him great pleasure to attend the dinner of the students, where the toasts were of the order of a family party. The toast of the child had first been drunk, and now that of the parent, for which he had to express thanks. But there was another child, by which allusion he meant the proposed Pharmacy Bill. He had been at the House of Commons a great deal lately, but it was not to be supposed that he took all the credit; that was shared by the Council. He congratulated the students on their wisdom in seeing the advantage of the extended curriculum; the necessity for it becomes more and more evident. Those present were showing others an object lesson, as it had been always seen that the students at the School of Pharmacy turned out good and successful men. But he wanted to see other schools as well, and they should be connected with a public institution; within a few years he hoped pharmacy would be connected with various teaching universities. One of those present, he hoped, would win the Percian medal; all could not win it, but he hoped the best man would and that he would be one of their own. He also hoped there would be some to go in for advanced study and research, under the distinguished professor, Dr. Norman Collie, and further that the Council would not be ashamed at receiving no candidates for the scholarships offered. He trusted, too, that they would not in after life forget their "alma mater"; he was afraid there had been some such tendency among their successful men They should be loyal and enthusiastic. It had been said that the Society wanted guineas, but that was not the most important thing; what they wanted rather was the men. With reference to the Bill, he was not then going to find fault with the resolution lately passed by the students; that, he believed, had been partly due to a misconception of words of his own, and he would take that opportunity of making his point clear. The remarks in question, as printed in the *Pharmaceutical Journal*, were as follow:—"Up to a certain extent he was in favour of dividing the qualifying examination, but he was entirely opposed to anything like an intermediate qualification. The division of the examination, as distinct from the qualification, might be advocated with a view to encourage students to commence their work on first entering the business, and to continue their studies throughout their apprenticeship. The question of jury service, too, was one which affected many men, but it was impossible to deal with it directly in a Pharmacy Bill; it could only be done indirectly, by providing that every one who passed the Minor should become a pharmaceutical chemist. That had been advocated by some, but he was not prepared to go to that length himself, and was quite sure that if a clause of that kind were inserted it would excite a good deal of opposition. He was in favour of considering a scheme for having only one qualifying examination, which should give the title of Pharmaceutical Chemist, with possibly a further honorary examination for those who liked, as he had shown by supporting a Bill brought forward some years ago, in which it was suggested that there should be a curriculum and an intermediate examination, the title of Pharmaceutical Chemist to be given to all who passed the qualifying examination; but it was distinctly on the understanding that there was a system of training to be taken into consideration as well as the examination." This statement he wished to adhere to. At present only about 13 per cent. of chemists and druggists go on for the Major examination; if that state went on, what condition could they expect? He trusted, however, that matters would soon be different. If the opposite proportion of men took the Major examination nothing would have been said; but, as things are, there is great necessity for the consolidation of the Society. The examination that it was proposed to introduce would be divided into two parts, of which the first would carry no qualification at all, while the second would make the successful candidate a pharmaceutical chemist. The Bill, it was hoped, would be brought into Parliament next week, and all should help to further it wherever they could throughout the country. It was important that all who became qualified should be eligible for membership, and should be ready to stand shoulder to shoulder to promote their common welfare. In conclusion he thanked everyone for the kind way they had received the toast and listened to his remarks, and trusted the School would continue to flourish.—Mr. Edmund White proposed the health of those who had so successfully arranged the evening's programme, Messrs. Lescher, Wilson, and Evans, to which Mr. Lescher replied.—A musical programme, contributed by Messrs. W. W. Ellis, W. Owen, A. Turner, H. R. Jones, M. Carteighe, J. Day, and Smorthwaite, added much to the evening's enjoyment.

CHEMISTS' ASSISTANTS' ASSOCIATION.

On Thursday, February 17, Mr. T. Morley Taylor, President, occupied the chair at a meeting of this Association, at 73, Newman Street, W., when Mr. George Roe read a paper on

Formaldehyde.

The author said the value of formaldehyde in preserving infusions and other substances, as well as its antiseptic properties, had been the subject of several interesting papers, and in his remarks on its use in pharmacy he should not produce anything particularly new, but more confirm the work of previous writers. It must not be understood by what he said that he laid down any rule as to what should be done with preparations requiring some preservative; every dispenser must be guided by circumstances as to how far he could go, but in no case should he make any change in the prescription that would be disadvantageous to the patient or not added by the next dispenser to whom it might be presented, and to ensure this the addition should be noted on the prescription. Formaldehyde, formic aldehyde, or formalin, was discovered by Hofmann in 1869, and is said to occur in those plant cells which

contain the green colouring matter. In the formation of starches and sugars from the carbon-dioxide which the plant absorbs from the air it is believed that formic aldehyde is formed as an intermediate product. Chemically it is prepared by the limited oxidation of methyl alcohol, or when calcium formate is subjected to dry distillation. The gradual oxidation of methyl alcohol occurs when a stream of air saturated with the vapour of methyl alcohol is drawn through a tube containing a copper spiral or platinised asbestos heated to redness, a process of oxidation. The result is a pungent-smelling liquid of sp. gr. 1·080 to 1·088 at 15° C., and may under favourable circumstances contain 30 to 40 per cent. of formaldehyde, together with methyl alcohol and water. In more concentrated solution it has a tendency to revert to its solid polymeric modification paraformaldehyde, which remains as a white solid. The aqueous solution of formaldehyde has a penetrating, suffocating odour, and a neutral reaction ; and its tendency to readily oxidise to formic acid causes it to be a powerful reducing agent. Added to ammoniacal solution of silver oxide a mirror is produced. Mercuric chloride becomes mercury, mercurous chloride being the intermediate product ; it reduces Fehling's solution even in the cold, but when treated with reducing agents it again becomes methyl alcohol. It is incompatible with ammonia salts, giving very curious reactions. In the cold it becomes strongly acid, and dissolves calcium, phosphate, chalk, etc. It coagulates gelatine into a tough, indiarubber-like substance insoluble in water, and acts similarly on albuminoid substances ; hence it has been used in photography in the place of alum for hardening the films of negatives. When once added to a solution it cannot be driven off; on boiling the fluid it is converted into trioxymethylene.

Formaldehyde is a Powerful Germicide

due to its combination with gelatinous and albuminoidal substances; in consequence of its chemical reaction with the various volatile products of decomposition it is a decided deodorant. Its great antiseptic properties were discovered by Berlitz and Trillat, who found that an addition of 1 in 50,000 was sufficient to prevent the development of bacteria in meat juice, while Leow recognised it as a powerful poison to vegetable protoplasm. Its non-poisonous character makes it extremely useful in preserving certain preparations, and in pharmacies, especially dispensaries where there is much dispensing done, it can be used in some cases with good results. This is particularly so where large quantities of fermentable mixtures have to be kept ready made, and often enough to last some days or even weeks. It was with a desire to obtain a preservative with little taste or smell and therapeutic inactivity that he used somewhat extensively formalin. In hospitals, dispensaries and establishments where a large amount of dispensing has to be done in a very short time it is necessary to prepare beforehand many preparations which in some cases must last a considerable time, and, as may be expected, a preservative of some kind must be added, such as alcohol, salicylic acid, chloroform, and now formaldehyde. The addition of alcohol is costly, and unless a large quantity be added it becomes sour, due to the action of a living ferment which exists in the air finding its way into the fluid and causing the alcohol to absorb oxygen and become converted to acetic acid. Salicylic acid is objectionable in many ways. Camphor and chloroform have a taste and smell which many cannot tolerate ; so there still remains to be found a preservative that can be used without having any particularly objectionable points. He had for a considerable time used chloroform, and, experimentally, formaldehyde in all cases where experience had taught him that a preservative must be used. These cases are numerous, such as in making fresh infusions and decoctions sufficient to last perhaps weeks, in solutions of the alkaloids, such as morphine, cocaine, and many others—mixtures which, if dispensed as written, would keep only a few days, whereas they are often expected to remain good for two or four weeks. Many such could be mentioned, the most typical being those containing organic substances in which bacteria grows with extraordinary rapidity, such as mixtures of ergot with bromides and strychnine. These at times assume the appearance of mucilage in a few hours. It would be absurd not to take this fact into consideration, and suggest the use of a preservative. Almond mixture was one which fermented in a few days, and he had often had to make enough of this to last a patient two weeks, and had not been able to find anything act so well as a small quantity of formaldehyde ; 1 in 10,000 keeping it for weeks, and causing no inconvenience to the patients. That was the best example of the value of formaldehyde that had come to his notice, and had been exceedingly useful. Chloroform did not answer nearly so well in that case, but for vegetable infusions he found it to be excellent. In preserving milk, formalin was found to act splendidly, and although it might not perhaps be used by the vendors it could with safety be adopted for domestic purposes as well as in hospitals. Milk required for future analysis could also be kept sweet for some weeks by adding 4 or 5 drops to each 100 C.c. of milk, but it was stated to have the curious effect of slightly increasing the total solids in some cases. He had used formaldehyde for infusions, and found 1 in 1000 to 1 in 3000 answer the best ; but taking into consideration its powerful effect on animal tissue, and how intensely irritating even a weak solution is, he doubted if the former strength could be used for the purpose until its action on human beings is better understood. When used for concentrated preparations the case is somewhat different, and no harm could possibly result from its use. It has the advantage of having little, if any, taste or smell in such small quantities, and thus differs from chloroform.

For Preserving Infusions

which it is an advantage to keep for one or two weeks it is decidedly useful, but when required to be kept longer he found nothing answer so well as chloroform, 1 in 500 or 1 in 1000 ; such as infusions of gentian, calumba, and quassia, either single or four times the strength of the pharmacopœia ; these, when diluted, have little of the smell or taste of chloroform. When patients are put on digitalis, jaborandi and a few others, and only small quantities of stock need be made, formalin answers well. For the purpose of this paper he used Schering's formalin (the 40 per cent.), the quantities stated as used being pure formaldehyde, using 2½ of the former to 97½ of water to make a one per cent solution. Infusions of calumba, ergot, gentian, digitalis, jaborandi, and many others kept quite sweet for nearly fourteen days. In all cases they were bottled cold, and the corks were taken out for a time each day. When a few drops of formalin was placed on cotton-wool and suspended over a fluid, as suggested by Mr. F. C. J. Bird, it was remarkable what a long time the fluid remained free from growths, but he had not found it answer so well for large quantities. Its power to destroy the bacteria of fermentation and putrefaction is its strongest point, and is thus of great service in pharmacy for preparations which have a tendency to ferment. By the judicious use of formalin it is possible to obtain pure cultures of yeast, since the difficulties experienced in conducting processes of fermentation generally arise from the development of bacteria, mostly lactic and butyric ; these require much less formalin to either paralyse or even destroy them than yeast. Consequently, during fermentation, the inhibitory action of the antiseptic reduces the acidity, and thus enables the brewer or distiller to conduct his process at a much lower temperature. In practice it is found that 1 in 20,000 of formaldehyde arrests lactic and butyric fermentation. Mr. Roe then dealt with the use of formalin in the manufacture of mineral waters of a sweet nature, 1 in 20,000 being considered sufficient to prevent fermentation, and for washing the utensils of manufacture 1 in 1000. He also referred to its use in medicine having been recommended in cases of diphtheria as a spray, ½ to 1 per cent., and as a paint, 1 in 500; also as an inhalation for consumptives, diluted with carbonic acid gas ; and in ophthalmic practice. Its use for ringworm had been tested at Guy's Hospital with good results. In dentistry, too, it was found to exert an extremely powerful astringent action. For preserving urine for future analysis it was found to be excellent, a very small quantity keeping it weeks. For preserving vegetable products a 1 to 2 per cent. solution had been found best, very little of the fresh appearance being lost, and the odour well preserved and quite distinguishable after the lapse of some months. In nutrient gelatine for biological specimens it must be used early in those cases where the bacteria liquefy the gelatine. For hardening tissue it is used somewhat extensively and saves a considerable amount of time, being considered much better than alcohol, chromic acid, pot. bich., and many others. It does not cause shrinkage of the cells. Tissue ½ to ¾ inch thick hardens in twenty-four hours in pure formalin ; 5 to 10 per cent. is best for loose tissue. In another method by which time can be saved, and which he believed to be quite new, instead of placing the specimen in the formalin and afterwards in mucilage, prior to cutting sections, make the mucilage with 2 per cent. (or stronger) formalin water, and it will then answer both purposes at the same time.

For Preserving Specimens

a 2 per cent. answers best, and is now being used instead of methylated spirit. The uses of formalin in surgical operations were next dealt with, and as a general disinfectant for purifying rooms in which contagious or evil-smelling cases have been lodged, the best method being by spraying the room with a 5 per cent. solution, and placing small quantities in shallow vessels in various parts. The use of the Alformant lamp was also referred to, and its great success in reducing the number of organisms in sick rooms. — The President said they were all very much indebted to Mr. Roe for his very practical and interesting paper. He (the author) had opportunities of experimenting with formaldehyde under exceptionally privileged circumstances, because in hospital dispensing large quantities of mixtures had to be prepared at one time, whereas the ordinary chemist, on account of the small quantities required, did not need to add a preservative as a rule. One in 1000 of chloroform, for instance, added to a bottle of medicine would be quite out of the question, and he thought it would be inadvisable to use formalin of that strength.—Mr. Pearson thought formalin would be very useful in dentistry, and in solution should prove very serviceable as a mouth-wash.—Mr. Fothergill said, taking into consideration the great chemical activity of formaldehyde, medical men had been somewhat reticent in their method of using it. This was probably on account of the secondary action it might set up.—Mr. Tompsett had personally tried a solution of formalin as a gargle, and was agreeably surprised at the result. He thought it would also prove useful as a nasal douche. He had noticed that it has an odour very much like witch-hazel.—Mr. Hymans said, with regard to witch-hazel, there seemed to be a very great difference of opinion as to whether formalin is present in it or not.—Several other members having expressed their appreciation of the value of the paper, Mr. Roe replied. Referring to the President's remark as to its being objectionable to add chloroform and formalin to a bottle of medicine, he did not lay down any rule as to what should be done in particular cases. If an addition was made, however, it should be noted on the prescription.—On the motion of Mr. Strother, seconded by Mr. Gamble, a vote of thanks was accorded to Mr. Roe.

WESTERN CHEMISTS' ASSOCIATION (OF LONDON).

A meeting of this Association was held at the Westbourne Restaurant, Craven Road, W., on Wednesday, February 16, Mr. J. H. Mathews, President, in the chair. There were about twenty-five members present, amongst whom were Messrs. Andrews, Cracknell, Dampney, Gulliver, Harrington, Hick, Horsley, Hyne, Hyslop, Parker, Pickard, Taplin, Warren, and others. Letters regretting absence had been received from Messrs. W. Martindale, Robinson, C. B. Allen, Dyce, and Baker.—The usual business having been transacted, Mr. R. H. Parker opened a discussion on

The Draft Pharmacy Acts Amendment Bill.

Mr. Parker, at the outset of his remarks, said that although two months have elapsed since the last draft Pharmacy Bill was published, it must not be considered as indicative of indifference or apathy on the part of the Association that its discussion had been deferred until that night, the reason being that that was the first meeting, the programme for which had not been previously arranged. In opening a discussion on a draft Pharmacy Bill the first question that arose was, Did they want any more Pharmacy Bills? Were they not already suffering considerably from the intricacies and superfluities of existing legislation? and did they not find that the manner in which pharmcy law is now construed hampered and inconvenienced them more than those whose actions they wished to render illegal? It might be so to a very large extent, but in spite of that admission he doubted whether any thoughtful member of the craft having any desire for the welfare of pharmacy would suggest the entire repeal of the existing Pharmacy Acts. He was afraid that by far the greater number of chemists make little, if any, effort to acquaint themselves with the operation of pharmacy law to acquire a clear conception of what sort of legislation is desirable and what practicable. Mr. Parker then alluded to the remarkable rarity of unanimity amongst chemists and the apparent absence of any general desire to unite for common good. This he attributed to the complex character of the chemist's business and the extent to which in certain departments it has become developed on opposite principles so that any influence favourable to one section would be unfavourable to another. For instance, one section of the craft cultivates the professional aspect of pharmacy, believing dispensing to be the chemist's legitimate business, and seeks opportunities for doing chemical, microscopical, and bacteriological analysis for doctors and the public. On the other hand, another and probably much larger section of the craft find themselves placed where no scientific work is required and where almost all the dispensing is done by the doctors themselves. These of necessity cultivate the purely trade aspect of pharmacy, and are compelled to add other departments to such an extent that it becomes a puzzle where to find the pharmacy. In a vocation where commercial interests had become developed in so many diametrically opposite directions could it be wondered at that universal concord does not exist? Only in very limited fields could unity of interest be found, and in those only could they expect united action. In spite of this, he considered it of utmost importance that there should exist a representative organisation, prepared to legislate or to oppose legislation if necessary, for the benefit of the craft; but the confidence and help of the majority of those in business would be essential to its usefulness. The Pharmaceutical Society, he contended, is *par excellence* the organisation which should occupy this position. All that is wanted is to make it thoroughly representative of the craft by giving a comprehensive membership and by endeavouring to make each member take an active interest in the welfare of the body corporate. These objects, he considered, are comprised in the draft Pharmacy Bill now under discussion, the main points of which are (1) To make all registered chemists and druggists eligible as members of the Society, with full voting power and equal right to a seat on the Council; (2) "Registered Students" to be called "Student-Associates"; (3) One-third of the members of the Council to retire every year in rotation, instead of by ballot. Mr. Parker then systematically considered the opinions that have been expressed concerning the Bill by the various provincial associations. It was found that only Newcastle objects to Clause 2 of the Bill, that Manchester, Liverpool, and Newcastle are more or less at variance with Clause 3, while the remainder of the Bill meets with no hostile criticism. Mr. Parker pointed out that Clause 2 confers the title "student-associate," therefore the Newcastle objection to the title "associate" does not apply; moreover, the new title was no more open to abuse than the present one, "apprentice or student." In reference to Clause 3, it was shown that the principle of extending the title "member" to all associates received universal approbation, all objection being on the ground that a higher title is not provided for the present member. He contended that the objections urged against such a title as "Fellow of the Pharmaceutical Society" were not weighty; whereas the refusal of such a distinction would create dissatisfaction, and diminished membership amongst pharmaceutical chemists, and particularly would constitute the sacrifice of an important inducement to pass the Major examination. For his own part, he was perfectly willing to extend full membership to all associates without any condition as to a fellowship title, but he certainly did think that the best interests of the Society would be served, and an additional inducement to pass the Major secured, by granting the title of "Fellow of the Pharmaceutical Society" to the pharmaceutical chemist. He repudiated the idea that "associates" are jealous simply because "members" have a higher title, but claimed that the former have reason for dissatisfaction on the ground, (1) that the title "associate" implies incomplete qualification, and (2) because the "associate in business" pays his guinea just as a "member," but has no voice in the management of affairs. Mr. Parker then alluded to the numerical constitution of the Society, and the manner in which it would probably be affected by the proposed Bill; he thought that in course of time, if not immediately, the effect would be that the Pharmaceutical Society would number among its members the majority of the craft, and until then no useful legislation could be effected. Mr. Parker then moved—

> That this meeting of the Western Chemists' Association (of London) cordially approves the draft Pharmacy Bill, but considers that its beneficial effect would be enhanced by granting the title "Fellow of the Pharmaceutical Society" to pharmaceutical chemist members.

—Mr. Taplin was not quite in accord with the suggestion as to "Fellowship of the Pharmaceutical Society," as he considered the title "pharmaceutical chemist" is a sufficient distinction from the Minor man, but in order to help forward or encourage the Bill he had much pleasure in seconding Mr. Parker's proposition. He thought the Bill about to be introduced into Parliament to be

a most excellent one, and that if passed into law will strengthen the Society to a very great extent They ought all to consider that the Pharmaceutical Society is made for the chemist, and not the chemist for the Pharmaceutical Society.—Mr. H. Cracknell (Hon. Secretary) said with respect to the last part of the proposed resolution he felt that it would undo any good they might hope to do. The Bill was intended to bring about the consolidation and unification of the Society, the object of the Council being that all qualified chemists should be on one footing with regard to the Pharmaceutical Society. If the suggestion as to the "Fellowship" was allowed to stand, he was afraid it would be opposed to what the Council are trying to do. He would much rather that the Association sent in a resolution supporting the Bill as it now stands, and therefore he would like to propose as an amendment—

That this meeting of the Western Chemists' Association (of London) cordially approves the draft Pharmacy Bill.

—Mr. Gulliver said he had very great pleasure in seconding Mr. Cracknell's amendment.—The President said with regard to the amendment he must say it had his most hearty support, because he thought that the draft Pharmacy Bill as it now stands is all that they could expect at the present time, and if they introduced any contentious matter it would doom it to failure.—Mr. Hyne said he must say he had been very much surprised to see in the *Pharmaceutical Journal*, and also in the other journals, the amount of antagonism to the Bill, raised by Major men, because he thought that although the Major man has passed an examination the Minor man has not, in very many cases it was not altogether because he had not the ability to pass, but rather for want of opportunity. He thought, therefore, that the pharmaceutical chemist should endeavour to enable the Minor man to attain to the same level as himself in the Society, and the less contentious matter they put in the Bill the better, seeing that its main object is the consolidation of the Society. —Mr. J. C. Hyslop, after paying a tribute to the clear and fair way in which Mr. Parker had brought the question before them, went on to speak in favour of the amendment. He thought the chemist and druggist taken altogether must be a fine specimen of the British lion who is so fond of a quiet dose, otherwise it would not have taken so much worrying and teasing as it has to rouse him to realise the realities of his position. Mr. Hyslop then referred to the original intention of the founders of the Society, which was that there should be but one qualification, but owing to the opposition then raised their idea was not carried into law. He was afraid that if they dallied with the opposition now being raised throughout the country, the modest efforts of the Council to pursue the honourable course of the amelioration of the chemist and druggist, which was started by Jacob Bell, would be thrown back considerably. The Pharmaceutical Society had long given consideration to the subject, and the Council had proposed the draft Pharmacy Acts Amendment Bill as a modest instalment of what is still to follow, for he thought he might venture to say that it is but a stepping stone to further improvements, and if they realised the real nature of the proposal, they would acknowledge it to be a good stepping stone. Those who lived fifty years ago did not think they would get any advantage by legislation, but now that legislation is *fait accompli* as far as the public good is concerned, they, as chemists, must not lose an inch of the ground gained, or some other body, such as the General Medical Council, would be stepping in to guide further legislation. Chemists must therefore, as a united body, keep the advantages they now possess and endeavour to guide future legislation, otherwise they would probably be thrown back a long distance. With regard to the multiplication of titles, he was decidedly opposed to anything of the sort.—Mr. Andrews felt a little difficulty in choosing between Mr. Parker's motion and the amendment, but on the whole he was more favourable to the latter. He sincerely hoped that the efforts of the Pharmaceutical Council in endeavouring to bring the members of the craft more together would be attended with success. They had never yet been united in one body because of the great variety of interests, but he hoped that difficulty would pass away as they gradually became a more educated and scientific body and more truly deserving of the word pharmacist. He thought that the pharmaceutical chemist, without being granted a "Fellowship," will still have an advantage over the Minor man, because he had found that where two men of equal ability apply for any position, one being only a Minor and the other a Major man, the latter invariably got the preference.—Mr. W. Warren, while fully appreciating Mr. Parker's paper, did not quite agree with the assertion as to the greater disunion existing among chemists than is the case with any other body, because he believed there was no more loyal body of men than the members of the Pharmaceutical Society. He would like to know of any other profession in which there are such meetings and associations as those of the elect of pharmacy seeking to improve the craft to which they belong. With respect to the question under discussion, he thought that every individual pharmaceutical chemist should be prepared to make some sacrifice for the benefit of the corporate body. All along the line of history, pharmaceutical chemists, such as Jacob Bell, Allen, and others had proved themselves above any desire for self-seeking; there had been no question of sacrifice with them, they were quite able to stand by themselves, and that Association and all pharmaceutical associations were following in their footsteps in trying to unite their brethren in pharmacy into one strong body.—Mr. W. Pickard said that although the feeling of the meeting seemed to go against Mr. Parker's motion in favour of the amendment, personally he was somewhat in favour of the original motion. All the arguments used had really meant that there should only be one qualification, and that they should all be on one level. Of course that was an argumental position, and he certainly thought there is an advantage in having a second examination, and consequently two grades. He quite agreed that they should all stand upon one legal level, but he thought it only right and just that after a man has devoted a considerable amount of money and time in attaining the position of the pharmaceutical chemist that the work should be recognised in some manner, and by adopting the title of "Fellow" it would be recognised and at the same time there would be an inducement for men to continue their studies. He thought they should not lightly do away with any inducement to young men to go beyond the bare legal requirements, but that they should rather encourage them to pursue their studies, so that they might go on to be the best educated pharmacists it is possible to produce. He was of opinion that by the Bill as it stands at present there would be an identification of the whole trade, which would cause a great amount of confusion, there being no distinction between the Major and Minor members. Of course the Major member would be Ph.C., but he considered "Fellow" a much more distinct title, and he thought the best way of avoiding any confusion would be to adopt that title.—Mr. Gulliver pointed out that the title "Fellow" in connection with the Pharmaceutical Society would be a creation unknown outside pharmaceutical circles; therefore he thought they would do better to retain the M.P.S., because the pharmaceutical chemist would still hold the same position as before.—Mr. Hick favoured the amendment, and remarked that he always advised his assistants to go in for the higher examination. Under the new Bill the pharmaceutical chemist would still have everything he now has, and therefore it would make no difference to him. With respect to the title M.P.S. his experience was that it is rarely used and not generally understood by the public, who, however, do understand the title Ph.C. He thought it far better for them to do all they could to consolidate the Society, especially seeing that the chemist and druggist community connected with the Society increased rapidly, while the Ph.C. section suffered a decrease each year. It was not quite right; in fact, it was not English to take the Minor men's subscriptions without granting them the full privilege of membership, because the Major members have the distinctive title Ph.C.—Mr. Parker, in reply, said that taking into consideration the extremely varied nature of the craft, any measure to be passed at all must be accepted in a spirit of compromise. Someone must yield their principles in order to carry the measure through, and he was quite willing to yield the title of "Fellow" if it could be got through with it. On the other hand, if the Bill could be carried without it, he was quite ready to drop the Fellowship. But before the Bill could pass they would have to get the support of the Manchester chemists, and unless the opposition there could be avoided, the greater good could be done by the use of the title "Fellow." A great deal had been said, both at that meeting and elsewhere, that the object of the Bill is consolidation and levelling. Against that he had nothing to say; indeed, he did not know that it would be much amiss to go one further and grant the title Ph.C. to all in business, to all Associates, and to all who pass the Minor examination. The result would be a levelling of the Society; they would have only one grade, and all would be exempt from jury service, and the Major examination would be done away with. He should very much hesitate, however, to say that that would be the best policy, but he did not think there is much chance of that coming to pass at present. The President had claimed that the introduction of the Fellowship title was the introduction of contentious matter

The great reason why he introduced the title "Fellow" was to avoid the contentious matter. Much had been said as to the levelling of the Society and having only one grade, but whether they had one title or not, there would still be individuals who would make every effort to show the public that they have something better than the qualifying title, and would consequently get it from other scientific societies. Therefore, whatever conditions are instituted by law, there would be a great effort on the part of some to show themselves better than the other members of the craft. He was not in any way strongly opposed to the amendment, his position simply being that whatever conditions are desirable to ensure unanimity on the Bill, either to accept the Fellowship or to leave it alone, he would be willing to give his support to.—Mr. Andrews did not quite understand if Mr. Parker withdrew his motion in favour of the amendment, or whether it would be desirable to vote.—Mr. Parker said he was perfectly willing to leave out the second part of his proposition.—Mr. Taplin also withdrew the seconding of that part.—The President then put the amended motion to the meeting, and it was carried unanimously.—On the suggestion of Mr. Andrews, it was decided that the Secretary should write to the Manchester chemists, who are opposed to the Bill, urging them to withdraw their opposition.—It was also decided to send a copy of the resolution to the Pharmaceutical Society, and to all the local members of Parliament.

Proposed Alteration of the Name of the Association.

The President then said they had received suggestions from several quarters that there should be an alteration in the name of the Association, that it might, as far as possible, embrace the chemists generally of London. The matter had been fully discussed in committee, but the committee had not pledged itself to any course of action, he had been requested, however, to suggest from the chair that some alteration should be made. He had no special name to propose, it being merely desired to bring the matter before the meeting that they might consider it. The question would be brought before the Association, probably at the meeting in March or April, when notice must be given of the alteration to be brought before the annual meeting of members in October. The name that seemed to meet with most favour with those who took an interest in the matter was "The London Chemists' Association," there being no other association in London composed of those who are either owners or managers of businesses. He rather fell in with that suggestion.—The Federation Circular was then mentioned, but as the hour was late, nothing further of importance was done.

IRISH PHARMACISTS' ASSISTANTS' ASSOCIATION.

On Friday, February 18, the fortnightly meeting of this Association was held in the Pharmaceutical Society's house, 67, Lower Mount Street. Mr. J. S. Ashe, M.P.S.I., presided. The minutes of the last meeting were read and confirmed. Apologies for absence were received from Messrs. Hardy and Johnston. Some routine business having been transacted, and March 18 fixed upon as the date of the annual smoking concert, the Vice-President, Mr. H. Hunt, L.P.S.I., proceeded to read a paper on

Photography,

in the course of which he said the art of photography should be taken up by chemists as a source of profit to themselves, and to enable them to set the novice right in the purchase of chemicals. The essayist went back three hundred years, and traced the evolution of photography step by step to the present day, mentioning *inter alia* the discoveries of Shulze in 1727, of Schule in 1770, Wedgwood and Humphry Davy in 1802, and of the partnership some years later on of Niepce and Daguerre, by whom iodine was first used to darken the bright parts of the plate, leading to the invention of the Daguerreotype, the process of which was explained at some length. Fox Talbot's discoveries in 1839 of the properties of sensitised paper for photographic purposes were enumerated. The invention of the dry-plate process, and the substitution of gelatine for collodion as a vehicle for the silver salts in solution, came in for attention, and the utility of gelatine, or an emulsion of bromide of silver in gelatine spread upon glass plates, was shown, the details of the process being fully explained. Photography was next considered as the practical application of the chemical action of light, and demonstrations in connection were given on the blackboard by the essayist, who showed diagrams of light passing through lenses, of which he named the double convex, plano convex and convex meniscus, also the double concave, plano concave and concave meniscus, the convex lenses being called converging lenses and the concave diverging lenses. The several terms in connection with lenses were enumerated, and the composition of prisms and their colours gone into. The refraction of rays of light in lenses owing to the spherical form of the latter, and the method of preventing blurring through the crossing of the rays were next touched upon. The effect of various colours on a sensitive plate was demonstrated by experiments, violet, blue, and indigo being shown to possess the most active effect on the plate, and red and yellow the least. It was incorrect to say that photographs were taken by light, the dark room being dark only in a chemical sense. The camera itself was then considered, and the various kinds of these apparatus discussed. The essayist was of opinion that the camera up to a certain point was a secondary consideration, as the results depended greatly on the skill and experience of the operator. A photograph of an exceedingly fine nature was exhibited, and was stated to have been taken by means of a fourpenny cigar box, an elastic band and a hairpin. Half-plate cameras were recommended for beginners, and promiscuous snap-shots were deprecated. Focussing was next dealt with. The exposure was governed by the character of the light, nature of the subject, time of the year and hour of the day. Sky and sea views required short exposures, while woodland scenery and dark masses of foliage required long exposures. The well-known rule, "expose for the shadows and let the high lights take care of themselves," was quoted. Developing was then treated of, the following formula for a stock developing solution being given :—

Stock Developing Solution.

Pyrogallic acid	1 ounce.
Acid nitre	20 minims.
Aqua	5½

(Add acid before Pyro.)

No. 1.		No. 2.	
Stock solution of Pyro	1 to 2 ozs.	Carbonate of Soda	2 ozs.
Water	to 20 ,,	Sulphite	2 ,,
		Bromide of Potash	20 grs.
		Water	to 20 ozs.

For a correctly exposed plate equal parts of Nos. 1 and 2 were taken, 6 drachms of each would be sufficient for one plate. The developing tray should be kept away from the ruby lamp as far as possible. Place the plate in the tray, film side upwards, and pour on it the mixed developer with a rapid motion so as to completely cover the plate, rocking the tray immediately; in a minute or two the image would begin to appear in patches, the parts where the light was brightest showing up first. In a landscape, the sky would first appear in a dark patch. The developer should consist of three parts, viz., the developer, or reducer-pyro; accelerator-soda, carb.; and restrainer, bromide of potash. The addition of sulphite of soda prevented pyro absorbing oxygen from the air, and bromide of potash kept the pyro from attacking the silver salts too rapidly. Further details of developing were mentioned, particularly as regarded the appearance of "high lights," and some useful hints in cases of over or under-exposure of plates were given. The plate, having been developed, should first be washed and then immersed for five minutes in a solution of alum and water, 1½ oz. and 2½ ozs. respectively, then washed again, and afterwards placed in a fixing solution of a 20 per cent. of $Na_2S_2O_3$, for the purpose of dissolving the unaltered salts of silver on the plate and leave the image only, the resolution being a double salt of hyposulphite of sodium and silver. After removal from this bath, the plate should be washed in running water for two hours. A comprehensive description of the production of the positive was given, after which printing and toning were touched upon, the solution for the latter being given as :—

Toning Solution.

Sulphocyanide of ammonia	30 grains.
Chloride of gold	2½ ,,
Water	16 ounces.

After toning, the prints should be fixed in a solution of $Na_2S_2O_3$ half the strength of that used for the plates. The platinotype was commented on in admiring terms and the method of printing by this process explained. The use of photography in art and commerce was referred to, and some beautiful specimens of portraits and advertising bills, the latter embracing colour photography, were shown by kind permission of Messrs. Lafayette, photographers, by whom they were lent for exhibition. Reference was made to the cinematograph, astronomical photography, and the new *x*-rays, all going to prove the utility of the camera in the heavens, the earth, and the sea, its functions in warfare, as instanced by the Röntgen Rays on the battlefield, and its use in

preserving the features of those "loved since and lost awhile."—Mr. O'Sullivan proposed and Mr. Turner seconded a vote of thanks to the essayist. Photography, according to Mr. O'Sullivan, rightly belonged to chemists, and pharmacists should be thoroughly conversant with the art, as it entered largely into their every-day life, the preparation of solutions being work proper to the pharmacist. The vote of thanks having been conveyed to Mr. Hunt, the proceedings terminated.

PHARMACEUTICAL SOCIETY OF IRELAND.

The usual fortnightly meeting for the discussion of scientific subjects was held at 67, Lower Mount Street, Dublin, on Monday, February 14, the President, Mr. R. J. Downes, in the chair. There was a satisfactory attendance. The minutes of the last meeting having been confirmed, and some complimentary remarks made by the President on the recent public lecture by Mr. Carpenter, B.Sc., on "Insects" (reported in our issue of the 5th inst.), Dr. J. C. McWalter proceeded to deliver a lecture on

"The Pharmacy of the Pancreas,"

which he illustrated by a number of specimens of pancreas handed round on plates. He said the tendency was to crowd the stomach with the lion's share of digestive work. Two-thirds of man's food was of a starchy nature, and therefore they must seek something on which to throw the blame for digestive troubles. The pancreas of calves grazing in the field and that of pigs were spoken of. The Imperial Academy of Medicine at St. Petersburg had recently instituted a most interesting series of experiments on the digestive processes which resulted in confirming many of the views which physiologists had hitherto held concerning that function, and had thrown more light on many obscure points. Practically the bulk of the teaching of the medical schools on the question was based on the experiments of that celebrated physiologist, Claude Bernard, who was a pharmacist. The St. Petersburg scientists had found that almost every kind of food required a different ferment to digest it, and it was to this point that he, the speaker, wished to direct attention, namely, that the stomach did not digest food, and that the normal secretion of that organ had no effect on the food. It had likewise been shown long since that when the pancreas was removed from animals, fat appeared in the fæces, and that in disease in vomiting this aluna there was a considerable wasting of the fatty tissue from the intestinal tract. By offering a fatty substance in a minutely divided and absorbable condition, an emulsion of cod liver oil was almost as efficacious. He, however, did not agree in that view, but there was no doubt that the fatty medicines were often marvellous in the early stages of consumption, and would probably be of immense benefit in the later stages if they could be absorbed. A peptonised cod-liver oil emulsion would seem to be the really simplest form to administer fats where the pancreatic and secretions were both too scanty to cause fat to be absorbed. The organ then which was concerned in the elaboration of fat to serve as food was pancreas which poured the secretion into the duodenum, that portion of the digestive tract which received the contents of the stomach after the process of gastric digestion had been conducted. Peptones were very differently treated by the stomach, and if starch or proteids were introduced, otherwise than by the mouth, into the stomach of an animal, that was without an ordinary psychic stimulus of the sense of humour, they were not diverted, but the secretion of gastric juice was carried on, while the peptones became absorbed by their very presence. It was proved, moreover, that when fat was put into the stomach, no effort was made to digest it, on the contrary it had rather an inhibitory effect and prevented the stomach digesting either species of food. A fatty pancreatic emulsion obtained by mixing the pancreas of the pig with lard, treating the product with ether and evaporating was in repute some years ago, also as a remedy for phthisis. Peptonised beef jellies were on the market, but they were not equal to the freshly peptonised preparation for administration in the stomach. Physicians had long noted that the pancreas was affected in most cases of diabetes. On this point Dr. McWalter spoke at some length. He also referred to the stomach of a young infant, and explained the cause of starchy foods disagreeing with it, on account of the non-development of the pancreas. The curdling of milk due to fermentation was dwelt upon, and the important function of the pancreas alluded to. Where the pancreas was removed the enamel wasted away. The question whether pharmacists could extract from the gland certain active principles was one that called for attention. The peptonising of milk by heat was contrasted with that of powders. It was unwise to allow milk to be wholly peptonised, as it was calculated to cause stomachic disorders, especially with invalids. The speaker condemned strongly the practice of "bolting" food. It, was due to this cause that distressing flatulency and dyspepsia arose. The maceration of the warm gland in a solution of glycerin was advocated, and the difference in quality of the juices of an animal freshly killed with that of the juices twenty hours afterward explained. The preparation of rennet was next spoken of, and extracts of malt, petroleum, and cod-liver oil came in for due attention. Reference was made to Martindale's views on the subject of pancreas, and the lecturer thought it would be for the Pharmaceutical Society to see how they could obtain a pancreatic solution of cod-liver oil in the form of an emulsion.—The lecture was commented on by Messrs. Smith and Johnston, who proposed and seconded respectively a vote of thanks to the lecturer. Mr. Smith gave his views on the peptonising of milk, and related his experience of its preparation by a customer. He found that the difficulty in peptonising the sample in question was due to the presence of boric acid in the milk.—Mr. Johnston had also an encounter with the public in the matter, and he advised writing to the proprietors of the powders in question for an explanation of their failure to act. Now, however, he would be in a position to explain the real cause of failure. The President, in conveying the vote of thanks to Dr. McWalter, spoke in admiring terms of the clear and lucid manner in which the lecture had been delivered. He gave his own opinion on the subject of pepsine, and could not overrate the importance of having the compound fresh and good in starting.—Dr. McWalter suitably replied, after which the making of emulsions was discussed by the meeting, Dr. McWalter taking a leading part in the debate. Oils, old and fresh, olive oil, and their various actions were spoken of in the discussion. The storage of emulsions in dark coloured glass bottles, well corked, was generally approved of.—Mr. Smith gave an illustration on the blackboard of an emulsion which he made up into a nice preparation.—Mr. Johnston varied the subject by inquiring whether it was right to go outside the prescription in order to make a perfect emulsion.—Dr. McWalter agreed to a certain extent, if the compounder knew that in doing so he was carrying out the wish of the prescriber.—Messrs. Brown, O'Connor, and others having spoken, the proceedings terminated.

EXETER ASSOCIATION OF CHEMISTS AND DRUGGISTS.

Mr. D. Reid (President) and Mr. P. F. Rowsell represented the Exeter Association of Chemists' and Druggists' at the Exeter Technical and University Extension College at the Albert Memorial Museum on Saturday, February 12, when the Right Worshipful the Mayor (Mr. R. Pople) distributed the prizes and advanced certificates to successful students of the college, including the following given by members of the Exeter Association of Chemists and Druggists in connection with the classes carried on by Mr. Alan Ware, Ph. Ch. Prize given by Alderman H. Gadd, J.P. (ex-President of the Association and of the firm of Evans, Gadd, and Co., wholesale chemists of Exeter and Bristol) to that student who should do best in the advanced chemistry course: Mr. G. Rae. Prize offered by Mr. J. Hinton Lake (vice-President of the Association and Local Secretary of the Pharmaceutical Society) to the student who should do best in pharmacy and materia medica: Mr. Jordan, who succeeded in passing his Minor examination direct from the college. Prize offered by Mr. G. Stocker to that student who should collect the best herbarium of British plants within a radius of ten miles of Exeter: Mr. Bernini Palmer. Prize offered by Mr. P. F. Rowsell (Hon. Sec. of the Association, and of the firm of Messrs. Holman, Ham and Co.) to that student who should do the best in the elementary chemistry course: Mr. Berg. Special prize given by Mr. J. Hinton Lake for elementary chemistry during the session: Mr. H. Pellow.—Mr. A. W. Clayden (the Principal of the College), in asking the Mayor to distribute the awards, said he had received apologies for non-attendance from Alderman Gadd, J.P., and Mr. J. Hinton Lake. Mr. Lake wrote that, although deeply interested, formerly as a science student and subsequently in the formation of pharmacy and materia medica classes, he regretted he should not be able to attend. He could not help thinking that it must add to the importance of Exeter to send successful students for the qualifying examination of the Pharmaceutical Society direct from the Exeter College. That sentence in Mr. Lake's letter

was a valuable reminder to him (Mr. Clayden) of the fact that the college had started a pharmacy school especially for the education of pharmacy students. Only two candidates went straight from the college to pass the qualifying examination of the Pharmaceutical Society. One failed in one of his subjects, the other passed direct from the college. This was an examination in which he believed something like two-thirds, or even a higher percentage of the candidates were ploughed, and it was greatly to the credit of the pharmacy school that one candidate passed direct from Exeter, and that another almost passed. He wished he had passed. At the conclusion of the proceedings, a vote of thanks was passed to Mr. Clayden and his staff, Mr. Clayden responding.

GLASGOW AND WEST OF SCOTLAND SCHOOL OF PHARMACY.

The students of this School spent a social evening at the Trades' House Restaurant on Thursday, the 17th inst., Mr. Thomas Mackenzie, Ph.C., in the chair. Over eighty students and their teachers were present. Supper having been served, the following toasts were honoured during the course of the evening.—"The Queen," proposed from the chair.—"The Pharmaceutical Society of Great Britain," proposed by Mr. David MacMillan, and replied to by Mr. M. Macfarlane, who urged upon the students to join the Society on passing their examinations.—Mr. A. Sheriffs, in proposing "The Glasgow and West of Scotland School of Pharmacy," complimented Mr. Mackenzie on the success which had attended his efforts since the inauguration of the School, which filled a gap and long-felt want in the West of Scotland.—Mr. Mackenzie replied, and expressed the hope that the time would soon come when students would be able during the course of their apprenticeship to take full advantage of thoroughly systematic and practical courses of instruction.—The other toasts were "The Present Students" and "The Past Students."—A varied programme of songs, recitations, selections on the mandoline, etc., contributed to the harmony of a very pleasant evening.

NORTH-EAST LANCASHIRE CHEMISTS' ASSOCIATION.

On Thursday, the 17th inst., the annual dinner in connection with this Association was held at the White Bull Hotel, Blackburn, Councillor T. Critchley presiding over a large attendance, which included Mr. Edward Evans, J.P., of Liverpool, a member of the firm of Messrs. E. Evans and Co.—Mr. R. L. Gifford, who proposed

"The Pharmaceutical Society,"

coupled with the name of Mr. Evans, remarked that he was anxious to obtain some practical benefit from the gathering. The Pharmaceutical Society was empowered by Royal Charter to regulate admission to the ranks of legal pharmacy and to enforce the provisions of the Pharmacy Acts. It was, therefore, the only means through which their interests were to be protected, and through which all improvements must come. As they were aware, membership of the Society was not compulsory, and by paying the subscription of a guinea they had a voice in its management, received the official Journal, and obtained a certain status. If people did not join the Society they had no right to grumble. In February of last year the Registrar reported that there were 15,166 qualified chemists in the country, but of these, 10,341 were not connected with the Society, leaving only 4825 who had the power of voting for the Council and electing local secretaries. Broadly speaking, what was the effect of this? Seeing that the Society represented less than one-third of the trade, how could they expect to be taken seriously when they approached Parliament for an alteration of the law? As Mr. Hills had said, with these figures reversed they could obtain any legislation of a reasonable character. The Pharmaceutical Council was a body of high-minded gentlemen who did all they could to advance pharmacy, and their estimable President said he had been delivered of a fine healthy baby in the shape of a Pharmacy Bill, which among other things would make every registered chemist eligible for membership of the Society and for election on the Council. To his mind the method of gaining the end was invidious, because it would stir up strife in a way of which they were all aware. It was childish for the Council to go to Parliament with such a Bill. Parliament ought to be approached at an opportune time and when the Society had something definite. He would like the Council to strive for the abolition of Company pharmacy and one man companies, and also to give the members a definite position in the eyes of the public in order that the latter might know "this from that"; they had wholesale manufacturing chemists, drug stores, and goodness knew what, to such an extent that the public was confused. He believed that if the Council agitated for the handling of all potent drugs, herbs, and chemicals by registered people the demand would be considered reasonable and granted without much delay. Common-sense arguments were the only arguments with which to approach Parliament. He did not think the members of the Council knew their trade, and it was time they were educated and made to represent the trade of the country.—Mr. Evans, in responding, said a person engaged as a chemist could not have too much knowledge of his business, and he thought the thanks of the community were due to the Pharmaceutical Society for its efforts in the direction of bringing about a higher standard of education and knowledge, and that it was not right they should be interfered with by a large number of people whose knowledge was absolutely *nil*, and who simply traded under fictitious names or something of that sort. Chemists must bear in mind that, though they were traders, they were also semi-professional men, and that there were two things for which the public would pay—the value of the goods they bought and the professional knowledge which they thought chemists possessed. Despite the extraordinary development of what Mr. Gifford had described as company pharmacy and one-man companies, he thought that there was still scope for a thoroughly competent man with business aptitude to make a very respectable living in the trade. As to the Pharmaceutical Society, he thought the Council was rather governed by the West-end pharmacies in London. They did not realise what he, as a provincial wholesaler and his hearers as provincial retailers, realised, that there was an altogether different trade in the provinces and in Lancashire towns from that of the West-end of London. The solution of this difficulty was for the provincial towns to get as many representatives as possible on the Council. He was optimistic enough to think that, notwithstanding the difficulties which surrounded them, the future before the retailers of the country was as good as in the past.—Mr. H. Hindle, the oldest chemist in Blackburn, gave "The Towns and Trade of North-East Lancashire," Councillor Green, J.P. (Blackburn), responding.—Mr. Grimshaw (Blackburn) proposed "Pharmacy," and Mr. Law (Accrington), who responded, said he would like to have a better opinion of the Pharmaceutical Society than he had. He had not been a member for many years, simply because he could not see what good it was doing the provincial trade.—Mr. Lomax (Darwen), who was entrusted with "The North-East Lancashire Chemists' Association," said he believed that in the past the Association had consisted entirely of Blackburn chemists, but he understood that the members had decided to extend their boundaries so as to include the chemists of neighbouring towns, such as Accrington, Burnley, Darwen, and other places. In doing this he thought they would not only give a helping hand to the smaller towns, but at the same time would strengthen their own position for usefulness in the future. It was quite time chemists combined to defend and protect their interests; unity was a quality that hitherto had not been much in evidence amongst chemists as a class. He was of opinion that every town should have its own local association for purely local interests, but nevertheless he believed that much could be gained by the smaller towns in addition amalgamating with large towns like Blackburn, as it would often be found useful, especially when presenting petitions to the Pharmaceutical Society, or to Parliament, to have a body large in numbers. If in the past chemists had been a united body they would have had better profits than they were receiving to-day, and they could have spoken with a more certain sound to the large proprietors of patent medicines, etc., although he hoped all chemists would bear in mind that they existed for something better than simply to sell patent medicines. There had been much discussion as to whether their calling should be looked upon as a trade or a profession. He thought that question was very nicely handled by Mr. David Storrar, in a paper read at an evening meeting of the Pharmaceutical Society in Edinburgh about a month ago. He said that "while the selling of drugs is a trade, the dispensing of medicines is an art or profession for which special education and training is required, and for which the dispenser ought to be paid over and above the selling price of the drugs used." That paper would be found on page 94 of the *Pharmaceutical Journal*, January 29. He would like to put in a plea for the Pharmaceutical Society. If chemists would only join the Society in large numbers, he believed they could so mould and shape the Society that anything reasonable could be done; thus it would be given a far greater power for

usefulness. The Society required backing up, and if the grumblers could be got to join, much benefit would accrue. An admirable address on pharmaceutical organisation was given by Mr. Taylor, of Bolton, at the meeting of the Manchester Pharmaceutical Association on the same evening that Mr. Storrar read his paper in Edinburgh, and anyone reading the address in the Journal would be amply repaid. A few months ago Mr. Newsholme, of Sheffield, said: "When any chemist fully realises the full value of combination for mutual defence and professional advancement, it will not be long before he perceives that the Society offers the simplest means of alleviating his position." It afforded him great pleasure to propose the toast.—Mr. F. N. Whitehead (Blackburn), the honorary secretary, responded. He remarked that the absolute necessity for combination in trade was bound to be acknowledged by everybody. What the legal and medical professions had done in the matter of combination chemists need not be afraid of doing, nor could they afford to neglect doing it. The efforts of their local Association had not been altogether unattended by success. There was a great deal better feeling among the members of the trade than formerly, and he believed that this in a great measure was due to the fact that they had formed themselves into an association. He appealed to the members to uphold the interests of the Association, and pointed out that by working for the Association and in the interests of the chemists of the town they were also doing something to benefit themselves.—Mr. Garland, the oldest pharmaceutical chemist in the town, gave "The Medical Profession," and observed that he had always been in favour of extending the boundaries of the Association.—Dr. Cunliffe, who responded, said neither profession could be improved without the other reaping some benefit.—Councillor Ralph Shorrock (Darwen), responding to "The Visitors," proposed by Mr. Joseph Hindle, spoke in favour of the extension of the boundaries of the Association, and with regard to the Pharmaceutical Society he said he had always looked upon it more or less as a failure. Business in Lancashire was altogether different to that of the south, but he believed that an association such as that in connection with which they were met that evening would be the means of bringing about such measures as would benefit the chemists and druggists of the North. If they were more united they would have more support from the medical profession.—Mr. J. S. Eatough gave "The Lancashire Witches," the responder being Mr. C. Critchley. "The Health of Mr. Evans" was proposed by Mr. J. R. Parkinson, "The Secretary" found a proposer in Mr. W. Holt, and "The President" was given by Mr. Howarth.

DERBY AND DISTRICT CHEMISTS' ASSOCIATION.

A meeting of this Association was held on Wednesday, February 16, at the Royal Hotel, Derby, the President, Mr. J. A. Cope, in the chair. The chief business of the evening was the discussion of the

Pharmacy Acts Amendment Bill.

Mr. Cope introduced the subject, explaining the different clauses of the Bill and pointing out the position of chemists when the last Pharmacy Acts were passed and their position to-day. After considerable discussion, in which Messrs. Dawson, Hart, Pemberton, and others took part, Mr. Cope proposed the following resolution:—

> That this meeting of the Derby and District Chemists' Association having considered the Draft Pharmacy Acts Amendment Bill approves of the same, and will render to the Council any assistance they are able to give to promote its passing into law.

Mr. Hart seconded, and it was carried unanimously. It was also resolved that the following letter be sent to the local Members of Parliament, signed on behalf of the Association by the President and Hon. Secretary:—

The Pharmacy Acts Amendment Bill.

"The Pharmaceutical Society of Great Britain desire to introduce into Parliament a Bill having the above title. Its object is to remove certain restrictions as to membership and to reconstitute the Council of the Society. At present only those who become 'pharmaceutical chemists' by passing an honorary or 'Major' examination are entitled to become members, whilst the Council must consist of two-thirds pharmaceutical chemists. Those who become chemists and druggists by passing the qualifying or 'Minor' examination may become 'Associates,' having restricted privileges, and must always be in a minority on the Council.

"The number of pharmaceutical chemists on the Register at the present time is 2251, and the number of chemists and druggists is 12,964.

"The Pharmaceutical Society is the only incorporated body representing chemists, and is charged with the administration of the Pharmacy Acts. It is hoped by the Bill to consolidate all those practising pharmacy, and to make all who are legally qualified eligible to become members of the Society and to have an equal right to share in the management of its affairs.

"At a meeting of the Derby and District Chemists' Association held on February 16, it was resolved that particulars of the Bill should be sent to the Members of Parliament representing Derby, expressing the hope that they would give it their consideration and support.

"Should you desire any further information on the subject we shall be happy to supply it.

"(Signed) "——."

Other matters were discussed, principally the subject of local trade protection against misleading advertisements of the so-called pure drug companies.

SCHOOL OF PHARMACY STUDENTS' ASSOCIATION.

At a meeting held on Friday, February 18, Mr. H. M. Morgan in the chair, Mr. H. E. Matthews gave an account of an investigation he had undertaken, at the suggestion of Professor Greenish, to accurately ascertain the development of the

Vittæ of Caraway Fruits.

The paper, which was well illustrated with drawings and microscopic preparations, was followed with interest by a good muster of members.—At the close, Professor Greenish and Mr. E. M. Holmes commented on the paper, the former speaking in high praise of such investigations clearing up doubtful points about which definite information could not be obtained from books.—Messrs. Smith, Dewhirst, and Perrédès also joined in the discussion.—Mr. F. A. U. Smith then gave a description of his

Quick and Permanent Method of Double Staining

of vegetable tissues, giving an admirable practical demonstration of the process. This involves the use of hæmatoxylin and safranin, the resulting preparation leaving nothing to be desired in distinctness and permanence.—Professor Greenish complimented Mr. Smith on the rapidity and excellence of his method, but rather preferred to use staining agents as little as possible, and those generally the temporary ones, which perhaps gave more accurate indications of the nature of the tissues.—Messrs. E. M. Holmes, Matthews, and Perrédès also spoke, Mr. Holmes inviting students to apply to him should they need material to investigate.

PLYMOUTH, DEVONPORT, STONEHOUSE AND DISTRICT CHEMISTS' ASSOCIATION.

At the monthly committee meeting held on Tuesday, February 22, the following new members were elected, Messrs. Pratt (Saltash), and Reed (Devonport) chemists, and Mr. Nicholls (assistant).—In connection with the new Pharmacy Bill which was to be introduced in Parliament this week, it was resolved to write to local Members of Parliament reminding them of their promise to support the Bill, and to ask members of the Association who had votes in other divisions to communicate to their respective Members, urging them to be present in the House at the time and support the Bill.—The Annual Ball Committee also met. The hon. Secretary (Mr. F. Maitland) reported a balance in hand of £1 2*s.*, which was voted to the Treasurer of the General Committee.—In connection with the Junior Section, Dr. W. Cheyne Wilson will deliver a lecture on "Some of Our Microscopic Foes" at the "Technical Schools" on Wednesday, March 2, at 8 p.m.

Intelligent Disinfection.—According to the *Berliner klinische Wochenschrift*, a medical man in Niederlausitz, having notified to the Sanitary Bureau certain cases of typhoid, the thorough disinfection of the dejecta (*Stühle*) was ordered. The police officer charged to execute the order, accompanied by a labourer with a great bucket of limewash, betook himself to the infected houses and consciously whitewashed not only the stools and chairs (*Stühle*) but even the beds, tables, and all the furniture.

NOTICES TO CORRESPONDENTS.

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

Advertisements and Orders for copies of the 'Pharmaceutical Journal' must be addressed to the Publishers, 5, Serle Street, Lincoln's Inn, London, W.C. Cheques and money orders should be made payable to "Street Brothers."

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

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

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

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

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

Reprints of Articles cannot be supplied unless authors communicate with the Editor before publication of the articles. The right to reproduce all original matter and illustrations published in the Journal is strictly reserved.

LETTERS TO THE EDITOR.

The New Pharmacy Bill.

Sir,—I have been both surprised and amused by the amount of breezy correspondence that has arisen from the proposal to admit successful Minor candidates to share in the title M.P.S., especially as the title in question is not of the slightest practical value, the rights of a Major man being fully protected by the title Pharmaceutical Chemist. This discussion on pharmaceutical titles reminds me of an anecdote I heard a few weeks ago wherein it was related that a tourist went to stay at a hotel at a fashionable seaside resort almost exclusively frequented by men of letters, so much so, that our tourist having signed his name in the visitors' book as plain Richard Grimston, it was pointed out to him that he had omitted to include his degree, whereupon he affixed to his name B.B.B.B.B.B., which, when the landlord perceived, he made careful search for the meaning of this strange appendage but without success, and was obliged to refer to the owner, when it transpired that the translation was "Best Blooming Blower Birstall Brass Band," which, I think, points the moral that with certain well-known exceptions these alphabetical appendages are not unlikely to be regarded with a good deal of suspicion and indifference by the public. For those of our Major friends who are not contented with the exclusive use of the title "Pharmaceutical Chemist" there is a title with a decidedly distinguished ring about it all ready for appropriation, viz., "Major Graduate in Pharmacy," so that, taking the proposed Bill as passed, they would have the use of Ph.C., M.G.Ph., which, for a man of ordinary appetite, should suffice. As a certain amount of alteration in titles is proposed I think it would be better to deal with the matter once and for all. A man who has passed the Minor is, I think, reasonably entitled to something more up to date than the antiquated title of "chemist and druggist," and I would suggest that all men qualified to practise pharmacy be styled pharmaceutical chemists. If a qualified man, whether he be Major or Minor, is not a pharmaceutical chemist, what is he? A new title would then be required for Major men, such as "Fellow" or "Pharmacist of the First Grade," while this examination should be of such a character that all holding the qualification should be intellectually fit for any company. I think also that exemption from jury service for all qualified men should have been included in the proposed Bill. Both Major and Minor men have the same class of duties to perform, and if one class be exempted the logical conclusion is that both should be, and I fail to see how any real objection could be raised to such an extension. All this, however, is by the way, as the main object of the Bill is to bring all chemists into line, besides which all these trivialities should pale into insignificance. It is beyond doubt that until we are united into one solid body there is not the slightest prospect of the illogical position we now occupy being altered. The common and monotonous custom is to blame the Pharmaceutical Society for things being as they are. It is not my purpose to defend the Society, whose sins of omission and commission may be quite as numerous as they are stated to be; but even accepting that basis, the Society has made continuous effort while the outsiders have proposed no alternative policy. The difficulty to my mind is to discover what the outsiders really wish. The Society is the only chemists' organisation in Great Britain; it is framed on truly popular lines and if it does not reflect the views of the majority of chemists now it can soon be made to do so if those outside will join and bear a hand in shaping its policy. What the chemists of this country who do not belong to the Society have to decide is whether they are prepared to remain under present conditions, or whether they will combine for the definite purpose of improving the material and social position of "the British chemist." If they are prepared to remain as they are, then they cannot reasonably blame the members of the Pharmaceutical Society for the prevailing condition, which is likely to prevail while the present state of disintegration continues. If, however, they go for union and energetic effort it will not be many years before the chemists of this country obtain their deserts.

Ashby-de-la-Zouch, February 14, 1898. G. W. Bullen.

Sir,—I hope that before any further time and money are expended on "Defence Committees," etc., in opposition to the new Pharmacy Bill simple facts will be well considered. These seem to me: (1) That the Society is—nominally—the representative to the outside world of that portion of the community which deals in drugs and dispenses medicines. (2) That it is not really representative, inasmuch as the great majority of chemists in business are Minor men, and, as they are denied any voice in the direction of the Society's affairs, even if they joined it, they naturally prefer not to do so. (3) That it is against all modern ideas that anyone subscribing to a society should not have a voice in its direction. (4) That any legislation which will tend to make the Society really representative deserves careful consideration. (5) That no one covets the title "M.P.S.," and few would use it if they could. (6) That the title "Pharmaceutical Chemist" is the really distinctive one, and that is not to be interfered with. (7) That the proposed change is the only possible way of giving Minor men who subscribe to the Society a share in its affairs which their subscription should entitle them to. As a Minor man, I am surprised that anyone who has his own interests at heart, to say nothing of those of the Society, should fail to see that, as union is strength, so the only way to further his interests is to have a body which shall really represent the whole trade and thus be able to speak out with no uncertain voice were those interests imperilled.

Southport, February 19, 1898. Herbert Roberts.

Sir,—I was much interested in reading the leader in the *Pharmaceutical Journal* of the 12th inst. headed "A Matter of Justice." Although I have been a pharmaceutical chemist for about twenty-eight years I have but seldom troubled the correspondence columns of the Journal, but on this occasion should like to make a suggestion, in order to get at the general opinion of chemists on the Pharmacy Acts Amendment Bill, especially with regard to the privileges of pharmaceutical chemists being accorded to those who are willing to take up their membership of the Society, including exemption from jury service, etc., which in itself is worth a guinea a year to anyone in business, whether he be the proprietor of a single-handed shop or one of larger dimensions. My suggestion is that the Society should issue two sorts of petitions to Parliament, one signed by the chemists and druggists desirous of participating in the privileges, etc., of the Society, and the other signed by pharmaceutical chemists and other members of the Society who think the time has come for the extension of the same. A copy of each should then be sent to every local secretary, with a request that he will call on every chemist in his district and place before him for signature the special petition suited to his position. By this means it would bring the local secretary into closer relations with his neighbours, and tend to foster the ties of brotherhood among chemists. The

wording of the petition might be something in this way: "We, the undersigned pharmaceutical chemists and other members of the Pharmaceutical Society, think that the time has now arrived when, in fairness to those willing to take up their membership, they should be allowed to do so, and should also enjoy the same privileges as a duly qualified pharmaceutical chemist (except the title of pharmaceutical chemist)."

Name and address.	Number of Major certificate.	Year of taking up membership.

Petition No. 2.—"We, the undersigned chemists and druggists, being duly qualified to keep open shop for dispensing prescriptions and the sale of poisons, are desirous of becoming members of the Pharmaceutical Society, and, as leaving our businesses in the hands of others when on jury service is against the safety of the public, we pray that we may be exempt from such service, as are the pharmaceutical chemists."

Name and address.	Number of Minor certificate.	Year of passing.

Of course this is only offered by me as a rough suggestion, leaving others more capable to deal with the detail; but if a more cordial feeling could be engendered between the various chemists in a town, the less they would give way to the cut-throat system of undue competition in prices. Trusting the idea may prove of some service.

Surbiton, February 18, 1898. John Pim Jackson.

The Use of the Metric System by Pharmacists.

Sir,—I noted with regret the announcement of your intention to encourage in the Journal the use of the metric system of weights and measures with a view to the ultimate exclusion of the present and older method. In last week's issue you appear to congratulate yourself that because only one adverse opinion had been received your proposal was accepted with approval. I would humbly desire to be objector No. 2 and to join issue with your Edinburgh correspondent in thinking that the proposal is at least premature. I have no wish "to stop the clock" or to retard what may eventually become the all-prevailing system, but I wish enlightenment to show what great benefits would accrue to practical pharmacists were the metric system generally adopted in dispensing. To carry it out as is done in Germany and some other Continental countries it is necessary that all liquids should be weighed—not measured, and I put it to anyone handling a number of prescriptions daily if this would be conducive to speed or accuracy. I agree with Professor Remington in thinking "that the advantage in supposed greater accuracy of weighing over measuring liquids is more imaginary than real. A careful pharmacist will compound prescriptions just as accurately by measuring liquids as he will by weighing them," and, I would add, much more speedily. Professor Remington further states "that liquid medicines are never administered by weight, but always by teaspoonful, tablespoonful, or other convenient measure." The absurdity, therefore, of prescribing gravimetrically and administering volumetrically is very apparent. In using the C.c. method there is not, of course, the same objection, but personally I require much education to convince me of the greatly superior advantages of the metric system in dispensing over our present method. Then, again, the trivial and easily-produced error of misplacing the point might lead to most serious consequences. You may argue that it is our duty to follow the scientific trend of all Continental countries, and adopt the metric system in its entirety. I know I expose myself to the taunt of being non-progressive, too conservative, etc., etc., but I think we might with advantage exercise a little self-independence and not discard an old, well-tried, and not-so-very-barbaric-a-system after all for a system "made in France or Germany." We all recognise the convenience of the metric system for analytical and highly scientific work where time, as a rule, is of no great moment, but I am objecting from the standpoint of a dispensing pharmacist, where alacrity and accuracy are of paramount importance. A few days ago I had a very good object lesson on the subject at issue. I had the following prescription sent me to be dispensed, accompanied by a request that a copy should be supplied with the weights changed into their metric equivalents, as my customer wished to send the prescription to Germany, and the pharmacist there might not be cognisant of our weights:—

℞ Zinci Valerian..... gr. iii.
Ext. Belladon..... gr. ⅓.
Pulv. Digitalis ..... gr. ¼. M.
Fiat pilula s.a. Mitte tales, xxiv.

This prescription is simplicity itself, and is representative of hundreds passing daily through the hands of pharmacists in this country. Except under the grossest carelessness or ignorance could a mistake be made in dispensing it. Transformed into the metric system it reads thus:—

℞ Zinci Valerian. ..... ·1944.
Ext. Belladon. ..... ·0216.
Pulv. Digitalis ..... ·0162. M.
Fiat pilula s a. Mitte tales, xxiv.

There is of course no difficulty in dispensing this, but I appeal to any practical and busy pharmacist if the same simplicity now exists, and in the calculations necessary to be made if there is not room for easy, though unintentional, blundering. You may of course say that were the metric system adopted it would be advisable to change the style of prescribing. Powders and pills would be ordered in different quantities; the capacity of bottles would require revision, etc. Is the game worth the candle? I can conceive no set of circumstances which cannot be met by our present system. So far as I am able to judge there is as great accuracy, and certainly there is less risk of error; two considerations which outweigh a very large number of hypothetical advantages. The great benefits of the metric system cannot be very obvious when, according to your own showing, "twelve years of a permissive system have done little or nothing in the direction of familiarising the inhabitants of the United States of America with metric weights and measures, and it is open to serious doubt whether a hundred years would see any change in that respect, either there or here, unless some section of the general public undertakes the task of conversion." The tables you purpose publishing will undoubtedly be a great boon, and if I might venture a suggestion I think they should be printed in such a way that they can be detached from the Journal without mutilating it, and so be pasted into our new Pharmacopœia or other convenient book for ready reference. When speaking of weights and measures, if it is not too late, or if it has not been already done, I think the Pharmacopœia Committee should give an authoritative deliverance intimating what "ʒ" means when placed as a quantity for a dry powder. In the preface of the present Pharmacopœia the symbols "℈" and "ℨ" are mentioned as equivalent to 20 and 60 grains respectively, but, oddly enough, the symbol which can bear an uncertain construction is left severely alone. It appears to me that the difficulty would be easily overcome were this symbol entirely disassociated from the word "ounce," and made to represent 480 grains when applied to a dry medicine and 480 minims when applied to a liquid. When an avoirdupois ounce is desired let it be simply written "an oz." or "ounce." I introduce this remark as of late I have asked several medical men what they intend when they prescribe under the symbol, and the opinions expressed are far from unanimous.

Glasgow, February 16, 1898. John McMillan.

Sir,—I notice your proposal to attempt the conversion of pharmacists in the matter of weights and measures, but fear you will have a long, uphill task. Pharmacists seem to differ in no way from other bodies in their modern methods of elementary business education, and I believe that to make the adoption of the metric system a success the only hopeful course will be to drill it thoroughly into the apprentices and students of to-day. My experience has been that students have but an elementary knowledge of the system or the value and facilities offered by it, and as a matter of course they follow the traditions of their elders and stick to the grains, avoirdupois ounce, and troy ounce as their standards. I think the Society's examiners could bear me out in this statement, for, although there are some candidates who appreciate the system thoroughly, yet the majority look upon it as a bugbear and something to be learnt indifferently, solely for the examination. I have heard it objected that grammes and cubic centimetres (or millilitres, if you prefer that term) are only suitable for scientific and analytical work, but I contend that their service would be even

greater in dispensing, and to make this clear I would ask for a comparison of the two following recipes :—

℞ Strychninæ ..... gr. 1/64th.
Ferri Arseniat. ..... gr. 1/6th.
Pil. "Blaud" ..... gr. v.
M. Send 100.

℞ Strychninæ ..... ·001.
Ferri Arseniat. ..... ·01.
Pil. Blaud ..... ·3.
Send 100. M.

The recipe is not by any means an uncommon one, and every dispenser will admit the many difficulties he has with high fractions. A centigramme is about the smallest weight which could be used with accuracy on a dispensing balance, and it would be rarely such a small quantity would require weighing, but between 1 centigramme and 1 gramme there would be 100 weight units. I have to admit that medical men would need educating in the matter, but believe they could as easily be taught it as to order—

"Pil. Blaud c. Ferri Arseniat. et Strychnin. X., Y. and Co. No. 999,"

If chemists would only take a little pains in the matter, instead of it being a hoped-for improvement, it would soon become an actuality. With the advent of the new Pharmacopœia every chemist, who has not already done so, should provide himself with metric weights and measures, and when he has used them for a twelvemonth I feel convinced he will want to find a method for abolishing his troublesome ounces, pounds, and pints.

London, February 23, 1898. C. Edward Sage, F.C.S.

Why the Pharmaceutical Society is not Supported.

Sir,—It is now fifteen years since I entered the ranks of the pill-rolling fraternity, and from that day to this I have been conscious of the weary dirge of begging, beseeching, and urging chemists to join the Society. And what is the result? A decreasing number of subscribers. Why is it? I think because chemists have found that the Council does not and will not trouble about the real interests of the trade at large. I admit there are the prosecutions of unqualified retailers, but this is not voluntary action: that is what chemists look for, and look in vain. What steps has the Pharmaceutical Society taken to secure fair profits, better relationships between medical men and chemists with regard to dispensing, the protection of public dispensers, the defence of its members in frivolous prosecutions, etc.? These would be just a few actions that would appeal to all. But what do we see? In the Journal of 12th inst. there is the report of a meeting at Sheffield in support of the P.A.T.A., and the Vice-President of the Society was the principal speaker against the movement. True, he did not speak in his official capacity, but his remarks cannot fail to make an unfavourable impression against the officials of the Society. Then again, are not Dinneford's Magnesia and Savory and Moore's Food two of the best-known proprietary articles that are cut to the bone, and the proprietors are leading chemists and pillars of the Society? I do not know if they share with Mr. Newsholme such a sacred aversion to any alliance with the grocers, but, at any rate, they have allowed the grocers to take the trade in the articles from us without the least exertion to protect our interests. I verily believe, sir, that if these two preparations were placed upon the P.A.T.A. list, or the profits secured in some way, the popularity of the Council and the Society would be considerably enhanced. The position of Messrs. Carteighe and Savory at the last election proved that all they have done on behalf of the Society for years did not weigh so much as their indifference to our profits on their goods. It is no use the leading pharmaceutical lights preaching about higher education, pharmaceutical ethics, quack medicines, etc. This may be all true enough, and may benefit our successors in twenty years' time, but in the meantime we have to live, and until they condescend to consider the present state of affairs, the Pharmaceutical Society and all its works will be ignored by a large majority. I shall be told that the Society is not a trade Society, and until it is supported more, nothing can be done. The first objection is groundless. If it is not a trade Society, there is no reason on earth why it should not become one by seeking additions to its powers. At any rate it might take an interest in the matters which concern the well-being of the trade. The fact is the professional element in the Society is utterly blind to the interests of the large majority of chemists who have to get their living by trade methods. The higher education, etc., is offering them stones for bread, and although the desire for the better position and training of pharmacists is perfectly legitimate and desirous, this is no reason why scores of chemists should be left almost to starve. It is because nothing is done now to better our condition that the Society lacks support. And the rejoinder of the Society is, "We can do nothing because we are not representative. We are not supported by the majority of chemists. Join, and you will see what we shall do." Such is the ridiculous deadlock to which we have arrived, and so the question arises, "What can be done?" The answer is, "Do what you can?" and if the Society will but try, their efforts will be appreciated. It may be hard work, but so is all reform, and all reformers have to stand alone at first. And we shall find that the apathy of trade will pass away and all chemists will rally to the support of the Society when they see something is actually being done on their behalf instead of so much "speak" of what will be done if they will but send their guineas along. "Come into my parlour," says the Society, but the "fly" chemist stays outside, for he has no guineas to spare to be eaten up and nothing to be had in return.

Northwood, February, 14, 1898. H. B. Sharman.

The Poisoning of Horses.

Sir,—The Lincolnshire Association for the Prevention of the Administration of Poisonous Drugs, etc., to Horses is not unknown to the Pharmaceutical Society, and a deputation from the Association several years ago attended one of the Society's meetings to seek amongst other things its co-operation in checking the sales of poisons to ignorant men without the knowledge of their employers, and which was at the time the occasion of great losses to owners of agricultural horses in this county. The Association does not wish to assume any authority belonging exclusively to the Pharmaceutical Society, and its purpose only is to assist its members in every way to take such measures as may be necessary for the prosecution of chemists and others who supply poisons to farm servants or others unlawfully, and in any such case they will seek the co-operation of your Society.

Lincoln, February 17, 1898. S. Upton, *Secretary.*

Note on Creosote Pills.

Sir,—Probably these cause the pharmacist as much trouble as most formulæ for pills. On looking through the pages of the *Pharmaceutical Journal* many methods have been suggested, all in their way settling the finality of the difficulty. None of them, however, appear to me to be entirely satisfactory, and especially would I take exception to the one in which beeswax is used. Having the following prescription to dispense—

℞ Creosoti ..... minima xviii
Aloes Barb. ..... grana xii.
Misce. Fiant pilulæ xviii.

it was found that the creosote apparently exercised a solvent action upon the aloes, and the whole became very liquid. In order to make a suitable pill mass 36 grains of pure white clay (kaolin) was added as a siccative, and only about 2 minims of mucilage was then required, the whole resulting in an excellent pill mass, which was rolled, cut, and rounded most easily. The final mass weighed 70 grains, and each pill looks about the size of a 3-grain pill, samples of which I enclose for inspection. They are readily disintegrated when placed in water. Thanking you for the help I have received from the articles which you have published on this and other subjects,

Sparkbrook, Birmingham, February 11, 1898. H. Smith.

*** The pills sent are very well made and disintegrate readily in water, as stated. [Ed., *P. J.*]

Sodium Arseniate and the B.P.

Sir,—I have examined several commercial samples of sodium arseniate, and I find that they invariably contain sulphate; but the Pharmacopœia does not take cognisance of the presence of this impurity. There can be no doubt that it finds its way into the compound through the nitrate of sodium which is used in its preparation, and on turning to the official description of this salt it will there be seen that authority permits this impurity. I am led to ask why it permits it in the one instance and not in the case of the sodii arsenias. It is very misleading, especially to young students of pharmacy. May I, while writing upon this subject, also call attention to the fact that potassium citrate invariably contains sulphate, which is derived from the potassium carbonate used in its preparation; but the presence of this impurity is not even referred to under the citrate, and I incline to the opinion that it should not only be referred to, but a limit put to its presence?

Handsworth, Birmingham, Feb. 21, 1898. Percy Dunn.

ANSWERS TO QUERIES.

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

Equation for H_2O_2.—Obviously, the numeral "2" has been dropped before the formula for manganese sulphate in the answer to "Ajax," on page 162. [*Reply to* J. E. L.—5/18.]

Pricking Cure for Rheumatism.—We are making inquiries in Germany with respect to this. All the information that we have as yet obtained from there is to the effect that it is not considered a serious remedial agent. [*Reply to* J. T.—4/33.]

Emulsin for Making Emulsions.—We are unable to find any record of emulsin having been used for emulsifying cod-liver oil. You should prepare some. Try it with the oil and publish the results of your experience. We doubt if it would be better than a good gum emulsion. [*Reply to* Associate.—5/6.]

Living Statuary.—Yes, zinc oxide mixed with glycerin and water will probably answer best. It is largely used by actors for "making up." Probably the addition of a little rice starch would be useful. It will not harm the skin if thoroughly washed off as soon as possible. [*Reply to* H. J.—5/10.]

Action of Lime on Sewage.—The action of lime on sewage is two-fold, mechanical and chemical. It causes a precipitate of various salts, chiefly calcium carbonate, which, in falling, mechanically carry down much suspended matter. It also causes partial decomposition of certain albuminoid bodies, and at the same time, when in excess, acts as a bactericide. [*Reply to* Associate.—4/32.]

Specific Gravity and Percentage.—The factor given in the "rule" you quote is a purely arbitrary one, for it is impossible to draft any satisfactory rule. No one is expected to carry such information in his head. Your friend should have determined the specific gravity and then asked the examiner for the necessary table to calculate from. [*Reply to* Aro.—5/12.]

Remuneration of Witnesses.—When subpœnaed on the part of the Crown, witnesses are allowed travelling and other expenses according to a fixed scale of allowance. By reference to this scale you can ascertain what the proper fee is. You should claim as a professional man. If called to give evidence by one of the parties in a suit, you should arrange the amount of remuneration in advance and insist on prepayment. [*Reply to* Ferox.—5/13.]

Purifying Distillers' Effluent.—You will probably find that treating the effluent first with a small amount of some cheap ferrous salt, such as crude ferrous sulphate, and then adding just enough milk of lime to produce a clear, not unduly alkaline filtrate, will be the best means of removing the objectionable impurities. Experiment with a pint or a gallon of the stuff first, until you arrive at the proper quantities of material. You will find a great deal of useful information in the recently published book of W. J. Dibdin, 'The Purification of Sewage and Water,' published by the Sanitary Publishing Co., 5, Fetter Lane, E.C. Price 21*s*. [*Reply io* Nemo.—4/34.]

Black Varnish for Grates, etc.—Boil 48 ounces of asphaltum for two hours. During the first part of the time add red lead, 7 ounces; litharge, 7 ounces; and 5 pints of boiled oil. Then add 8 ounces of resin; and further boil until a little, when cool, will roll into hard pills. Then thin down with turpentine. Another formula is: Black pitch, 28 ounces; common asphalte, 28 ounces. Boil together for eight hours, and add 4 pints of boiled oil; gradually add litharge, 10 ounces; red lead, 10 ounces; and again boil until it will roll into pills. Then thin down with turps. [*Reply to* F. W. J.—5/25.]

Ammonium Thioacetate.—This is obtained by neutralising thioacetic acid with ammonia. The acid is obtained by distilling acetic acid with phosphorus pentasulphide; it is also obtained by heating lead acetate and sodium thiosulphate together. [*Reply to* Sulphophobia.—5/9.]

Aperient Syrup.—Fluid extract of cascara, 2 ounces; compound decoction of aloes, 2 ounces; tincture of gentian, 2 drachms; tincture of capsicum, 1 drachm; oil of sassafras, 5 minims; oil of winter-green, 2 minims; borax, 30 grains; treacle, 4 ounces. Mix. [*Reply to* Pestle.—5/16.]

Brown Boot Polish.—Yellow wax, 3½ oz.; yellow soap, ½ oz.; Bismarck brown, 3 drachms; potass. carb., 1 drachm; boiling water, 10 oz.; turpentine, 10 oz. Dissolve the soap, potash, and dye in the water, and add the mixture gradually to the wax and turps melted together. Rub together until quite cold. This will give a good non-sticky polish if only a little be used at a time and the boots be well polished with a soft cloth after applying the paste. [*Reply to* J. B. L.—5/19.]

Cottonseed Oil and Lard.—It is practically impossible to entirely separate cottonseed oil from lard when once they have been mixed, but you may readily detect the presence of the former in the latter. Conroy's modification of Bechi's test (*Pharm. Journ.* [3], xix., 238) is very convenient for this purpose. It is carried out thus:—Make a test solution containing $AgNO_3$, 5, and HNO_3 (sp. gr. 1·42), 1, in S.V.R., 100 fluid parts. Melt a small quantity of the lard to be tested and pour about 100 grains of it into a dry, clean test-tube. Add 20 grain measures of the silver reagent and place the tube in boiling water for five minutes. Pure lard remains perfectly white; with cottonseed oil the colour is more or less olive-brown. The tint is best seen as the lard sets, when the tube is plunged into a vessel of cold water. [*Reply* to S. Q. S.—5/26.]

Syrup of the Glycerophosphates (Robin).—The formula for this is published in the *Bullet. Gén. de Thérapeutique*, cxxviii., 443 (Mai 15/95). The formula is:—Calcium glycerophosphate, 6 grammes; sodium, potassium, magnesium, and iron glycerophosphates, of each 2 grammes; tincture of Ignatia amara, 30 drops; pepsin, 3 grammes; maltine, 1 gramme; tincture of kola, 10 grammes; syrup of cherries, to make 200 grammes. A tablespoonful to be taken in the middle of a meal. The syrup, which the author states is difficult to prepare, should be clear, of a bright red colour, and without deposit. To obviate the necessity of preparing this syrup he also prescribes the following cachets:—Glycerophosphate of lime, 30 centigrammes; glycerophosphates of sodium, potassium, magnesium, and of iron, of each 10 centigrammes; powdered Ignatius beans, 3 centigrammes; pepsin, 15 centigrammes; maltine, 5 centigrammes. Robin does not publish any detailed method of preparing the syrup. [*Reply to* C. L. T.—4/2.]

Formula for Perfume.—Send us a drachm or two of the perfume you would like to make. We may then be able to give you a formula. [*Reply to* J. R. P.—6/2.]

INFORMATION WANTED.

Compressed Tablets.—"Ferox" (5/13) asks if any reader can inform him who is the maker of compressed tablets stamped with the letters "J. M. R." They are taken for indigestion.

Ferrozone and Polarite.—"C. R. P." (4/32) asks for information regarding the composition and action of these substances, which are used in sewage works. Can any reader oblige him?

Shop-Fittings.—"Audax" (5/30) desires to know the addresses of firms dealing in second-hand chemists' shop-fittings and fixtures in good condition.

Nitragin.—"P. H. J." (6/4) wishes to know whether "Nitragin" is procurable in this country, and, if so, where?

COMMUNICATIONS, LETTERS, etc., have been received from

Messrs. Andrews, Atkinson, Barrett, Brown, Butterworth, Clark, Cummings, Dawson, Dunn, Dunstan, Gimeno, Hogg, Howorth, Jackson, Jeeves, Jennings, Jones, Kühn, Larder, Lewis, Lindsey, McMillan, Matthews, Parry, Penistan, Raimes, Ridlington, Roberts, Roe, Russell, Shapley, Shorthouse, Skirrow, Smith, Thomson, Vibert, Walden.

Pharmacy and the Allied Sciences.

A REVIEW OF CURRENT WORK.

Tropin Derivatives. A. van Son, in continuation of the work of E. Schmidt and his pupils on tropin, has studied the action of monochloracetic acid, ethylene chlorhydrin, and ethylene bromide on tropin, and finds that it behaves towards these bodies in a manner analogous to trimethylamine, pyridine and other simply constituted tertiary bases. Tropinbetaine chloride was obtained by the action of monochlor-acetic acid on tropin at 130° C., according to the equation—

$$C_8H_{15}ON + CH_2Cl\cdot CO\cdot OH = C_8H_{15}ON<^{CH_2-CO\cdot OH}_{Cl.}$$

The gold salt, $C_8H_{15}ON<^{CH_2-CO\cdot OH}_{Cl,AuCl_3}+H_2O$, melts at 223° to 224°. The platinum salt, $(C_8H_{15}ON<^{CH_2-CO\,OH}_{Cl})_2PtCl_4+2H_2O$, melts at 227° C. Tropincholine chloride was produced by heating tropin for three hours at 100° with ethylene chlorhydrin, the reaction taking place thus—

$$C_8H_{15}ON+CH_2\cdot OH-CH_2Cl=C_8H_{15}ON<^{CH_2-CH_2\cdot OH}_{Cl}.$$

The gold salt and platinum salt were prepared. As the starting-point for the preparation of tropinneurine, the addition product of tropin with ethylene bromide was obtained, and this by digestion with silver oxide converted into tropinneurine thus—

$$(1)\ C_8H_{15}ON + CH_2Br-CH_2Br = C_8H_{15}ON<^{CH_2-CH_2Br}_{Br}$$

$$(2)\ C_8H_{15}ON<^{CH_2}_{Br}-CH_2Br+Ag_2O=C_8H_{15}ON<^{CH}_{OH}=CH_2+2AgBr.$$

E. Schmidt, Bode, and Nothnagel have shown that trimethylamine ethylene bromide is converted into choline by long heating on the water-bath with aqueous silver nitrate. A similar reaction occurs with the addition product of tropin with ethylene bromide, although it takes nearly three weeks to eliminate the second atom of bromine and to leave tropincholine nitrate. In what respect tropinbetaine, tropincholine, tropinneurine, and the corresponding trimethylamine derivatives resemble in physiological action betaine, choline, and neurine, is left for further investigation.—*Archiv*, 235, 685.

New Tartrate Ferment. L. Grimbert and L. Ficquet have isolated a new bacillus, which rapidly converts tartrates into acetic and succinic acids with the evolution of carbonic anhydride and hydrogen. It acts best under anærobic conditions at about 36° C. The organism has been called *Bacillus tartricus*, and is regarded as quite distinct from the tartaric ferments further to be isolated.—*Journ. de Pharm.*, 6 ser., vii., 97.

Decomposition of Auric Chloride. E. Sonstadt has been unable to observe any decomposition of auric chloride in solution when exposed to light, but was able to produce that effect on heating the same solution for some hours, a precipitate of gold being thrown down. In a second experiment a solution of one part of auric chloride in fifteen thousand parts of water, coloured by the addition of a little bichrome, was distilled with every care to exclude organic matter, and in this case also gold was precipitated on heating. A trace of hydrogen peroxide was detected in both solutions after precipitation had taken place, and it is suggested that if the reaction took place without heating, the peroxide produced would be much more easily recognisable. The reaction appears to be entirely analogous to that which the author has shown to take place when a dilute solution of platinic chloride is similarly heated (see *ante*, p. 163), aurous chloride being formed, but as the latter chloride is decomposed when heated with water, metallic gold only is precipitated. It is thought to be probable that the indicated reaction is a general one for the higher chlorides of the platinum group.—*Chem. News*, lxxvii., 74.

Basic Salt of Magnesium. M. Tassilly has succeeded in obtaining an oxybromide of magnesium, by heating to boiling an aqueous solution of crystallised magnesium bromine, then withdrawing the flame and adding calcined magnesia in small portions, again boiling until the magnesia dissolved, next raising the temperature to 150°, filtering the solution while hot, and preserving it in a well-stoppered bottle. The oxybromide was deposited in about fifteen days, in the form of small needles, the composition of which is given as $MgBr_2 3MgO, 12H_2O$. Half of the water of crystallisation is lost on heating the crystals in dry air to 120°, and the oxybromide, which is decomposed by water, alcohol, etc., also undergoes a change when exposed to air, carbon dioxide being fixed.—*Bull. Soc. Chim.*, xvii., 964.

Formation of Carbides. H. Moissan has established the fact that potassium, sodium, and magnesium carbides cannot be produced at the temperature of the electric furnace. By the action of cold acetylene gas, or of liquid acetylene, with or without pressure, it is possible to obtain the intermediate potassium and sodium acetylenes—C_2KH and C_2NaH—in a state of purity, and by elevating the temperature those bodies can be decomposed, acetylene being disengaged, and potassium and sodium carbides—C_2K_2 and C_2Na_2—left as residues. At a still higher temperature the carbides are dissociated into the metals and carbon, as in the case of the carbides of the alkaline earths, though a much higher temperature is required. The same holds good with magnesium carbide, and it is pointed out that the stability of these carbides, under greater and greater variations of temperature, continues to increase from the alkaline metals up to those of the alkaline earths. Details are given in the same paper of experiments with lithium and calcium carbides, both of which can be decomposed in the electric furnace by currents of high intensity, though the highest temperature is required in the case of the calcium compound.—*Comp. rend.*, cxxvi., 302.

Electro-Synthesis. W. G. Mixter defines electro-synthesis as the chemical union of substances by an electric discharge, as distinct from combination effected by the heat of the discharge. A feeble glow discharge from an induction coil driven by one storage cell, and giving a spark in air about 1 Cm. long, was used in the experiments for effecting combination, and the amount of combination of oxygen with hydrogen in a discharge tube connected in series with the tube under investigation, served in all cases as an arbitrary standard of reference. To obtain a measure of the chemical action the products of the combination were absorbed directly in the vacuum tube, and the corresponding diminution of pressure was noted on a manometer. Experiments were made at varying pressures, and the corresponding values for the mixture of other gases with oxygen—the number of hydrogen and oxygen molecules combining being taken as 100—were as follows:—Carbonic oxide, 113; methane, 149; ethylene, 300; acetylene, 320; ethane, 150. From a consideration of these results the author concludes that the glow discharge renders gaseous molecules chemically active, and that the molecular charges involved

in electro-synthesis are analogous to those often produced by light or by heat at temperatures below that at which gaseous dissociation is measured.—*Am. J. Sci.*, 154, 51, through *J. Am. Chem. Soc.*

Action of H_2SO_4 on Mercury.

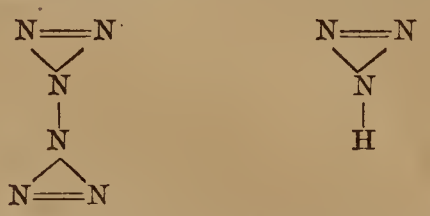
J. R. Pitman controverts the statement previously published by Baskerville and Miller, to the effect that mercury decomposes concentrated sulphuric acid at about 20° C. He was unable to obtain any such result when the acid and metal were left in contact for forty-eight hours, or when they were shaken violently together in the proportion of one part to seventy by volume, and the opinion is expressed that no reaction can take place between mercury and sulphuric acid at the ordinary temperature, and that if Baskerville and Miller noted any reaction, the conditions must have been other than as stated by them.—*Journ. Am. Chem. Soc.*, xx., 100.

Sodium Peroxide as a Reagent.

C. Glaser has failed to confirm O. Kassner's statement that iron is not oxidised to ferric acid by sodium peroxide; the statement only holds good if the reagent is added to a solution of an iron salt, without the precaution of keeping the temperature of the latter sufficiently low. Exception is also taken to J. Clark's statement that the action of the peroxide on coke and coal is too violent to permit of use in analysis, as it has been used in coke, coal, and asphalt analyses for sulphur with perfect success. It is necessary that the material to be analysed should be placed in a sufficiently large silver or nickel dish and covered with about four times its weight of sodium carbonate. Then dust the dry peroxide upon the mass, from a porcelain or platinum spoon, in small quantities at a time, until all the carbon is consumed. Next, heat the mass, if necessary, to perfect fusion, and determine the sulphur present in the ordinary way. Used in this manner sodium peroxide is a very useful and convenient reagent, applicable in a great number and variety of cases.—*Journ. Am. Chem. Soc.*, xx., 130.

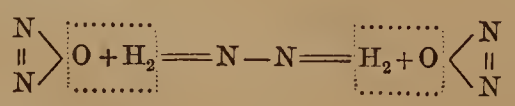
Is Argon an Element?

The question as to the elementary nature of argon has induced Goehlich and Dennstedt to attempt its preparation by means of the oxidation of imidozoic acid, N_3H, but without success. Jakobi regards argon as having the same relationship to N_3H as cyanogen has to hydrocyanic acid, thus—



He also favours the view that N_6 rather than N_3 should be considered the formula for the argon molecule, since, apart from the fact that the molecular weight has not yet been satisfactorily established, the acceptance of the formula N_3 would necessitate the assumption of the constitution of the molecule being represented by

the inner bond of which does not harmonise with the views at present accepted. He suggests that an attempt should be made to obtain argon by the action of nitrous oxide on free hydrazine, as shown by the formula—



—*Chemik. Zeit.*, xxii., 20.

Kinds of Curare.

Boehm classifies the various forms of curare thus: *Tubocurare*, preserved in hollow bamboo canes, frequently called paracurare, originating from the Amazon. The drug consists of a dark brown substance, which contains well-formed crystals up to 2 Cm. in length. It contains about 11 to 15 per cent. of moisture, and is soluble in water and in dilute alcohol to about 85 per cent. The ash amounts to 12·3 per cent. The lethal dose on a 1 kilo rabbit varies between 6 and 12 milligrammes. The aqueous solution has an acid reaction, depositing a flaky sediment even after filtration. *Tubocurare* contains an inactive basis, curine, and about 9·2 to 11·8 per cent. of tubocurarine, which is the poisonous constituent. The crystals referred to were found to be quercitin. *Gourd curare* has now almost entirely disappeared from the European market. It is derived from *Strychnos toxifera*, Benth., and is a dark brown substance, containing 5 to 12 per cent. of moisture. It is soluble in water from 34 to 75 per cent. The lethal dose pro 1 kilo weight lies between 1·5 to 3 milligrammes. The aqueous solution is faintly acid. It yields 6·1 per cent. of ash. The active principle is curarine and an alkaloid soluble in ether. *Jar curare* (packed in jars) is derived from *Strychnos castelnæi*, Wedd., but has also disappeared from the market. Frequently it possesses a peculiar aromatic odour. It contains 8·33 per cent. of moisture and 7·9 per cent. of ash. The solubility and toxicity of various preparations differ considerably. It contains three bases—protocurine having a slight curare action, the formula for which is $C_{20}H_{23}NO_3$, the non-poisonous protocuridine, and protocurarine, which is extremely poisonous and much more intense in action than curarine. 0·24 milligramme is a lethal dose for 1 kilo for body weight.—*Pharm. Ztg.*, xlii., 41, after *Abh. k. Sachs. Ges. d. Wiss.*, 22, 201.

Jamaica Ginger.

F. B. Kilmer states that Jamaica ginger planters divide ginger into "blue" and "yellow," according to the colour of the rhizome. The two varieties are also known as "turmeric" and "flint." No botanical difference is apparent between the plants producing them, and the "blue" seems to be a degenerate species. Its root is hard and fibrous, yields a smaller proportion of powder, is less pungent, and therefore less valuable commercially. Another division is into "plant" and "ratoon" ginger, the former being planted each season, while ratoon ginger is described as a product of laziness, being a return crop, secured by leaving in the ground, when the crop is harvested, a part of the "hand" containing a bud. Ratoon ginger is much smaller in size of "hand" than the planted, and loses each year in flavour, each successive crop being less and less in amount. It is gathered from March to December, whereas planted ginger is not ready for digging until December or January, and from then to March is the true ginger season.—*Am. Journ. Pharm.*, lxx., 65.

Soap Stone as an Emulsifier.

An argillaceous earth named "Tfol," which contains free gelatinous silica, is largely used in Northern Africa by the Arabs as a substitute for soap in washing linen. Lahache finds that it has great capabilities of absorbing oil, 1 part of this substance completely absorbing 5 parts of heavy tar oil. When the compound is mixed with water a perfect emulsion is formed, which does not adhere to the sides of the vessel. It is proposed to employ this earth for the purpose of emulsifying heavy tar oil for disinfecting purposes. For this purpose the "tfol" is first mixed with an equal weight of water, and then intimately incorporated with sufficient heavy tar oil to make a paste.—*Journ. de Pharm.* [5], vi., 58.

THE ALLEGED DECAY IN THE ART OF PRESCRIBING.

BY EDMUND WHITE, B.SC.,
Pharmaceutist to St. Thomas's Hospital.

From time to time letters appear in this Journal drawing attention to what most of the writers consider the decay of the art of prescribing among members of the medical profession. Usually these communications are sent by pharmacists who have had to obtain a package of some proprietary article of more or less secret composition in order to dispense a physician's prescription.

A letter of this nature appeared in the *Pharmaceutical Journal* for November 13 last, and drew a reply from Dr. A. P. Luff, of St. Mary's Hospital, which was published the following week. Dr. Luff showed that the exigencies of modern medical education hardly allowed sufficient opportunity for the medical student to acquire the necessary facility in prescribing, and that the pressure of work in the out-patient department at St. Mary's Hospital was so great that the physicians in charge were only able to give a limited amount of instruction in prescribing. This pressure in the out-patient department is not peculiar to St. Mary's Hospital, but is well known to exist in a more or less acute form at all such institutions. As Dr. Luff points out, the out-patient departments at the great hospitals to which medical schools are attached provide the training ground where the medical student chiefly acquires his notions relative to the art of prescribing. It would seem, therefore, that in the interests of medical education some modification of the present system of out-patient treatment is desirable. It is not my intention to do more than mention this aspect of out-patient medical treatment, since the whole subject has received, and is now receiving, the earnest attention of hospital authorities, both lay and medical. Whatever alterations or improvements may be effected from the purely ethical point of view there would still remain one obstacle to the full development of the facilities provided by out-patient departments for teaching the art of prescribing, which has a direct bearing upon pharmacy, namely, the amount of labour involved in dispensing, within a limited time, the prescriptions which have formed the basis of the physician's teaching.

This is at present a matter of considerable practical difficulty, which has been met, in a great measure, by each hospital having a book, a so-called hospital pharmacopœia, containing a number of formulæ for the administration of remedies in frequent demand. Now the existence of this book of formulæ is usually held to be justified for two reasons—both economical. In the first place the physician merely has to write the distinctive name of a formula containing several substances, and by so doing economises his own time; and secondly, it becomes possible to prepare in the dispensary beforehand, and in bulk, certain formulæ which are found by experience to be frequently required; this economises time and labour in supplying the medicines to the patients. Only by some arrangement of this sort is it possible to deal with the volume of work in the time available. At the same time it is easy to understand how the student misses the points involved in the compilation of the prescription, for the disease being diagnosed and the remedy indicated, he frequently sees the latter prescribed in the form of a stock preparation, perhaps with a Co. of undefined extent at the end. Even if he be attentive enough to refer to the hospital pharmacopœia in order to see what the full formula contains, one cannot admit a comparison between the information gained by so doing with what he might have acquired from a discussion arising out of the same prescription written in full, perhaps with slight variations, several times on the same day. For example, suppose mistura quininæ is prescribed, containing quinine sulphate, diluted sulphuric acid, compound tincture of cardamoms, and water. A bare knowledge of the formula does not convey any further definite ideas as to the solubility of quinine salts, the selection of a dilute acid for dissolving it, and the amount required, or the employment of flavouring agents; all these points would have arisen in writing a similar prescription for quinine in a soluble form, independently of any book of formulæ. Other examples readily occur: mistura bismuthi, which constitutes a type for the administration of heavy powders insoluble in water, or mistura copaibæ, which furnishes material for illustrating the method of administering certain things in the form of an emulsion.

Now, if it be admitted that the out-patient department chiefly affords the opportunity for teaching prescribing, it is well worth discussing whether the price paid may not be too high for the economy effected. For the old system of apprenticeship or pupilage in the medical profession is extinct, under which the tyro had ample opportunity of practically acquiring that knowledge of the nature and physical properties of drugs upon which the art of prescribing is based. Nothing in the modern medical curriculum adequately replaces this. I have repeatedly found by communications from those who have been my pupils in pharmacy at St. Thomas's Hospital, and who have availed themselves as fully as possible of the necessarily limited opportunities for acquiring a knowledge of the subject, that they have felt keenly the disadvantage of their incomplete equipment in this respect when first going into medical practice.

Let us admit now the possibility of limiting the number of out-patient cases to the extent of rendering easily possible what Dr. Luff says is, under present conditions, very difficult, viz., the writing of a prescription without abbreviation for each case. I maintain then that it would be possible to burn the whole edition of the so-called hospital pharmacopœia and break up the stock-pots in the dispensary. This might also necessitate some increase in the dispensing staff, which, however, would be fully justified if any advantage accrued to medical education. The number of out-patient cases treated under present conditions could hardly be dispensed for in detail by any increase in staff, because the structural arrangements in every hospital dispensary with which I am acquainted would not admit of so many independent prescriptions being dealt with in the manner indicated in the limited time available. The question of time is a very important element in the discussion because of the possible hardships inflicted upon the patients by avoidable causes of delay. It must not be forgotten, also, that charitable institutions, such as our hospitals, are administered on the basis of distributing as much medical relief as possible with a limited expenditure. The governing authorities then would require some tangible justification for incurring an increased expenditure in dispensary administration. Is there any justification? It might be shown that the decay in the art of prescribing is a real evil affecting the efficiency of the medical profession at large and that, as a consequence, the whole community suffers. On the other hand, it might be maintained that absence of knowledge concerning the minutiæ relating to basis, vehicle, adjuvant and corrective do not in any way diminish the ability of the physician to prescribe successfully for the sick. And in this connection it is well to distinguish carefully between cause and effect. That is to say, are prescriptions simpler because the system of medical education does not now supply the necessary knowledge for writing a more or less complete combination, or is the simplification of prescriptions due to a change in medical teaching? I cannot contend that any change in the direction indicated would result in increased benefit to the patients, because, although there is usually a tacit understanding that the formulæ

of the hospital pharmacopœia are, with the object of saving time and labour, to be used as much as possible, there is no hesitation on the part of the medical officers to deviate from the formulæ contained therein if the necessity arises. The abolition of the book of formulæ, from a medical point of view, can then be only demanded for educational reasons. In the best interests of pharmacy I consider its abolition or contraction within the narrowest possible limits eminently desirable. The former consummation is, however, impossible under the prevailing conditions, for the reasons already stated. It remains for medical authorities to decide whether the desirability of any alteration can be used as an argument in favour of the reduction in the number of out-patient cases treated. This is a necessary prelude to any alteration in the method of prescription-writing in the large general hospitals.

It is universally recognised that prescriptions are simpler now than they were formerly when long formulæ containing perhaps half-a-dozen remedies were the rule rather than the exception. The truth probably lies here as it does in most cases, between the two extreme views. Undoubtedly the increasing employment of proximate principles and concentrated extracts rather than the cruder forms of drug, and the introduction of the compressed tablet, cachet and capsule have very much simplified prescribing, compared with what it was in the old days, when the julep, haustus, and plaster prevailed. Yet the old-fashioned bottle of medicine or "mixture" prevails at the present day, and is perhaps the most popular form of medication, apart from the advantages it presents. It will probably be admitted on all sides that instruction in prescribing for the medical student is desirable, somewhat on the altered lines I have sketched, but the question of ways and means is not so simple. Certain phases are purely medical: with these the medical profession must deal. I have only introduced them into the discussion because it is impossible to get the hang of the whole question, even from a pharmaceutical point of view, without involving them. I have endeavoured to show how the practical difficulties, from the pharmaceutical side, may be removed if any alteration in our present methods be considered desirable.

On the subject of hospital pharmacopœias I feel most strongly that some modification is possible, even apart from any change in hospital medical treatment. The bulk of most of the existing ones might be considerably reduced without decreasing, to anything like a proportionate extent, the utility of the compilation for the purpose of saving time. The existence of such a book at all is only a question of expediency, which from economical reasons one is bound to consider.

Pencils of Yellow Oxide of Mercury Ointment for Ophthalmic Use.—Babcock, in the *Ophthalmic Record*, calls attention to an old formula for preparing sticks of this ointment, which, although containing some unusual ingredients, is found in practice to be very serviceable. English graphite, 10 grains; yellow oxide of mercury, 20 to 40 grains; oil of theobroma, 4 drachms; butter of antimony, 2 drops. Mix and mould into pencils. Instead of the butter of antimony any bland oil will do. In applying the stick to the lids, it is rubbed on the eyelids, and the eyes closed for about ten seconds, when any excess is wiped off. If it is to be introduced into the eye, a small piece is picked off, softened between the fingers, and put between the ball and the lower lid, or the upper lid is everted and dressed with the pencil. It is also a good application for any abrasion of the lips or nostrils. *Quart. Med. Journ.*, vi., 179.

ENGLISH PHARMACISTS AND RUSSIAN PHARMACY.

BY P. SPEHR, M. Pharm.

Whilst occupied with the compilation of the history of Russian pharmacy I discovered certain facts which appear likely to excite the interest of my English colleagues. There is an unsatisfactory lack of authentic original materials relating both to the older political history of Russia and to the history of its civilisation, and in a still higher degree relating to special professions like that of pharmacy. Doubtless important documents were lost during the disturbances at the beginning of the seventeenth century, at the almost entire destruction of Moscow, and afterwards, in 1812, when Moscow was burned. Whatever original materials have been preserved have mostly been at a distance from Moscow, and are at present kept in different archives of the State, which are scarcely accessible to private researches.

Fortunately, some secondary original materials have been saved; though very scattered and incomplete, they are still of some use and shed some light on the nature of Russian pharmacy in the past, at the same time supplying interesting details regarding the history of the early English pharmacists. For it has been ascertained from a number of letters sent from English sovereigns to Russian regents that the founders of the oldest State drug store in Moscow, and, therefore, also of Russian pharmacy as a whole, were Englishmen.

As is well known, the first people in the West with whom Russia entered into active commercial intercourse were the English. Though an expedition, under the chief command of Sir Hugo Willoughby, which had been equipped on the suggestion of the famous English navigator, Sebastian Cabot, with the intention of seeking to discover a north-easterly channel to China and India (in which Nordenskjöld was successful in 1878), did not attain its end, one result of it was that one of the commanders of the three ships sent out, Richard Chancellor, reached the mouth of the northern Dwina, where, at that time (1553), a small monastery was the only building that existed.

During his later voyages to Russia in 1555 and 1556, which he undertook with a view to entering into commercial intercourse with Russia, Chancellor was invited by John IV. to Moscow, where he was cordially received, and subsequently honourably dismissed on his return to his country. He was drowned while returning to England during a storm at sea. But soon afterwards English factories and markets arose on the borders of the northern Dwina, and in the year 1583, by order of the Tsar, the commercial town Archangel was established, and began to flourish. This place was almost exclusively the centre of commercial and personal communication with the West, till the foundation of St. Petersburg (1703), when John the Terrible granted to Englishmen considerable trading privileges throughout the whole of Russia, which had been temporarily checked under the Tsar Michael at the beginning of the seventeenth century. The English trading company then founded flourished till the nineteenth century.

The foundation of Russian pharmacy by English pharmacists can be attributed to the direct initiative of the Tsar John IV. Basilzewitsch, Queen Elizabeth having sent him, in accordance with his request, the necessary professional persons and special fixtures for the drug store that was to be founded. There seems to have been nothing in Russia that corresponded with a properly organised pharmacy or pharmaceutics, as we know them, till about the end of the long reign of this despotic and cruel, yet in many respects genial and highly gifted and enlightened, regent, who, however, was intellectually greatly superior to his contemporaries in the Russian society of those days. The increasing feebleness and final pining away of the monarch, his lively correspondence with the

ingenious and well-educated English queen, from which he must have gained a comprehensive grasp of Western culture, may have hastened his decision to introduce the Western European arts of pharmacy and medicine. He addressed himself, therefore, several times to the English Sovereign with an urgent request to send him capable physicians and pharmacists. The letters of the Tsar are not available, but the answers of Queen Elizabeth show that she was complying with a particularly outspoken request of the Tsar when she proved her complaisance by sending her "friend and brother" the wished-for experts, and recommending them to his personal patronage. On September 12, 1557, an extraordinary Russian ambassador, Nepeja, returned from London, and on December 6 of the same year his companion in the voyage, the agent of the newly founded Anglo-Russian Trading Company, Anthony Jenkinson, arrived in Moscow. He had taken with him from England a physician named Standish, a pharmacist (name unknown), different technologists, and finally several apprentices for the aforesaid company. Jenkinson soon afterwards returned to England, apparently again charged by the Tsar to bring a physician, a pharmacist, and several technologists to Moscow. This agent again arrived in Moscow in 1566, bringing for the Tsar a letter from the queen, in which she announced to him, among other things, that she had allowed the persons he had asked for to go to Moscow—the engineer, Humphrey Lock, his assistant, John Finton, the goldsmith and assayer, Thomas Green, and other masters, as well as the physician, Reynolds, and the pharmacist, Thomas Carver, who are said to have reached Moscow in 1567. Thomas Carver is stated to have perished in 1571 during a great fire, caused by an invasion of the Tartars, who destroyed almost the whole city, among other buildings consumed being the saloon under the English company's hall, situated in Warwarka (street in "China-town"), where Carver is said to have met with his death together with thirty other persons.

As an English pharmacist is recorded to have already arrived to Moscow in the year 1557, as mentioned above, and Carver must also have lived in Moscow about four years, it is not improbable that something like an apothecary's shop existed in Moscow long before the arrival of the pharmacists mentioned below, who are generally considered as the founders of the oldest Russian drug-store. But as these two persons almost act in the history of Russian pharmacy the part of mythological figures, and as all demonstrable proofs of the conjecture expressed above are removed, relying on more positive material, we must consider the English apothecary, James Frencham, as the founder of Russian pharmacy. The name of this druggist, who arrived in Moscow in 1581, accompanied by the physician Robert Jacob and several surgeons, is not mentioned in the queen's earliest confidential letter concerning him. Little is to be learned from that first letter who and how many were Frencham's colleagues, yet there were undoubtedly several pharmacists in question. The queen also states positively that she has sent the Tsar, her learned subject, "not spontaneously or because she did not need them, but only because the Tsar had expressly asked her for them, and needed them in his sickness." On account of the interest this document has in connection with the history of Russian pharmacy, as well as English pharmacy, the letter is here given :—

"Elisabeth, by the Grace of God Queen of England, France and Ireland, Defender of the faith, etc., to the most high and mighty Prince and Lord Ivan Bassilzewitch, etc., etc., etc., Our Brother and Friend, greeting. As is to be seen from the letter of Our dear Brother, which is written in the Russian language, You need a learned and skilful man for your health, and therefore We did not wish to have you ask in vain, while keeping back a scrupulous and learned man of my court-physicians, but I sent You the famous Doctor Robert Jacob, who is well versed in the medical science, not because he were not needed here, but because You need him, and We hereby wish to prove to You Our friendship; but receive him kindly and benevolently, wherefore We are interceding. And also receive kindly, according to Our intercession, the respectable and skilful apothecaries and the surgeons who are coming with them, and whom We have not sent spontaneously either, but upon Your request, hereby damaging Ourselves. Appoint and reward them, for We are sending them to serve You truly and rightly. Therefore We pray to God to preserve Your Highness well and happy for many years. Written in Our city of Westminster the 19th of May, Anno Dni. 1581, and of Our most happy reign 23.—Elisabeth Queen of England."

As there are several apothecaries mentioned in this letter it may be taken for granted that Frencham, who was designated as chief apothecary, had received the order to take to Russia the staff that was necessary in order to found the drug store. This supposition gains in probability when we learn that Frencham left Russia for a long time at the end of several years, and returned again only in 1601, without the business of the pharmacy having been interrupted. All doubt appears to be removed by a second letter of the queen, in which she speaks of a "sufficient number of apothecaries being in the service of the Tsar." Her knowledge of this circumstance can only be explained by assuming those apothecaries to have been Frencham's countrymen and by the fact that the queen knew of their emigration to Russia.

In this letter of the queen nothing is said about the personalities of the apothecaries who came to Moscow in 1581, and we should not even know the name of the chief apothecary if the later letters did not give particulars regarding him. Doctor Robert Jacob had already asked to be discharged from the Tsar's service, and at the same time addressed himself to England for support to his petition. On June 8, 1583, the English ambassador, Hieronymus Bowes, arrived in Moscow with two letters from Queen Elizabeth. In the first letter, which was written in Latin, the queen supports the solicitation of Doctor Jacob, and asks the Tsar to dismiss him. In the second one, which bears the same date, there is in the Russian translation the question of the "apothecary Jacob." Here the queen remarks that this apothecary had previously been in her own service for ten years, and asks for his return to England, on account of his old father wishing to bestow upon him his share of his estate before he died. The letter runs thus :—

"August Lord, dear Brother and Friend, etc. . . . . With You stays the apothecary named James, who has previously been in our service for ten years, and whose father has reached an advanced age and is daily expecting to die, wherefore he (the father) has asked us to write to Your Majesty in order to solicit the return of his son, so that he may yet see him again in this life and hand over to him his inheritance. For this old man's sake We could not refuse to solicit Your Majesty for this, so much the more as there are yet other apothecaries in the service of Your Majesty, who are enjoying your complete confidence, and therefore We beseech Your Majesty to kindly do Us this favor in order that the abovementioned old man may also pray to God for you after having happily seen his son again, who will have returned to him thanks to Your inexhaustible kindness. . . . . Anno Domini 1583, June 8th."

Yet, in spite of the warm intercession of the queen, the Tsar hesitated, according to the testimony of Hacluyts, to comply with the request before another apothecary could be sent from England, and this would appear to bear favourable testimony to the great capacity of the first chief apothecary of the Tsar. In the following year, however, the Tsar John IV. died, and the resignation of the "apothecary Jacob" was assented to at the beginning of the reign of the Tsar Theodore Ivannowitch, in 1584, so that he could start upon his homeward voyage together with Bowes, whose departure had also been delayed.

In spite of the second letter, the identity of the "apothecary Jacob" mentioned here with the apothecary James Frencham would not as yet have been proved, if later documents did not shed a complete light upon it. Written documents as well as letters of the queen have been saved, which explain this, and according to these "the apothecary James Frencham, who had been in the service of the predecessors of the Tsar Boris, John IV., came to Russia for the second time" in 1601—during the reign of the Tsar Boris Godoonov. In addition to the name and Christian name of the individual being stated, the patronymic (Ostafiew) had also been added, and it is expressly stated that the same

apothecary had already been in the service of the Tsar John IV. It is plain, therefore, that the "apothecary James" who had been sent to Russia in 1581, and reclaimed by Elizabeth in 1583, and James Frencham who had come to Moscow "for the second time" in 1601, were one and the same person. That he had simply been referred to as "James" in the second letter of the queen is easily explained by the fact that Frencham had probably signed only his Christian name in a former letter to the queen, according to a widely spread custom of those days. At all events, he had received this name, "Jacob" (instead of the English "James"), when he settled in Russia, and John IV. used it afterwards in his letters to the queen. The transformation of foreign names, which the Russians found difficult to pronounce, and in general the diminution of a name in intercourse with persons in high positions, was very common, and whenever a person was called in Russia by his full Christian name and surname it showed that he was a very important personage.

(*To be continued.*)

DISPENSING NOTES.*

BY HAROLD WYATT, JUN., PH.C.

The following notes are simply a record of certain difficulties met with of late in the ordinary course of a dispensing business, and lay no claim to any originality, either of conception or manipulation. Their object is to show the utility of carefully noting in the prescription register any special point of interest worth remembering about a prescription, a method of procedure I have found beneficial not only to any subsequent dispenser, but also to the maker of the note, from the additional interest it gives him in the products of his handicraft.

No. 1.—A pill mass containing nitrate of silver in addition to vegetable powders and an extract.

℞ Argent. Nitratis	gr. vi.
Pulv. Digitalis Fol.	gr. iii.
Ext. Nucis Vom.	gr. vi.
Pulveris Capsici	gr. xii.

In pil. xii., divide.

To minimise the action of the other ingredients on the nitrate of silver this was triturated well with 10 grains of French chalk and massed with resin ointment. The powders and extract were then separately massed with more resin ointment, and the two masses mixed and cut into pills, which kept their colour and shape well.

No. 2.—An extremely unsightly and unsatisfactory mixture, little calculated to do credit to even the best dispenser.

℞ Syrupi Sennæ	℥i.
Sodii Sulphatis	℥ii.
Aluminis Sulph.	gr. 40.
Tr. Carminativæ, B.P.C.	℥iss.
Ext. Glycyrrhizæ Liq.	℥i.
Aquam ad.	℥viii.

Misce fiat mistura.

The solids present being more than enough to saturate the liquids, they were rubbed to a fine powder, then the syrup of senna and extract of liquorice worked in and water added gradually to the required volume, the tincture being added last. In addition to the undissolved sulphate of soda, there is a precipitate caused by the action of the alum on the glycyrrhizin of the fluid extract of liquorice. A few drops of ammonia would dissolve this, but the use of it is not to be recommended in this case, as it would convert the alum salt to hydrate, and cause a further precipitate.

No. 3.—A mixture of syrup of iodide of iron with infusion of calumba.

℞ Potassii Iodidi	gr. 160
Syrupi Ferri Iodidi	℥i.
Inf. Calumbæ ad.	℥viii.

M. fiat mistura.

* Read at a meeting of the Liverpool Pharmaceutical Students' Society on Thursday, February 10.

As will be readily seen, this mixture changed almost immediately, giving a gradually increasing red precipitate of oxyiodides of iron. The patient having to continue the use of this mixture for some time, it was imperative that some preservative should be used to retard the reaction if possible, and so, with the doctor's permission, hypophosphorous acid, B.P.C., was used in the proportion of 40 minims to the bottleful. This had the desired result, as may be seen from the two specimens shown, one containing the acid, and the other not. They were made in May, 1897, that with the acid being still clear, whilst the other is half filled with deposited dark red oxyiodides of iron.

No. 4.—A bismuth salicylate mixture—

℞ Potass. Bromidi	℥ii.
Bismuthi Salicylatis	℥iss.
Pulveris Acaciæ	℥iv.
Sp. Chlorof.	℥ii.
Aquam Cinnamomi ad.	℥viii.

M. ft. mistura.

Make the gum into a mucilage with half the cinnamon water and pour into the bottle. Then rub the salicylate of bismuth down to a very fine powder, to which add the spirit of chloroform, making a smooth cream, which is thinned further with half an ounce cinnamon water, and poured into the mucilage in the bottle, well shaking. The bromide is separately dissolved in the rest of the menstruum and added to the other ingredients, the froth from shaking being removed with a drop or two of spirit of chloroform. The only difficulty in this is that the salicylate has a tendency to float to the surface unless well rubbed down with the spirit of chloroform before mixing with the mucilage.

No. 5.—A dusting powder containing hydronaphthol.

℞ Hydronaphthol	gr. xii.
Pulveris Iridis	℥i.
Zinci Oxidi	℥i.
Cimolite	℥ii.
Pulveris Amyli ad.	℥i.

Misce fiat pulvis aspersorius.

To obviate any chance of small particles of the hydronaphthol irritating the sore surface to which the powder was to be applied, a solution of the salt was made with 2 fluid drachms of ether and poured on the other ingredients previously mixed together and contained in a warm mortar. With brisk trituration the ether was soon dissipated and a smooth, even powder resulted.

No 6.—An eye lotion of cocaine and acetate of lead.

℞ Plumbi Acetatis	gr. xxx.
Cocainæ	gr. x.
Aquæ Rosæ ad	℥x.

M. fiat collyrium.

As the uncombined alkaloid would precipitate part of the lead salt, it was converted into the acetate by the addition of the least possible quantity of acetic acid and mixed with the lead acetate dissolved in the rose water.

No. 7.—A quinine mixture with tincture of perchloride of iron, containing more quinine than the iron would hold in solution.

℞ Quininæ Sulphatis	gr. 24.
Magnesii Sulphatis	℥ss.
Tinct. Ferri Perchlor.	℥i.
Aquæ Chlorof. ad.	℥vi.

M. ft. mistura.

The quinine dissolved at first in the tincture, but dilution caused a precipitate of oxychloride of iron. Enough dilute hydrochloric acid was used to dissolve this precipitate, or rather to prevent its formation, viz., 24 minims. The tincture of iron was found to be much less acid than is usually the case.

No. 8.—A storax ointment:—

℞ Styracis Ppd.	gr. 145.
Adipis ad.	℥i.

M. ft. unguentum.

Melting the storax with 2 drachms of castor oil and rubbing in a hot mortar with enough lard to make 1 ounce was found to give a better ointment than that made with lard alone.

No. 9.—An application for the ear.

℞ Cocainæ ..... gr. iv.
Camphoræ ..... gr. xxiv.
Acid. Carbol. ..... gr. xlviii.
Menthol ..... gr. xlviii.
Olei Petrolei Rect. ..... ad. ℥i.
M. ft. applicatio.

It was certain that the doctor did not intend rectified oil of petroleum to be used, so white liquid paraffin was employed. This afterwards turned out to be correct on seeing the doctor.

No. 10.—A lotion noticeable from the chemical reaction of its contents.

℞ Sodii Hyposulphitis ..... ℥vi.
Acidi Sulphurosi ..... ℥ss.
Glycerini ..... ℥ii.
Aquæ ..... ad ℥viii.
M. ft. lotio.

The sulphurous acid caused a precipitate of sulphur and evolution of sulphuretted hydrogen from the thiosulphate.

No. 11.—Pills containing nitrate of silver and strychnine.

℞ Argent. Nitratis ..... gr. ¼.
Strychninæ ..... gr. $\frac{1}{24}$.
Ft. pilula. Mitte 48.

The doctor, wishing the patient to take these pills for a lengthy period, asked if the blackening he had seen in similar pills could be stopped or hidden, as the patient on seeing the change was under the impression the coloured pills did not have the same effect as the fresh ones. Accordingly they were made in the following manner :—Nitrate of silver, 12 grains, was rubbed well with French chalk, 12 grains, and massed with cacao butter, 12 grains. Another mass was then made of willow charcoal, 6 grains, trituration of strychnine (1 in 8), 6 grains ; and manna. This was mixed with the nitrate of silver mass, made up with more manna to 96 grains, and cut into forty-eight pills.

The charcoal hid the change of colour, which usually takes place in nitrate of silver pills, and which is caused by the action of light, by the action of traces of chlorides contained in the other ingredients, and, lastly, by contact with the metal cutters of the pill machine in making.

No. 12.—Cachets containing Stockholm tar, 2 grains in each, were prescribed for a patient who would not swallow pills. Remembering a remark of a former apprentice of ours that the infusorial earth called dimatos should be good as an excipient for pills containing carbolic acid or creosote from its power of absorption, and its superiority to kieselguhr in point of fineness, I rubbed up the Stockholm tar with enough dimatos to make it into a dry powder, every 2 grains of tar requiring 3 grains of dimatos. This was then weighed out into 5-grain powders, which were enclosed in No. 1 cachets. The powder retained the tar, and caused no coloration of the cachets, even after keeping over a month.

This dimatos has proved in my hands very satisfactory for pills with large quantities of oily liquids. In one case particularly so. A pill of creosote, 1 minim, and valerianate of zinc, 3 grains, mentioned by one of the members of this Society—Mr. R. H. Mitchell—as troublesome to make of small size, I managed to turn out by the employment of a grain of dimatos.

There appears to be some reaction between creosote (Morson's) and valerianate of zinc, for I have noticed that, though at first becoming liquid when mixed together, they rapidly harden, and if massed as pills, get extremely hard in the course of a few days whatever be the excipient used.

THE DISPENSER'S ART ITS DEMANDS, CLAIMS, AND RESPONSIBILITIES.*

BY H. MACNAUGHTON-JONES, M.D., M.A.O., M.CH., F.R.C.S.I. AND E.
President of the British Gynæcological Society.

When you assigned a reason for asking me to give this inaugural address you referred to my personal interest in pharmacy and the dispensing art. In this you were quite right, for my first introduction to medicine was as an apothecary's apprentice in 1859, having then passed the Preliminary examination of the Dublin Hall just before my college matriculation, being then a lad of fourteen. I regularly served my time, becoming an assistant in due course, and subsequently obtaining the Hall diploma. Hard work was the feature of these early years, for attendance on lectures during any spare hours I could obtain was incorporated with my dispensing duties, and a great part of the night was devoted to reading. Still, I had passed all my examinations and had taken my degree of M.D. before the age of twenty, and how far I had included the study of other subjects than that of materia medica is evidenced by the fact that before taking my degree I had obtained honours in the senior subjects of the course, and immediately afterwards was appointed demonstrator of anatomy in the Queen's College, Cork. During the years of my apprenticeship I had learnt many things besides dispensing, for in those days bleeding, both by lance and cupping-glass, had not quite gone out. The extraction of teeth was a common operation for the apprentice, and a large variety of minor operations and attendance on accidents fell to the lot of the apprentice and assistant to attend to. Children of all ages were brought to the pharmacy in which I worked, and at a very early age I had learnt to carry out most of the remedial measures needful in the ailments of children. Thus I had learnt in it far more of the every-day needs of my profession than I did by attendance at hospital during these early years of study. I briefly recount a few first experiences in an open pharmacy, in order to justify my assertion that the pharmaceutical assistant and dispenser can, if he have but zeal and energy, study many subjects collateral to his calling, improve his general culture, and fit himself to occupy that position in society which, as I shall presently show, he is indubitably entitled to hold.

Immediately after taking my apothecary's diploma, I was appointed Visiting Apothecary to the large city gaol, and, by the Government, to the Cork District Lunatic Asylum ; thus am I entitled by my early life to speak to you with the sympathy of an old dispenser myself in public institutions. My first private teaching class was one in materia medica and pharmacy, and my first medical publication, a notice of which will be found in the *Lancet*, I think of the year 1865, was 'A Chart of Medicinal Preparations for the Use of Students,' which contained in one sheet an analysis of the compositions and strength of all the most important preparations to be found in the Pharmacopœia of 1864.

Gentlemen, let me say a few words before speaking to you on the subject matter of this address. Work is the *raison d'être* of our existence, and the gospel of work is the nineteenth-century message, directing us in the road of progress, culture, and social advance. I assume that, as all good workers are, you are naturally proud of the work you profess to do. If a man is not, in the right sense of the term, vain of his work, then, at least in the great majority of instances, that work is but poorly done. Let me then ask you, what are your ideas of work ? the outcome and output of which you may be justly vain of. All work demands certain qualities for its efficient performance. There must be love of it, aptitude for it, knowledge of it, experience in it, self-sacrifice in the performance of it, and perseverance in the carrying out to

* Inaugural address to the Public Dispensers' Association, delivered on Friday, February 25. See page 245.

perfection of its details. These you may say involve high ideals, which few can hope to reach, and a combination of qualities rarely to be found in one individual. This I grant you is true. But it is not by aiming at the readily achievable and surmountable obstacles of life that distinction or eminence in any calling is attained. Ever in the career of each worker who is earnest and ambitious is heard that voice calling from the invisible heights of progress and duty, sometimes so faintly, at other times with louder accents, "Excelsior!" And I take it that the explanation of your presence to-night is to be found in the existence amongst you of ardent spirits who look ever beyond the "topmast crags of duty," who seek, not merely in the routine discharge of ordinary and commonplace work to fulfil their lives' mission, but who, in the words of Arnold, are determined "not in the crowd to be lost, in an eddy of purposeless dust," striving blindly, achieving nothing," but whose ambition it is to be master spirits of their time, and whose destiny it is to add to the nobility of their calling, and increase the scientific and social status of their fellow workers. To repeat Carlyle's appeal from Goethe to the students of Edinburgh University, "Heard are the voices, heard are the sages, the world and the ages. Choose well —your choice is brief but yet endless."*

Well, gentlemen, if these be your ideas of your work's demands, the very initial elements of which are essentially difficult, as in all such human efforts, you require hope to stimulate you and encouragement to inspirit you. Further, you need strength in order to advance, and success to incite you to continue. There is an element which has proved the most powerful in the direction of all human movements, whether in art, science, politics, or social and national economics, and that is the element of association. Men depend on each other for mutual help, guidance, and support. Association involves combination; both demand leadership; leadership requires of the leaders and in the followers self-sacrifice and self-control. These, then, I take it, are the motive principles which have brought you here to-night, and have induced you to ask me to review your position and inquire into your objects. You are a Dispensers' Association, bound together by common hopes and aspirations, and the first question I have to ask you is, Does your work justify your association, and do you bring to its performance those attributes of interest, aptitude, training, knowledge, experience, self sacrifice, and perseverance to which I have referred?

"It is physically impossible," says Ruskin, "for a well-educated, intellectual, or brave man to make money the chief object of his thoughts: just as it is for him to make his dinner the principal object of them."† And he goes on to show that in all professions, whether that of the soldier, the parson, or the doctor, their work is first, their pay is second, and the main object of their calling becomes the main object of their lives. It is not a case of fees—it is a case of work. The work is first and the fee second, and on the choice of this issue depends life or death to the man. And mark this, too—"nobody does anything well that they cannot help doing. Work is only done well when it is done with a will, and no man has a thoroughly sound will unless he knows that he is doing what he should, and is in his place." "Wise work," he says, "must be honest, useful, and cheerful." Could I better such maxims as these in an inaugural address?—"Shoulder to shoulder, right hand to right hand among yourselves, and no wrong hand to anyone else, and you'll win the world yet."

And as to the utility of work, he says: "No man minds, or ought to mind, its being hard if only it comes to something, but when it is hard, and comes to nothing, when all our bees business turns to spiders, and for honeycomb we have only resultant cobwebs, blown away by the next breeze, that is the cruel thing for the worker." Mark you, it is this resultant of our work that inspires love for it and sweetens the labour itself. In short, it is this belief in the eternal consequences and evidences of his work that lifts the worker above his toil and brings that element of cheerfulness to which Ruskin refers.

Think not of the nature of your work, but of the essentials on which its due performance depends. One of the falsest and most accursed of modern teachings is that which tends to incite men to look only to the nature of their work, and the immediate rewards which follow upon its bare performance, leading their minds away from the attainment of those essentials on which progress and advancement in any class of labour, any department of art, any branch of science, depend. Concentrate a man's mind thus, and rivet his attention only on the mere details of his work and their pounds, shillings, and pence equivalent, and you infallibly encourage discontent, for the consequence is not a desire for greater perfection, but for higher remuneration. Then comes the danger of national decadence, and the superiority of technical methods, as well as of labour generally, in countries which are not so subject to the teachings of false prophets and interested leaders. Look to it—that the pharmaceutical art in Great Britain shall hold its own with that of foreign countries. Surely there is no necessity that many valuable drugs should find their way into this country from German and French laboratories, or from across the Atlantic, or that original investigation and research in analytical methods and synthetical combinations should reach us with the name of some continental firm attached to it.

As bearing on this appeal to you as English pharmacists, I ask you to note the words of Doctor Pereira in 1844:—"No country," he says, "in the world has so great facilities for carrying on such inquiries" (referring to the natural history and origin of substances used is medicine, and the nature of various drugs) "as Great Britain." He refers to her numerous colonies, her commercial relations, her enormous possessions, and winds up a patriotic appeal by saying that such investigations in various climes may be made the means of declaring to the remotest part of the Empire the wants of the Mother Country, and conversely, the capabilities of the former to the latter. What would he say to you chemists to-day of your increased responsibilities, consequent upon your vastly enlarged spheres of influence, your proportionately greater sources of information and material, your marvellously improved methods and means of research, communication and experimentation? Truly, Dr. Pereira, were he alive, would not be found amongst the "little Englanders." There is a discontent that is more honourable and praiseworthy than any form of satisfied contentment, and that is, that dissatisfaction with ourselves and our attainments, the discontent that leads to renewed and greater effort, to higher and prouder successes. This is the form of discontent which should bring you together to-night, and which, no matter how worthy be all your other aims, should inspire your future exertions.

(*To be continued.*)

* Inaugural address, Edinburgh University, April 2, 1866.
† Lecture on "Work"—'The Crown of Wild Olive,' by John Ruskin, 7th edition, 1892.

Plants in Rooms as a Source of Infection.—Tailor, of New York, has found that plants were the cause of the infection of several patients with malaria. The removal of the latter was immediately followed by an abatement of the attack. He also found that most gardeners suffer from a form of malaria, and, on examination, their blood was found to contain the characteristic organisms.—*Pharm. Centr.* xxxviii., 537.

PHARMACEUTICAL SOCIETY.

MEETING OF THE COUNCIL.

WEDNESDAY, MARCH 2, 1898.

Present :

Mr. Walter Hills, President.

Mr. G. T. W. Newsholme, Vice-President.

Messrs. Allen, Atkins, Bateson, Bottle, Carteighe, Corder, Cross, Grose, Hampson, Martindale, Park, Savory, Southall, Symes, Warren, and Young.

The minutes of the last meeting were read and confirmed.

The President announced that Mr. Harrison was suffering from a severe cold, and consequently would be unable to be present that day.

The Late Mr. Giles.

A letter had been received from Mrs. Giles acknowledging the vote of sympathy which had been passed by the Council with herself and family in her recent bereavement.

Death of a Founder.

The President then said he had to announce with regret that they had lost one of their oldest members in the person of Mr. Thomas Glaisyer, of Brighton, who died on February 4, at the age of 89. Mr. Glaisyer was a pharmaceutical chemist, and one of the founders of the Society. He was a member of the first Council of the Incorporated Society in 1843. There were now eight founders left. Mr. Glaisyer was a member of the Society of Friends, and it was curious to note how many of those who were interested in the foundation of the Society belonged to that body. He was one of the great authorities on Brighton and its history, and was a man of great scientific attainments. Though he had lived to a good age, they could not but regret that one more link with the past was severed.

Election of Members.

Pharmaceutical Chemists.

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

Bell, Arthur Henry ; Llandudno. | Drust, John Hubert ; Bayswater.
Goode, Arthur Frederick ; London.

Chemists and Druggists.

The following, who were in business before August 1, 1868, having tendered their subscriptions for the current year, were elected "Members" of the Society.

Johnson, Robert ; Leek. | Parry, Wm Robert ; Cerrigydruidion

Election of Associates in Business.

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

Averill, Morris ; Stafford.
Green, Joseph Henry B. ; Wimborne.
Hudson, John B. ; Hebburn-on-Tyne.
Shackleton, George H. ; Abergavenny.
Tinsley, Samuel Hilton ; Fleetwood.
Winterbottom, Arthur ; Leeds.
Wright, Joseph ; Grimsby.

Election of Associates.

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

Callander, Robert Andrew ; Falkirk.
Cockburn, Bertram ; Hawick.
Davis, Henry ; Riverhead.
Ellinor, John Thos. ; Sheffield.
Greaves, Henry Eldred ; Ironville.
Hovenden, Sydney C. ; Croydon.
Johnson, John W. Baker ; Nottingham.
Oliver, Joseph ; Hull.
Pennie, William ; Aberdeen.
Robinson, John N. ; Stockton-on-Tees.
Wootton, Joseph Frederick ; Thirsk.
Wright, John ; Edinburgh.

Election of Students.

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

Anderson, D. W. ; South Queensferry.
Barrett, Thomas Edward ; Portsmouth.
Barritt, Percy ; Norwich.
Batman, John Edwin ; York.
Beale, Percy Arthur ; Northampton.
Bell, Ivie Hair ; Glasgow.
Bird, Albert Edward ; Rugby.
Booth, William ; London.
Bott, Graham Ewart ; Lewisham.
Boulton, Howard ; Nottingham.
Bristow, Herbert, Mere.
Clark, Frederick H. ; Cockermouth.
Coonan, John Woodroffe ; Stockport.
Dales, Joseph Wardle ; Louth.
Dyas, James Edmund ; Bromley.
Faulkner, Sidney H. ; King's Lynn.
Finch, Jacob ; Norwich.
Geenty, Owen Charles ; Leeds
Goss, John Osborne ; Plymouth.
Graham, John ; Inverness.
Gray, Sydney Bunting ; Rugby.
Hands, Harold Frank ; Cheltenham.
Harmer, George Clayton ; Eastbourne.
Hill, John S. ; South Shields.
Hollingsworth, A. ; Newcastle-on-Tyne.
Lane, George ; Wymondham.
Machin, Harold ; South Tottenham.
Mayson, Wilfrid Leslie ; Blackpool.
Murray, Thomas Ninian ; Workington.
Nield, Thomas ; London.
Pinfold, Arthur H. ; Sheffield.
Powell, Edward Thomas ; London.
Pratt, Edgar ; Lancaster.
Preston, Ernest ; Eccles.
Rayner, Edith ; Holloway.
Reeson, Herbert S. ; Rotherhithe.
Reynolds, William ; Bolton.
Rixen, Ernest Alfred ; Teddington.
Sare, Frederick Samuel Thomas ; Bath.
Shrive, William Ernest ; Cambridge.
Thompson, George Pinder ; Malton.
Tippetts, John William ; Leicester.
Tonkin, John Kenyon ; Guisboro'.
Watson, Arthur ; Nottingham.

Addition to the Register.

The name of the following person, who has made the required declaration and paid a fine of one guinea, was restored to the Register of Chemists and Druggists :—

Mill, Samuel Thomas ; 10, Cheeke Street, Exeter.

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

Report of the Finance Committee.

The report of this Committee was read by the Secretary, and included the recommendation that various accounts be paid. It also included a statement of accounts from the North British Branch.

The President, in moving the adoption of the report and recommendations, said there was nothing to which he need call special attention, either in the expenditure in London or in Edinburgh. The accounts showed that, as usual, the greatest care had been exercised by those who had charge of the Society's funds in the north. The expenditure had been rather higher than last year, but the arrangements were not yet quite complete, a few further alterations being still necessary in order to make the premises all that was required. It was intended to enlarge the museum, and make it co-extensive with the ground-floor. There had recently been some valuable additions to the Museum, for which room had to be found. It was also considered advisable that a few other alterations should be made, for instance, that the Assistant Secretary should have a separate room for himself, where he would be a little less accessible than at present. Of course he would always be accessible to members and friends, but it was desirable to protect him a little from the visits of casual callers, who sometimes detained him at undue length. He had an immense fund of information which he was always willing to place at the disposal of others. A new library was also being constructed on the first floor back. There would probably be about another £100 required during the coming year beyond the usual expenditure, about £50 for completing the museum, about £25 for alterations on the first floor, and, perhaps, £25 for sundries. The electric light was already in, and when these alterations were completed the premises would be in a very satisfactory condition. Their thanks were due to the Executive of the North British Branch, and especially to Mr. Ewing, for the very careful way in which they managed the affairs of the Society.

He was glad to announce that a further donation of one hundred guineas to the Benevolent Fund had been received from Mr. Charles Maw, making a total of £525 which that gentleman had contributed to the Fund.

The report and recommendations were unanimously adopted.

Report of the Benevolent Fund Committee.

The report of this Committee included a recommendation of grants to the amount of £37 in the following cases :—

The widow (47) of a former associate (1870-78) who has had three previous grants. (Liverpool.)

A chemist and druggist member (73) (1882–89) and subscriber. (Mablethorpe.)

A registered chemist and druggist (64) suffering from paralysis. (Bristol.)

A registered chemist and druggist (63) who recently failed in business. (Cley, Norfolk.)

Two other cases were deferred for further inquiries, and one was not entertained.

Mr. Bottle, in moving the adoption of the report, said there was no particular item that he wished to comment on, as the recommendations were quite of an ordinary character; four grants were made, two cases deferred, and one case declined.

Mr. Atkins seconded the resolution.

Mr. Bateson said there were two somewhat anomalous cases to which he wished to call attention. One was the case where the applicant had a considerable income from his wife, and the other was a case where 2*s.* 6*d.* had been subscribed to the Fund by the applicant. He could only say that in the latter case the 2*s.* 6*d.* had been returned forty-fold.

Mr. Carteighe said he saw on the agenda a name which he would not mention, but it was an application from a very respectable member of the body, whose case would receive consideration in due course. He was not there to advocate that or any other case, because he knew how carefully the Committee did its work, but he should like to say now that he was relieved from the responsibilities of the chair that he hoped the Committee would during the next year or two consider how far the law of earning a little money should be carried. Hitherto the general view had been that a person should be in real distressed circumstances before obtaining relief. He would suggest whether they could not do as was sometimes done in the case of widows, make a grant to some of their brethren, under certain conditions, to help them along, even though they were earning something at the time. Of course, certain rules and regulations were framed very properly for the guidance of the Benevolent Fund Committee, but, seeing the generous response they had had during the past year to their appeals for funds he should like to encourage in the Committee the view that the best form of benevolence was often that which would give something to a man who was earning a few shillings a week rather than letting him go on till he was absolutely destitute, and had to be kept altogether. He hoped the Committee would understand that he personally was deeply grateful to them for the way the Fund was administered; but he would advocate boldness in the expenditure of their money.

Dr. Symes was afraid that the way in which Mr. Carteighe had shaped his argument might lead their friends who subscribed to suppose that they had a rule not to give aid to anyone who was capable of earning any money. In his experience the Committee had always been quite willing to help such people. The principle laid down was that they should do their utmost to aid those who would help themselves. One rule of the Committee was not to help persons who were still in business. When a man was carrying on a business, and could scarcely make both ends meet, it was not thought fair that he should have something given him to continue him in business, because he must be carrying on business in opposition to somebody who might be a subscriber to the Fund. In his own experience in Liverpool he could remember cases in which men had been acting as *locum tenens* occasionally, and yet had received help from the Fund immediately on their ceasing to earn anything. He did not rise to correct anything that Mr. Carteighe had wrongly stated, but he thought his remarks might create a wrong impression. It would be unfortunate if the idea were to get abroad that they did not help those who were still earning a little money, and who were trying to help themselves.

Mr. Carteighe did not think he had said anything to reflect on the Committee at all. He had not made a speech, but if he were to give notice of motion, he thought he could prove his case. He had ventured to make a suggestion, which he did not think was met by anything Dr. Symes had said.

Mr. Atkins thanked Mr. Carteighe for his expression of confidence in the work of the Committee. He need not tell Mr. Carteighe, as an old officer of the Society, that every case was most anxiously and sympathetically discussed. The amount of time spent over the various cases exceeded that of any committee of which he had any experience. There was one case which was maturing and would come before the Committee again, and when it did so he was perfectly sure that all Mr. Carteighe had said would be most carefully weighed by them. It was a case full of the deepest possible interest.

Mr. Southall was glad to hear what Mr. Carteighe had said, as the Committee did want a little encouragement. They did naturally get into the groove of being perhaps too careful with money that was not theirs.

Dr. Symes hoped that Mr. Carteighe would not think that he found fault with his remarks. It was simply that he thought a wrong impression might go forth.

Mr. Carteighe thought the same observation might be made to Dr. Symes' remarks.

The President, in putting the resolution, would say very little, because the Benevolent Fund Committee was the only Committee in which he had not actively taken any part. He was deeply indebted to the members who went into the case so thoroughly and sympathetically. Mr. Southall had anticipated him when he had said the Committee wanted a little support from those who were not on the Committee to spend the money sometimes even a trifle more freely than they did. They had had a very splendid response during the last few months to their appeals, and therefore there ought to be no case that should not be helped if there was the least occasion for it.

Mr. Hampson quite endorsed what Mr. Carteighe had said, re-affirmed by the President. He would like to refer to an old question, quite incidentally—he did not wish to establish a precedent—that was a bogey word that ought never to be used; but it was very delightful to remember that their Fund was a flourishing one. Last year they had such bountiful help, and he would make this affirmation, that if out of the generous nature of the Council there should arise an abolition of unnecessary strife in obtaining a position at the poll—if there should be a temporary diminution in the Fund, that gap would readily be filled up by the spontaneous and hearty feeling of those who had at present sustained it so ably.

Library, Museum, School, and House Committee.

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

Attendance.		Total.	Highest.	Lowest.	Average
January	Day	327	26	4	13
	Evening	116	11	0	

Circulation of Books.	Total.	Town.	Country.	Carriage paid.
January	173	92	81	17*s.* 1*d.*

Several donations had been received (*Ph. J.*, February 12, p. 145), and the Committee had directed that the usual letters of thanks be sent to the respective donors.

The Committee had recommended that the 'Geschichte der Pharmazie, von J. Berendes, be purchased for the Library in London.

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

	Attendance.	Total	Highest.	Lowest.	Average.
January	Day	514	36	5	20
	Evening	32	7	1	1

Several donations had been received (*Ph. J.*, February 12, p. 145), and the Committee directed that the usual letters of thanks be sent to the respective donors.

The President moved the adoption of the report, which was at once adopted.

The Annual Meeting.

It was resolved that the annual meeting of the Society be held on Wednesday, May 18, at 12 o'clock.

The Annual Report.

The preparation of the annual report was, as usual, referred to the Library, Museum, School and House Committee.

Divisional Secretaries.

The President moved the appointment of the following gentlemen as divisional secretaries, all of whom had expressed their willingness to accept the office.

N. Islington, Mr. H. Cryer.
Haggerston, Mr. J. B. Barnard.
W. St. Pancras, Mr. G. H. Peters.
Wandsworth, Mr. W. H. Williams.

The Pharmacy Act Amendment Bill.

The President said it would perhaps be interesting if he said a word or two with regard to the position of this Bill, which was read the first time in the House of Commons last week. Since the last meeting the following resolutions had been passed in favour of the Bill:—

By the Midland Chemists' Assistants' Association: that it "expresses its unqualified approval of the Bill and pledges its members to give the measure every possible support."

By the Midland Pharmaceutical Association : That the Council having considered the Bill, are of opinion that it is a step in the right direction, and that it shall receive their support.

By the Western Chemists' Association (of London) : That this meeting cordially approves the draft Pharmacy Bill.

By the Derby and District Chemists' Association : Having considered the Bill, approve of the same, and will render to the Council any assistance they are able to give to promote its passing into law.

By the Chemists' Assistants' Association : That in the opinion of this meeting the Bill is calculated to serve the best interests of pharmacy by establishing more efficient union amongst the members of the trade, and this meeting cordially supports the same.

It was, perhaps, not well to go too much into detail, but he might mention one or two facts in regard to the present position of matters. The Bill was introduced last Thursday by the Hon. W. F. D. Smith, and endorsed by Mr. Brodie Hoare, Dr. Farquharson, Mr. Boulnois, Mr. T. Shaw, Mr. Brookfield, Mr. Kearley, and Mr. Schwann, and the second reading was fixed for the next day (Thursday). He had been a good deal in the lobby of the House of Commons lately, and had been received with the greatest kindness and consideration by various members who had expressed interest in the measure. Only that morning he had had a letter put into his hands which was interesting as showing the way in which Members of Parliament regarded the Society. It was from an eminent member, who said he would be truly glad to have a hand in anything which benefited such a body as chemists, for whom he had a great admiration and much gratitude. In connection with the introduction of the Bill, he had been greatly impressed with the immense volume of support accorded to it by both pharmaceutical chemists and chemists and druggists in every part of Great Britain, and he wished to take this opportunity of expressing on his own behalf and that of the Council their sense of the loyalty of their friends in the country, and their appreciation of their active co-operation in facilitating the progress of the measure. He would also say, on behalf of the Secretary, that he had received such a very large number of letters containing proof of practical support from local secretaries, members and associates, that he had been unable to reply to them all, and therefore begged his various correspondents to absolve him of discourtesy and allow him to publicly make this acknowledgment through him. Having regard to the argument which had been raised that the effect of the Bill might be to lower the standard of the examination or qualification, he thought it his duty to submit the Bill to the Privy Council, the department charged in the interest of the public with the surveillance of the examinations, and to ask an expression of their Lordships' opinion. He had received a reply saying that the draft Bill had been submitted the Lord President of the Council with a statement explanatory of Clause 3, and that his Grace saw no objection to the provisions of the proposed Bill. He hoped this would remove any anxiety which might have existed in the minds of any pharmacist as to the possible retrograde or reactionary effect of the Bill. He would repeat that he had been very much impressed with the amount of support which had been received from all parts of the kingdom. He had read something of the history of pharmacy, and had been more or less closely associated with the Pharmaceutical Society and its work during the last fourteen or fifteen years, and he must say that never could he recollect so much unanimity amongst the whole body ; and he did think there was a chance of the Bill going through. It was down for second reading on the morrow, and he hoped the state of public business would allow of its being reached. He also hoped that no one would rise to object to it. Of course there were individuals who were not altogether in favour of it—perfect unanimity could not be expected with respect to a Bill of this kind, and he knew there were individuals who objected, but he would earnestly appeal to those gentlemen to recognise what he had said, that except from one district he had no evidence whatever of any objection or any hostility. He would therefore urge on those gentlemen to put aside their own views, and to come in and show for once at least that the members and associates of the Pharmaceutical Society could show a united front, and work hand in hand for the common good.

Stamped Medicines.

Dr. Symes said two months ago he moved a resolution with reference to the Medicine Stamp Duty Act, which was sent to the Law and Parliamentary Committee for consideration. It had not been yet considered, but an article on the subject appeared in the Journal last week, to which he wished to call special attention. If very fully and ably explained the position, and quoted from the Act of Parliament to which he had referred, and he thought it was well worth the attention not only of the Committee, but of all chemists and druggists throughout the country. If they would peruse that article they would see the object he had in bringing the matter forward, in order to show that the Council really looked after trade interests, which they were often accused of neglecting. Towards the close of the article the writer said that on analysis the exemption resolved itself into this, that a qualified chemist and druggist might sell unstamped medicinal compounds of known, and approved virtue, or efficacy, whereas persons not qualified within the meaning of the Clause must stamp such compounds. That was exactly his contention, and he was glad to see it, though he could not say that the conclusion of the article was altogether satisfactory.

The President said he hoped all his colleagues would read the article referred to, if they had not already done so, for it threw a good deal of light on the subject.

Report of the General Purposes Committee.

The Council then went into committee to hear and consider the report of this Committee, which dealt entirely with legal matters.

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

MEETINGS OF SCIENTIFIC SOCIETIES

ROYAL INSTITUTION.

At a meeting held on Friday, February 18, Professor L. C. Miall delivered a lecture, entitled

A Yorkshire Moor,

Peaty moors, overgrown with heather, are common in Scotland, and reach into Yorkshire and Derbyshire, but become fewer as we go south, and in the south of England, with one or two notable exceptions, such as Dartmoor and Exmoor, are never found. There was an old saying that one could walk from Ilkley to Glasgow without stepping off the heather, and while this was not strictly true, it expressed the abundance of moorland lying in that part. The formation of peat is not dependent on high altitudes ; it may occur at, or even below, the sea level ; but the necessary condition was an impermeable soil. The same may be said of heather, which may occur also where peat is absent. The impermeable bed is provided in Yorkshire by the boulder-clay, which probably owes its existence to the Ice Age. At the borders of the moors, where the boulder-clay disappears, the vegetation is of a different character. A number of pictures were shown by the lecturer illustrating the characters alluded to, and showing how the variety and coloration of the scenery depended on the subsoil. Peat owes its origin, it may be said, almost always to that particular kind of moss which is commonly used for packing plants, and is known as sphagnum moss, although its formation may afterwards be carried on by heather, lichen, and other plants. The explanation of this is seen when one examines the minute structure of this moss. Its leaves are folded in such a way as to give it a great capacity for holding water. If one goes further and examines a section of the leaf with the microscope, one again finds an adaptation for taking up water in the spongy nature of the dead cells lying between the living tissues of the leaf, the internal cavities being connected by canals with the exterior. Masses of moss peat occur to a depth of twenty, thirty, and even fifty feet ; and on the boulder-clay at the bottom of such peat formations tree-stumps are often found. At the present time wood usually gains in growth on peat, but in other periods the peat often overgrew a forest of wood. An instance is known where such an event took place during the memory of one man ; the individual, refusing to believe that what he had known as firm ground could have become a treacherous bog, attempted to cross it, with the result that he narrowly escaped sinking in it. No water is so full of animal life as that of a sphagnum bog, great numbers of desmids, diatoms,

protozoids, and other varieties being found; and it is remarkable that the same species are everywhere associated with this moss, the sphagnum of even Spitzbergen offering no exception. The heather or ling shares many of the characters of the moss described in the provision made for holding water, forming a typical example of what are known as drought plants. A section of the leaf shows large air spaces, communicating with the exterior by a few stomata, none of which appeared on the upper surface or the deep sides of the leaf, but only on the narrow lower surface, which was folded inwards. The bell heather has a similar structure. Protection against drought is not the whole purpose of this structure, however. Exposure to sun, wind, and cold are conditions under which it is experimentally found that a plant must not absorb water, and as it is to these that moorland plants are continuously exposed, the reason is obvious why they behave as drought plants. So great is the tendency of all the plants to keep dry that a moor will take fire and burn over large areas at all times of the year, and even soon after a rainfall. The bilberry is a plant that carries on the work of assimilation even in autumn and winter. Its leaves also contain air spaces, while their margins are provided with grooves, which serve to convey water down by means of the stem to the roots. It has a great power to withstand cold, and is able to flourish much farther north than the common furze. Another plant indigenous to the moor is the crowberry, a plant having the appearance of heather, and which the older botanists always wanted to include among the heaths, while in reality it is not at all related to the group. The leaf of this plant —which is somewhat cylindrical outwardly—is remarkable because the internal cavity is not morphologically the middle of the blade, but is formed with the lower surface as a lining by the downward folding of the leaf, the hairy margins meeting completely. The lecturer was for a long time puzzled because the plants gathered on the moor could not be persuaded to grow in his garden, not even when the garden was adjacent to the moor. At length it was found out that the life of these plants depended on the function of a number of long thin filaments on the root, resembling root-hairs, which penetrate the root-forming nodular masses within it. These filaments belong to a fungus that is parasitic on the root, and yet is different from common parasites in that the plant obtains so much of its nourishment through it that if the fungus is not present the plant cannot live on peaty soil. The coarse moorland grass, Nardus, was also described. Its leaf-blade has the property of rolling up cylindrically and spreading out again to adapt itself to dry and wet weather. All the Yorkshire moorland plants are arctic; they are found also in Spitzbergen and Siberia, and much speculation has taken place to account for it. The glacialists, by which term the lecturer meant "those who see ice in everything," said that at the beginning of the Ice Age the arctic plants were driven southward, and as the ice receded the plants also went back, but some remained on the Alps and on the Yorkshire hills. Dealing with the animal life on the moor, the lecturer named the smaller animals, such as stoats and weasels, and the birds, among which were the curlew and golden plover, kestrel, sparrowhawk and merlin. Formerly the peregrine and golden eagle were also found. Of the larger quadrupeds none now existed, but evidence that they once abounded was supplied by the bones lying on the lecture table which had been found in caves. Among them were a reindeer's horn, an elephant's tooth, the grinder of an extinct species of rhinoceros, and teeth of a hyena. The wolf, bear, lion, and wild boar were also common. Why have all these disappeared? The glacialists here again argue that the reindeer, mammoth, and woolly rhinoceros had to retreat northward at the close of the glacial period. Professor Hiam does not, however, accept this explanation. In the same layers and deposits are found the remains of the southern hippopotamus and other animals belonging to warmer climates, and co-existent with them we find the work of man. Besides flint weapons there are found sketches, rough drawings of these animals, showing that man had seen these animals alive. Moreover, the smaller animals—moles, shrews, and field mice—have gone through all the vicissitudes of climate and remained. It is therefore to be supposed that the larger animals disappeared before the face of man. And one need not look far to see the same work going on to-day in the extermination of the Greenland whale and numerous other animals that provide man with sport or a means of living. He had a few strong remarks to make on the destructiveness of some people who called themselves naturalists. Whatever animal became rare, they were so eager to secure specimens of it that it stood in imminent danger of becoming extinct, which has of late been the case with the Emperor moth. This is not science, but the selfish love of possession; and the fittest occupation for such people was, in the lecturer's opinion, to collect postage stamps. At any rate, they should keep off natural history, and it should be the boast of the student of nature that he leaves as much life as he found.

At a meeting held on Friday, February 25, a lecture was delivered by CAPTAIN ABNEY, on

The Scientific Principles of Modern Colour Photography.

Captain Abney first called the attention of the audience to a curve which showed the relative brightness of simple colours. What has to be kept in view by experimenters on this subject is to reproduce the colours of the spectrum as far as possible. Coloured light has to be introduced, and the first question, is, What are the fewest colours that will suffice? From the observations of Helmholtz we gather that red, green, and blue are alone sufficient to reproduce all other colours, a fact to which confirmation has many times since been given. Combining these three colours in such a way that the ordinates indicating their relative brightness are equal, one obtains white light. It was a notable fact that as long ago as 1861 Clerk Maxwell, a man who had only to touch a scientific matter with his scientist's wand to turn it to gold, had incidentally foreshadowed the process of colour photography now in vogue. A diagram showing colour mixture curves, prepared by him, was shown, and then followed experiments illustrating his theory that the three standard colours being reduced to equal luminosity produced white light. The lecturer also showed the working of an apparatus devised by himself for producing all kinds of light from these colours. A long band of paper was unwound from an axle and caused to pass in front of three slits, admitting light from the red, green, and violet parts of a spectrum. The paper screen being perforated in such a way as to admit the three lights in different amounts as the axle was turned, colours of every variety were produced in succession by their recombination. It was found, moreover, that in this respect the colours to be combined need not be pure, a fact that was very important for the success of the system. It was also shown that a sham spectrum could be produced with the three elementary colours. To produce the coloured picture three photographs must be taken, one with each kind of light, an intensity corresponding to that indicated by the curve. Each photograph, therefore, has a bare space corresponding with the maxima of the curves for the other two kinds of light. By using the three different lights respectively to throw the images thus obtained in combination upon a screen the object becomes depicted in its natural colours. As to how far photographic plates answer the requirements demanded it was pointed out that we have none at present that can be called perfect. The matter has to be compromised by using screens to cut off the requisite quantities of light, and as a plate is about ten times less sensitive to green light than to violet, and ten times less to red than to green, the exposures must be made proportionately, and, moreover, the screens used for taking must be different from those used for viewing. A succession of colour pictures produced by the method described were then thrown upon a screen by means of a lantern, all of which appeared perfect in detail and elicited hearty applause from the audience. Another process based on the same principle, the three-colour theory of vision, was then described. It depended for its success upon an imperfection in the eyesight, which is that coloured lines—red, green, and blue—when sufficiently close together appear grey. Three photographs are taken through glass of orange, green, and blue respectively, and the monochromatic images thus obtained, being backed by a screen, on which red, green, and blue lines are ruled at intervals of 1/200th of an inch, give by recombination a correct image of the object photographed in its natural colours. A number of pictures obtained in this way were also exhibited, by which the natural appearance of flowers, butterflies, etc., were beautifully reproduced. Photographs in a single colour, in combinations of two colours, and in the complete number were shown for comparison. If, however, a photo be viewed by light of the colours used for taking, a dark picture is formed, and therefore glasses of colours complementary to the red, green, and blue used in viewing are employed in taking the photographs.

INSTITUTE OF CHEMISTRY OF GREAT BRITAIN AND IRELAND.

The annual general meeting of the Institute was held at 30, Bloomsbury Square on Tuesday, March 1.

The annual report shows that the register contains the names of 820 Fellows, 125 Associates, and 168 Students, and the balance

sheet shows that the year has left the Institute with £133 13*s.* 4*d.* to the good.

The chief interest at the meeting centred in a discussion of a portion of the report from the Council dealing with the question of granting a certificate or qualification for candidates for

The Position of Public Analyst.

The Local Government Board now receives the Institute qualification as perfect evidence of chemical training and competence, but requires some evidence of a knowledge of therapeutics, pharmacology, and microscopy: to meet this demand the Institute has adopted the following recommendations:—

1. Candidates for the membership of the Institute requiring testimony of their knowledge of therapeutics, in view of qualifying themselves for the appointment of Public Analyst shall be required to pass an examination in therapeutics, pharmacology, and microscopy, on or after presenting themselves for the final examination in Section E (the analysis of food and drugs and of water, including the assay of alkaloids and recognition of impurities, adulterations, and substitutions).

2. It will be open to existing members wishing to receive the certificate of competency in therapeutics, pharmacology, and microscopy, to present themselves for examination in those subjects.

3. The examination will be conducted by examiners appointed by the Council, and the scope of the examination, indicated briefly, will be as follows.

Candidates will be required:—

I. To recognise specimens of any drug or poisonous chemical ordinarily to be found in commerce, or employed for technical purposes in the arts or manufactures.

II. To detect by microscopical or chemical examination, adulterations, substitutions, or impurities in foods and drugs.

III. To show a general knowledge of the therapeutic effects of ordinary drugs, and of the quantities of such drugs and poisonous chemicals which, taken internally, would be fatal to man.

Mr. Cassal, with the Chairman's permission, moved a resolution disapproving of Clause 2 as given above. He said that he was of opinion that it would be a great injustice to men who were already members if all the new Fellows were granted this certificate, and he thought it would be extremely unfair to the older Fellows to expect them to sit for such an examination. He contended that all Fellows who were public analysts should be granted the certificate if it was necessary that any such should be granted, though of that he had doubts, and he could not see that the Local Government Board had power to compel the Institute to hold such an examination or grant such a certificate.

Mr. Bodmer seconded the resolution, and Messrs. Hake, Hehner, and Dr. Dyer spoken in favourable terms on it.

Messrs. Friswell, Carteighe, and others spoke against the resolution, which, when put to the meeting, was lost.

Finally the Council's report was adopted, the censors for the year were elected, and Dr. Thos. Stevenson, F.R.C.P., delivered the annual presidential address.

PARLIAMENTARY NOTES.

Petitions in favour of an amendment of the law relating to food adulteration continue to arrive from the villages of England at the average rate of three a day, but the Government has not yet produced its Food and Drugs Bill. Failing this, Mr. Kearley brought in his remedy on Wednesday evening entitled a "Bill to consolidate and amend the law relating to the sale of food and drugs." The measure made a trial trip last session.

The Cost and Administration of the Science and Art Museums is to engage the attention of a re-constituted Select Committee, consisting of Lord Balcarres (Chorley), Mr. Bartley (N Islington), Sir M. Bhownaggree (N.E. Bethnal Green), Mr. J. Burns, Dr. Farquharson, Mr. Daly (Monaghan), Sir John Gorst, Mr. E. Gray (N. West Ham), Sir H. Howorth (S. Salford), Mr. Humphreys-Owen (Mont.), Mr. Kenrick (N. Birmingham), Mr. Platt-Higgins (N. Salford), Sir Francis Powell (Wigan), Mr. Woodall (Hanley), and Mr. Yoxall (W. Nottingham). If there be abuses in the administration of the Museums coming within the scope of the inquiry, such a Committee may be depended upon to uncarth them, and that is half-way towards removing them.

The Versatility of Dr. Tanner is distinctly Hibernian. His quick changes from "Grave to gay; from lively to severe" may be envied but never imitated. Only the other night the exuberance of his spirits found playful expression in shouts of "Vive la France," and now he has placed upon the notice paper a question purely professional and severely scientific. He proposes to ask the Home Secretary (who, by the way, is the wrong official to ask) whether the calf lymph now used for vaccination is prepared with glycerin, and whether the Government is keeping its eye on the German Commission appointed to investigate the germicidal action of glycerin. It will occur to most people that the Hon. Member for Mid Cork appears to better advantage in these medico-chemical questions than he does in pronouncing benedictions on the Queen's enemies. In dealing with the question of the efficacy of glycerinated lymph, Dr. Tanner will find ample support on both sides of the House, from Sir Walter Foster and Sir W. Priestley downwards.

The Pharmacy Bill, 1898, was duly launched on Thursday by Mr. W. F. D. Smith and the supporters mentioned last week. The second stage of its parliamentary life is, we hope, being inaugurated as this page goes to press. The President, in his remarks to the Council on Wednesday, pretty fully indicated the chances of the measure becoming law, and little more need be said now. The tacit approval of His Grace the Lord President of the Privy Council should make it possible for all opposition to be withdrawn, for it is a fact that what opposition has been manifested has chiefly arisen from the fear that the Bill might indirectly lower the educational standard of the examinations. But that fear may be dismissed as "infinitesimal" if the Privy Council cannot appreciate it.

Carbolic Acid and its unrestricted sale is to the fore again. This time it is Mr. Sam. Woods, the representative for the Walthamstow division of Essex, who raises the question, and he seems particularly well informed of the efforts made by the Pharmaceutical Society to move the Privy Council to schedule the article. He will ask the Home Secretary on Tuesday next whether he is aware that the deadly acid is sold in mineral water and other bottles without a poison label; and whether it is a fact that the Pharmaceutical Society recommended to the Privy Council in 1882, 1886, and 1888 that carbolic acid should be scheduled as a poison. The question is very pertinent thus far, but Mr. Woods proposes to further ask whether the Government will give early effect to the promise of the Privy Council in the matter; and we are at a loss to comprehend to what promise the honourable member refers. Certainly the Pharmaceutical Society has never been able to extract anything approaching a promise, nor was Mr. Macdona more successful. Considerations of public policy demand that some action should be taken to stop the reckless distribution of so potent an article. Chemists who are entrusted by the Legislature with the retailing of legal poisons are particularly anxious to know what that action will be.

Merchandise Marks Amendment.—The Bill to remove some of the unexpected evils of the 1887 Act, and to set upon its legs again the British carrying and transit trade is now waiting its chance of second reading. It bears the names of three Liverpool M.P.'s, Mr. C. M'Arthur, Mr. Drage (Derby), and Mr. J. Samuel (Stockton). Its chief object is to preserve from detention and Customs examination imported goods which are not intended for home consumption but are merely brought here for the purpose of being forwarded to other countries. That object is to be effected by removing from the operation of the Merchandise Marks Act, 1887, all imported goods which, in transit to places outside the United Kingdom. The exemption is to apply not only to goods entered for trans-shipment, but also to those entered for home consumption, though intended for re-shipment. In the latter case, however, the Customs must have notice and satisfactory evidence of the *bonâ fides* of the transaction. The Customs commissioners are to be authorised to make the necessary rules and regulations for carrying the intention of the Bill into effect, provided always that such working details be approved by the Treasury. One curious clause gives a suspicious trader, who may have ground for imagining that his trade mark is being infringed, power to require a Customs examination of the suspected goods, but if, in the result, he is proved to have been mistaken, he becomes liable for any damage occasioned by or in consequence of the detention and examination of the goods. The privilege would seem to be of doubtful practical utility.

The Metric System for Pharmacists

THE following table of equivalents is supplementary to that giving the equivalents of measures of volume, which was published last week (see pp. 211-2). Whilst, however, the former table commenced with the equivalent in minims of the litre and gave special prominence to the fluid ounce and its subdivisions, in the present instance the equivalents in fluid grains and millilitres are given for the number of minims in the fluid ounce and smaller quantities, down to one minim.

Equivalents of Measures of Volume.

Imperial Measure.		Metric Measure.	Imperial Measure.		Metric Measure.
Minims.	Fluid Grains.	Millilitres.	Minims.	Fluid Grains.	Millilitres.
480 [1 ℥	437.5	28.412	270	246.1	15.982
472.9	431.1	28	261.8	238.7	15.5
470	428.4	27.821	260	236.9	15.390
464.5	423.5	27.5	253.4	230.9	15
460	419.3	27.228	250	227.9	14 798
456.1	415.7	27	244.9	223.3	14.5
450	410.2	26.637	245	223.3	14.502
447.6	408.1	26.5	240 [4 ℥	218.8	14.206
440	401.1	26.045	236.5	215.5	14
439.2	400.3	26	235	214.2	13.910
438.8	400	25.974	230	209.6	13.614
430.8	392.7	25.5	228.1	207.9	13.5
430	391.9	25.453	225	205.1	13.318
422.4	384.9	25	220	200.6	13.022
420 [7 ℥	382 8	24.861	219.6	200.5	13
413.8	377.3	24.5	219.4	200	12.987
410	373.7	24 269	215	195.9	12.726
405.4	369.2	24	211.2	192.5	12 5
400	364.6	23 677	210	191.4	12.430
397.1	361.9	23.5	205	186.8	12.134
390	355.5	23.085	202.7	184.6	12
388.6	354.2	23	200	182 3	11.838
383.9	350	22.728	195	177.8	11.542
380.1	346.5	22.5	194.3	177.1	11.5
380	346.3	22.494	190	173.2	11.247
371.7	338.5	22	185.8	169.3	11
370	337.2	21.902	185	168.6	10.951
363.2	331.1	21.5	180 [3 ℥	164	10 655
360 [6 ℥	328.1	21.309	177.4	161.6	10.5
354.8	323.3	21	175	159.5	10.359
350	318.9	20.718	170	154.9	10.063
348.3	315.7	20.5	168.9	153.9	10
340	309.9	20.126	164.6	150	9.740
337.9	307.9	20	165	150.4	9.767
330	300.8	19.534	160.5	146.3	9.5
329.3	300.3	19.5	160	145.8	9.471
329.1	300	19.481	155	141.3	9.175
320 9	292.5	19	152	138.5	9
320	291.6	18.942	150	136.7	8.879
312.4	284.9	18.5	145	132.2	8.582
310	282 5	18.350	143.6	130.9	8.5
304	277	18	140	127.6	8.287
300 [5 ℥	273.4	17.758	135.2	123.2	8
295.6	269.5	17.5	135	123	7.941
290	264 3	17.166	130	118.5	7.695
287.2	261.8	17	126.7	115.5	7.5
280	255.2	16.574	125	113.9	7.399
278.7	254.1	16.5	122.5	111.6	7.251
274.3	250	16.234	120 [2 ℥	109.4	7.103
270.3	246.4	16	118.3	107.8	7

Equivalents of Measures of Volume.

Imperial Measure.		Metric Measure.	Imperial Measure.		Metric Measure.
Minims.	Fluid Grains.	Millilitres.	Minims.	Fluid Grains.	Millilitres.
115	104.8	6.807	20	18.2	1.184
110	100.3	6 511	19.8	18	1.180
109.8	100.2	6.5	19.4	17.7	1.15
109.7	100	6.494	19	17.3	1 125
105	95.8	6.215	18.6	17	1.1
101.4	92.3	6	18	16.4	1.066
100	91.2	5.919	17.7	16	1.050
98.7	90	5.844	17	15.5	1.006
95	86.6	5.624	16.9	15.4	1
92.9	84.6	5.5	16.5	15	0.974
90	84	5.327	16.1	14.6	0.95
87.8	80	5.195	16	14.5	0.947
85	77.5	5.031	15.5	14	0.918
84.5	76.9	5	15.2	13.9	0.9
80	72.9	4.735	15	13.7	0.888
76.7	70	4.546	14.4	13.2	0.85
76	69.3	4.5	14.2	13	0.839
75	68.4	4.439	14	12.8	0.829
70	63.8	4.143	13.6	12	0.8
67.6	61.6	4	13	11.9	0.769
65.8	60	3.896	12.7	11.6	0.75
65	59.8	3.847	12	11	0.710
60 [1 ℥	54.7	3.552	11.8	10.7	0.7
59.1	53.9	3.5	11	10.1	0.65
55	50.1	3.256	10.9	10	0.649
54.9	50	3.247	10.1	9.2	0.6
50.7	46.2	3	10	9.1	0.592
50	45.6	2.959	9.9	9	0.590
49.4	45	2.922	9.3	8.5	0.55
45	41.1	2.664	9	8.2	0.533
43.8	40	2.597	8.8	8	0.520
42.2	38.5	2.5	8.5	7.7	0.5
40	36.5	2.368	8	7.3	0.474
38.4	35	2.273	7.6	7	0.45
35	31.9	2.072	7	6.4	0.414
33 8	30.8	2	6.8	6	0.4
32.9	30	1.948	6	5 5	0.355
32.1	29.3	1.9	5.9	5.4	0.35
30.4	27.7	1.8	5.5	5	0.325
30 [1 ℥	27.3	1.813	5.1	4.7	0.3
29.6	26.9	1.75	5	4.5	0.296
28.7	26.2	1.7	4.4	4	0.259
27·4	25	1.623	4.2	3.8	0.25
27	24.7	1.6	4	3.7	0.237
25.3	23.1	1.5	3.4	3	0.2
25	22.8	1.479	3	2.7	0.178
24	21.9	1.421	2.5	2.3	0.15
23.7	21.6	1.4	2 2	2	0.130
23	20.9	1.361	2.1	1.9	0.125
22	20.1	1.3	2	1.8	0.118
21.9	20	1.299	1.6	1.5	0.1
21.1	19.3	1.25	1.1	1	0.065
21	19	1.243	1	0.9	0.059
20.3	18.3	1.2			

CORRECTIONS TO PREVIOUS TABLES.

Page 209, col. 1, line 24, read "1 Mile = 1,609,342.6 Millimetres."
Page 209, col 1, line 26, read "1 Grain = 0.0648 Gramme."
Page 209, col. 2, line 15, read "Inches × 0.0254 = Metres."
Page 211, col. 1, line 54, read "77.2" Grains, *not* "74.2."
Page 211, col 2, line 21, read "Fluid Grains" as "Imperial Measure."
Page 212, col. 1, line 2, read "Fluid Grains" as "Imperial Measure."
Page 212, col. 1, line 50, read "437·5" Fluid Grains, *not* "435.7."
Page 212, col. 1, line 57, read "14.798" Millilitres, *not* "14.394."

PHARMACEUTICAL JOURNAL.

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THE COUNCIL MEETING.

At the opening of the meeting last Wednesday the President read a note from Mr. Harrison, of Sunderland, apologising for his absence on account of a severe cold. After the minutes of the previous meeting had been read and confirmed, mention was made of a letter received from Mrs. Giles acknowledging the sympathy expressed by the Council with herself and family on their recent bereavement. In referring to the death of Mr. Glaisyer, of Brighton, the President said the Society had lost another of the few remaining founders, who had been a member of the Council in 1843, and was, like many others who took interest in the establishment of the Society, a member of the Society of Friends.

The additions to the Society comprised 5 members, 19 associates, and 44 students.

The report of the Finance Committee recommended the payment of the usual monthly expenses, but it contained no special feature except the statement of outlay in connection with the Society's premises in Edinburgh. In reference to that matter the President spoke approvingly of the great care that had been exercised by the Executive of the North-British Branch and of the endeavour made to promote the best interests of the Society. The fitting of the new premises was not yet complete in all its details and some further expenditure would have to be made in order to provide suitable accommodation for the assistant Secretary and the museum. Before putting the motion for adoption of the report, mention was made of the receipt from Mr. George Maw of a further donation of one hundred guineas to the Benevolent Fund, bringing his contributions up to the sum of £525.

The report of the Benevolent Fund Committee recommending the payment of four grants, amounting in all to thirty-seven pounds, was adopted without discussion on the motion of Mr. Bottle, as acting Chairman of the Committee. Incidentally Mr. Bateson drew attention to some anomalous cases of application for relief. Mr. Carteighe also expressed a hope that the Committee would consider how far the fact of applicants being able to earn a little should be an absolute bar to the grant of aid from the Fund. He expressed the opinion that the generous response made to applications for support should be an encouragement to the Committee to widen its action towards those who were not absolutely destitute as being the best form of benevolence, and, while advocating boldness in that respect, he at the same time felt deeply grateful for the care exercised by the Committee in the administration of the Fund. Dr. Symes said he thought Mr. Carteighe's remarks might be misunderstood as reflecting on the Committee, but Mr. Atkins took a different view, and as a member of the Committee, wished to thank Mr. Carteighe for his expression of confidence. Mr. Southall said a Committee might naturally get into a groove and tend to be too careful of money that was not its own. Dr. Symes disclaimed any intention beyond that of preventing a wrong impression being formed. The President said Mr. Southall had anticipated him in suggesting that the Committee might want a little support towards spending money more freely by helping any case where there was occasion to do so. Mr. Hampson fully endorsed the hint given by Mr. Carteighe and reaffirmed by the President, and he took the opportunity of referring incidentally to the possibility that the generous help accorded to the Fund might lead to abolition of unnecessary strife in obtaining a position at the poll, believing that any temporary diminution of the Fund would be made up for by the spontaneous liberality of those who had hitherto sustained it so well.

On the presentation of the report of the Library, Museum, School, and House Committee it was resolved that the annual meeting of the Society should be held at 12 o'clock on Wednesday, May 18. The preparation of the annual report of the Council was also referred to this Committee.

On the motion of the President divisional secretaries were appointed for North Islington, Haggerston, West St. Pancras, and Wandsworth.

The President then gave a statement of the position of the Pharmacy Acts Amendment Bill, which was introduced last Thursday by the Hon. W. F. D. Smith and read a first time, the second reading being fixed for Thursday, the 3rd inst. Further resolutions in support of the Bill have been received from the Midland Pharmaceutical Association, the Midland Chemists' Assistants' Association, the Western Chemists' Association (of London), the Derby and District Chemists' Association, and the London Chemists' Assistants' Association, all expressing hearty approval of the amendments to be effected by the Bill. It is endorsed by Mr. Brodie Hoare, Dr. Farquharson, Mr. Boulnois, Mr. T. Shaw, Mr. Brookfield, Mr. Kearley, and Mr. Schwann, and in communicating with Members of Parliament in the lobby of the House the President has met with expressions of much interest in the measure. That was also expressed in a letter just received from an eminent Member of Parliament, who said he should be truly glad to have a hand in anything to benefit chemists, for whom he had great admiration and gratitude. The President added that he was much impressed with the very general support given to the Bill by pharmaceutical chemists, and by chemists and druggists in every part of the country, and he wished to take that opportunity of expressing on behalf of the Council and himself a sense of the loyalty shown by friends in the country, and

appreciation of the unprecedented unanimity manifested by them in promoting the progress of the Bill. He also added, on behalf of the Secretary, that he had received such a large number of letters giving proof of approval and practical support as to make individual reply to them impossible, and therefore he wished to make the acknowledgment of them through him.

In regard to the suggestion that the effect of the Bill might tend to lower the standard of qualification, the President has asked for the opinion of the Privy Council on that point, with the satisfactory result that His Grace the Lord President saw no objection to the proposed provisions. In conclusion, the President earnestly appealed to all members of the craft to recognise the fact that there was no evidence of any objection to the Bill, with the exception of a few chemists in one district, and he expressed a hope that, even in that case, personal views would be laid aside in order that all might show a united front, and work hand in hand for the common good.

Dr. Symes recalled the motion brought forward by him in reference to the incidence of the Medicine Stamp Duty, which was referred to the Law and Parliamentary Committee, and also drew attention to the article in last week's Journal on this subject, as showing that matters connected with the business of chemists and druggists received consideration. The President hoped the article would be read, though he was compelled to say that on getting to the end of it no great advance might have been made.

THE PHARMACY BILL.

At the moment of going to press several communications have been received from local secretaries reporting the very satisfactory results of their applications to Members of Parliament in reference to the Pharmacy Acts Amendment Bill. While regretting that neither time nor space admit of the publication of all these letters we take this opportunity of expressing thanks for the trouble taken in bringing the objects of the Bill under the consideration of Members of Parliament. That there is necessity for that being done is evident from the references to the Bill which have appeared in the newspapers. In almost every instance there appears to have been a want of due appreciation of the strangely anomalous position now prevailing as to British pharmacists who have become qualified by examination since a statutory qualification was established in 1868. The achievement of that result was the outcome of many years' strenuous effort on the part of the Pharmaceutical Society, and it necessarily involved the registration of all chemists and druggists then in business, as well as their admission to membership of the Society. But, as *les absents ont toujours tort*, those who have since complied with the provision of the Act of 1868, as to proving their qualification to practise pharmacy, were not equally considered—they were not then in existence, and so it happens that while the examined chemist and druggist cannot become a member of the Pharmaceutical Society, those whose claim to registration rests solely on the fact that they were in business before 1868 can become members. Without instituting any invidious comparison between the two, the obvious injustice and even absurdity of the position only requires to be made clear in order to show that the provision of the third clause of the Bill now before the House is really necessary.

ANNOTATIONS.

The Metric Equivalents published last week, though correct throughout when passed for press, are not uniformly so in the printed copies, the reason being that in printing the exceptionally large issue of the Journal, considerable difficulty appears to have been experienced by the printer in dealing with the tables of figures given on pages 209 to 212, on account of the tendency of the figures arranged in tabular form to drop out of their places. Though the machines were stopped several times during the operation of printing in order to check this tendency, a number of errors crept into the printed copies which did not exist in the proofs when passed by the Editor. A list of such errors is given this week (see p. 240) and the Editor, while expressing his thanks to those readers who have pointed them out, requests that any others that may be detected may be promptly notified to him, as it is proposed to reprint the tables when completed in a more convenient form for reference.

Of the Letters on the Metric System, those by Mr. Matthews and Mr. Perrédès, possess a special value as showing the interest taken by those who are now students in matters that will affect them later in the course of their daily business; Mr. Catford—with others who may hold similar erroneous views to those expressed in his closing remarks—is strongly recommended to study Mr. Matthew's letter very carefully. There is no need for any confusion whatever, if it be borne in mind that in determining the equivalents, as explained last week, the mass of water contained in the litre at 4° C. is compared by the authorities with the mass contained in the gallon at 16° 667 C. (62° F.). This procedure necessarily involves a difference between the equivalents of metric weights and those of metric measures, expressed in terms of imperial weights or measures and the reverse. This difference is proportionate to the difference between the density of water at 4° C. and at 62° F. It amounts in the case of the kilogramme (=15432·4 grains) and the litre (=15398·3 grains or grain measures) to 34·1 grains (=2·213 millilitres), or practically one grain in each fluid ounce. For ordinary practical purposes, this is a difference of no real importance, and it may therefore be ignored.

The Pharmacy Bill continues to attract the sympathy of Members of Parliament, and, at the same time, leading newspapers all over the country have a word in its favour. At the head of the list comes the *Daily News*, with an appreciative reference to the proposal contained in the Bill, and the only objection that can be taken to this is that the writer has not given sufficient prominence to the main point—the injustice of preventing fully examined men from becoming Members of the Society, when so large a number of unexamined persons can legally claim that privilege. The *Echo* also publishes a brief but accurate summary of the Bill, and prominent amongst provincial papers that deal with the matter is the *Western Daily Press*. The last named organ also insists that, sooner or later, some Bill should be submitted to Parliament with the view of more adequately regulating the sale of poisons, but for the present it must suffice to provide for the internal organisation of legally qualified chemists and druggists that is so urgently called for, and for their adequate representation through the Pharmaceutical Society.

The Court of Reference proposed in Mr. Kearley's Sale of Food and Drugs Bill of last year is not to be regarded as what is ordinarily understood by "Court," according to the President of the Society of Public Analysts, a letter from whom is published at

page 253. But neither was there any misapprehension of the kind suggested on our part. The point to which objection was taken is that the proposed Court of Reference—which is intended to be "A Board or Standing Committee possessed of functions advisory and legislative"—is intended to include two nominees of the Society of Public Analysts. Now, if public analysts generally would restrict themselves to their proper function, that of analysing samples taken under the provisions of the Sale of Food and Drugs Acts, and not go out of their way to suggest what samples should be taken, or in any other way act as directors of prosecutions, there would be little reason to object to this proposal. So long, however, as the practice objected to continues to prevail, strenuous opposition may be looked for. And, in any case, one nominee of the Society of Public Analysts should be quite enough.

The Letter from Mr. Jeeves probably explains his position as well as any written communication could do, and it is satisfactory to find that he was only posing as a candid friend on a recent occasion. He is wrong in assuming, however, that the criticism offered in these pages was based on anything but what he was reported to have said. What appeared to be a full copy of the paper was sent to the Journal, and on that full copy the remarks to which Mr. Jeeves objects were based. We still fail to recognise that, as regards quality, a pharmacist working in a factory is capable of turning out better products than he whose sphere of labour is an ordinary pharmacy. The advantage of factory-made medicine is merely that of cheapness, and when, as is often the case, the factory-hand is not a properly trained pharmacist, the comparison ought to be still more in favour of the home-made product. "Space, machinery, and general facilities" are nothing as compared with an individual guarantee, and that cannot be given by any wholesale maker of capsules, tablets, or plasters.

The Chemists of Plymouth and District are anxious to entertain the British Pharmaceutical Conference once more, and for some time past they have been busily engaged in securing promises of support locally. As a result, a guarantee fund has already been formed, and a formal invitation for the Conference to visit Plymouth next year was received at a meeting of the Executive Committee held on Wednesday afternoon. The invitation must, of course, be submitted to the members at the Belfast meeting, but our Plymouth friends are exceedingly sanguine of the result, and feel that the preliminary arrangements cannot be made too early.

The Chemists' Assistants' Association is holding its twentieth annual dinner as we go to press, with the President, Mr. T. Morley-Taylor, in the chair, supported by several distinguished guests, including Mr. Walter Hills, President of the Pharmaceutical Society, Sir Dyce Duckworth, Mr. Michael Carteighe, and many other friends of the Association. The Nottingham and Notts. Chemists' Association will hold its annual dinner on Thursday next, March 10; and on the following Wednesday, March 16, the Bristol Pharmaceutical Association will follow suit. The President of the Pharmaceutical Society is amongst the visitors expected at Bristol on that occasion. The dinner of the Liverpool Chemists' Association is fixed for Thursday, March 17.

A New Type of the Phonograph has recently been on exhibition in London, and it would appear that the difficulties in the way of the instrument becoming useful for commercial and general purposes have now been overcome. The new phonograph is simple and substantial in structure and not expensive, costing as it does about five guineas, whilst the sounds are reproduced with clearness at a speed under the control of the operator. The wax cylinders are capable of recording nearly two thousand words, and the record may be effaced by means of a shaving attachment on the machine, so that a single cylinder is available for sixty or seventy records. The machine weighs less than nine pounds, and may be handled freely without risk to the mechanism. Phonograph records were formerly limited in number, and could only be made by the person whose voice or musical performance it was desired to reproduce. These limitations have now been removed by the application of a very simple process, the cylinder with the original record being placed on the machine, and a tracer passed over the indented lines, which communicates its motion and direction to a second tracer upon a new cylinder, and in this manner a duplicate of the original record is produced.

An Ingenious Fraud has been exposed by a Dundee chemist, in connection with the sale of a so-called "aluminium tincture." Cornelius De Vries, *alias* Henrick Mulern, stated to be a traveller, was charged before Hon. Sheriff-Substitute Paul at Dundee, on Thursday, February 24, with defrauding the public by selling as "aluminium tincture" a preparation of nitric acid, mercury, and potassium bichromate. In pursuance of his ingenious scheme he entered the shop of a chemist and pretended that he was the agent for the firm of De Vries, on whose behalf he was selling a preparation which was manufactured at Schaffhausen, Switzerland, and contained aluminium in solution. The liquid was recommended for silver-plating (*sic*) brass and other metals. The chemist was induced to purchase a dozen bottles of the preparation, and on the fraud being detected, it was found that the defendant had foisted the composition on eleven other persons—chemists and ironmongers. After considerable evidence had been given in support of the charges, defendant was fined £2 or in default thirty days' imprisonment.

Mr. A. H. Ross, senior dispenser at Dundee Royal Infirmary, who has intimated his resignation after occupying the position for fully four years, during which he has had sole charge of the dispensary, was the first to take a skiograph of the human body, and that achievement was taken special notice of by the leading medical journals. A skiograph of the human hand sent to us by Mr. Ross is the finest specimen of the kind we have yet seen, all the blood-vessels being shown, even more distinctly than the bones. Mr. Ross, who is about to start business on his own account, served his apprenticeship with Mr. James Ford, chemist, Kirriemuir, and afterwards studied at the South London School of Pharmacy, where he gained certificates of honour for chemistry, pharmacy, and materia medica. During the time he has been dispenser at the Infirmary Mr. Ross has proved himself an accurate and reliable chemist, and he has manifested a keen interest in microscopy and photography generally. His departure from the Infirmary will be regretted by the members of the staff generally.

The Pharmaceutical Society will hold an evening meeting at 17, Bloomsbury Square, London, on Tuesday next, March 8, when a paper on "The Pharmacy of Cantharides" will be contributed by Professor H. G. Greenish, F.I.C., F.L.S., and Mr. Harold Wilson; and the Curator, Mr. E. M. Holmes, F.L.S., will exhibit and describe some recent additions to the Museum. The chair will be taken by the President at eight o'clock precisely On the following day, at 11 a.m., there will be a preliminary meeting of the Society's House, of those interested in the annual dinner of the members of the Pharmaceutical Society and their friends.

Pharmaceutical Transactions.

CHEMISTS' ASSISTANTS' ASSOCIATION.

This Association met on Thursday, February 24, at 73, Newman Street, W., Mr. George Roe, Vice-President, in the chair. Mr. T. Morley-Taylor, the President, having written expressing his regret at not being able to be present to open a discussion on "Trades Unionism in Pharmacy" as announced, the Chairman asked Mr. Charles Morley, ex-president, to open a discussion on

The New Pharmacy Bill.

Mr. Morley said that as the Pharmacy Acts Amendment Bill was about to be brought before Parliament, it had been thought that the Association ought to put on record its opinion of the same in the form of a resolution, to be submitted to the Council of the Pharmaceutical Society. Having read the Bill, Mr. Morley proceeded to give his views of the matters affected by it. There was, he thought, only one clause that would excite the interest of the meeting, and that was Clause 3, whereby all registered chemists and druggists become eligible for membership of the Pharmaceutical Society, with all the rights and privileges of the pharmaceutical chemist, with the exception of exemption from jury service and the title of Ph.C. He believed the promoters of the Bill were actuated by a desire to

Remedy a Long-Standing Injustice

to the chemists and druggists who, while by law considered to be capable of looking after the interests of the public, have not been recognised and allowed to be capable of managing their own affairs on the Council of the Pharmaceutical Society. True, certain chemists and druggists in business before the passing of the 1868 Act were eligible for election to the Council, but they at the present time only represented about one-third of the total number on the Register, and were gradually dying off. He, as a pharmaceutical chemist, had always thought it to be a great injustice that the registered chemist and druggist who has passed the Minor examination, and paid his guinea to the Society, should not be entitled to full representation on the Council. It might be said that the Minor man could have the privileges of membership by passing the Major examination, but they must take into consideration the fact that frequently, owing to the exigencies of circumstances at the time of passing the qualifying examination, many men were prevented from going on to the higher examination, and afterwards were unable to go in for it. Mr. Morley then dealt with some of the objections that have been raised to the Bill by Major men, who ask, Why they should have been induced to pass the higher examination with the promise held out to them that by so doing they would have certain special privileges, and then afterwards break faith with them by offering to the men who have only passed the Minor examination the same privileges with the exception of jury service? Against that he wished to point out that they still had the distinct title Ph.C., which remained quite intact. Then there was the question of M.P.S. *versus* A.P.S. Under that head it would be well to ascertain how the trade discriminate between the two, and they must all acknowledge that the pharmaceutical chemist must be a man who has passed an examination that is beyond the chemist and druggist examination and he would get due regard for that fact. With respect to the public discrimination there was probably none at all. So long as the "man in the street" got what he wanted, Mr. Morley thought that was all he cared for, and it made not the slightest difference to him whether the chemist was a Major or a Minor man.

The Superiority of the Major Man

had been mentioned in some quarters, and he (Mr. Morley) thought there was a good deal of nonsense going about with respect to that. Some pharmaceutical chemists seemed to have put on a kind of glorified superiority in virtue of the fact that they have passed an examination the Minor man has not. After all, the difference between the two examinations was so small that there was almost no inequality, the Minor man being quite as capable of looking after the interests of the craft as the Major man, and he thought the discrimination between the two should not exist to the extent it does, because to all intents and purposes the chemist and druggist is as capable a man as the pharmaceutical chemist. Another objection that had been brought against the Bill was one which he might term

The Education Bogey,

and he thought a more belated fallacy had never been brought forward than that suggested by some who were of opinion that if the Bill was passed into law it would prevent men from going in for the Major examination. If there was one watchword of the present time it was "Education," and even if the Council of the Society should consist of a majority of chemists and druggists, he had sufficient faith in them as being an intelligent body of men to believe that they would not be left behind in the struggle now going on for a good sound education, and that they would keep up the standard of pharmaceutical education. There was an idea said to be prevalent amongst members of the Council that the Major examination should finally be abolished. Well, he did not think that there could be any very great objection to that, because the Minor examination, instead of being lessened in stringency, would rather be increased to the present standard of the Major.

Another Object of the Bill

that he wished to draw attention to was the consolidation of the Society by the enrolling of a large number of chemist and druggist members. The point he desired to emphasise was that at present the Society does not represent a fair proportion of the trade, and if they wished to get further legislative powers, it was necessary that it should represent a fair proportion of those on the Register. Therefore, if for no other reason, he thought the Bill should be passed. Before closing he could not help expressing his surprise at the hostility of certain pharmaceutical chemists to the Bill. He thought it had been prompted by a most niggardly and narrow-minded spirit, and was of opinion that they, as pharmaceutical chemists, could well afford to wait, and any little ideas of resentment should be put in abeyance for the time being, in order to make a united effort to bring about the consolidation of the Society. He therefore had great pleasure in proposing the following

Resolution.

> That in the opinion of this meeting of the Chemists' Assistants' Association the proposed Pharmacy Acts Amendment Bill as drafted by the Council of the Pharmaceutical Society is calculated to serve the best interests of pharmacy by the establishment of a more efficient union amongst registered members of the trade, and this meeting hereby cordially supports the same.

—Mr. F. W. Gamble, Hon. Secretary, had great pleasure in seconding the proposition. He had not gone very deeply into the question of pharmaceutical politics, but from what he had read of the Bill he had come to the conclusion that it was calculated to carry out the objects mentioned in the proposed resolution. He believed the Bill would have a tendency to bring a larger number of chemists and druggists into the ranks of the Society, and would thus put a greater power into the hands of the Society, inasmuch as it would then represent a much larger portion of the trade.—The Chairman said they were very much indebted to Mr. Morley for the careful way in which he had gone into the question before the meeting. Undoubtedly the Pharmaceutical Society was actuated by the desire to consolidate its ranks, so as to have more power when bringing any other Bills before Parliament. He certainly was of opinion that it was only doing justice to the chemists and druggists, who formed the majority of those in business, that they should have the opportunity of taking a part in the management of the affairs of the Society. With regard to the supposed injustice to the pharmaceutical chemists, he could not see how they were wronged by the Bill, because they retained their distinctive title, Ph.C., and as for the title M.P.S., he did not think that the general public distinguish between associates and members of the Society.—Mr. F. A. Hocking said that although not a member of the Association, the President, Mr. Taylor, had invited him to be present to express his views of the proposed Bill. He then proceeded to criticise the remarks of Mr. Carteighe, printed on page 51 of the *Pharmaceutical Journal*, with reference to the degree of B.Sc. Mr. Carteighe was alleged to have stated that the degree of B.Sc. was simply an indication of education in a certain direction, and that a man could be B Sc. and at the same time not be a good pharmacist. These remarks he (Mr. Hocking) took to apply to himself, or rather to the class to which he belonged. He considered there were also

Three Fallacies

put forth by Mr. Carteighe, the first being with respect to asso-

ciateship, which was said to indicate youth or incompleteness. He thought Mr. Carteighe was guilty of non-observation in not becoming acquainted with the fact that associateship of the Royal Academy, Royal Institute of British Architects, and several other societies does not convey an impression of youth or incompleteness. The second fallacy had to do with the title "Fellow," and he wished to ask if there were not two grades in the Royal College of Physicians and the Royal College of Surgeons, and if the "Fellows" of either College are not considered to be far superior to "Members." In the same way he considered that a pharmaceutical chemist is a far superior man than a chemist and druggist, and is therefore entitled to a higher grade in the Pharmaceutical Society, viz., "Fellowship." The intentions of the founders of the Society had been referred to by some, but he did not see how they could be binding on the pharmacists of to-day. The third fallacy was in respect to

The Strength of the Society.

which it was supposed would be improved by the Bill. This supposition he held was not based upon proof, and he called for proofs. He then dealt with the number on the Register of Pharmaceutical Chemists and Chemists and Druggists. There were, he said, over six hundred pharmaceutical chemists at present outside the Society, and he wished to know how they were to be brought in by the proposed Bill. Then they had over three thousand chemists and druggists who by virtue of their being in business before 1868 were entitled to membership of the Society, but only one out of six of these was connected with the Society. Why did the other five not join? and would they if the Bill was passed into law? He did not think so, seeing that for the last thirty years they have had the opportunity of becoming members of the Society and to enjoy all the privileges therewith, but had not considered it to their interest to join. It seemed to him that these were the very men required to strengthen the Society. Then, of the nine thousand odd who have passed the Minor examination, over three thousand were outside the Society. Would these become members if the Bill became law? From what he could learn by inquiries amongst them, he did not think they would. The pharmaceutical chemists he considered had not been treated fairly by the Council of the Society. He understood the Bill had been submitted to certain associates of the Society before it was brought out, and he was of opinion it should first have been submitted to pharmaceutical chemists. Not being a member of the Association, he could not move an amendment to the motion before the meeting, but he would like them to consider whether those outside the Society at present were likely to be brought in by the proposed Bill or not.—Mr. W. Roberts, who also was not a member of the Association, desired to express his views of the Bill. He was most decidedly opposed to it, as he did not consider it a fair one to the Major men, who all along had been the friends of the Society. He was, however, in favour of the Minor men being eligible for the Council, but not so as to be in a majority. —Mr. Pickering wished to support the motion in favour of the Bill, although in his opinion it did not go far enough; still it was a step in the right direction. The Society should have more members of the trade supporting it, but he did not think the *modus operandi* of the Council was exactly the right way to bring that about. To him the only way of consolidating the trade into one united body seemed to be that every man who passed the Minor examination should be granted his certificate on the condition that he became attached to the Society.—Mr. E. W. Hill said they were very much indebted to Mr. Hocking for the masterly way in which he had laid his case before them. He however believed Mr. Hocking did Mr. Carteighe an injustice with reference to his remarks concerning the degree of B.Sc. His opinion was that Mr. Carteighe meant there was a possibility of a B.Sc. being an inferior pharmacist, just as a pharmaceutical chemist might possibly be inferior to a Minor man. He did not think it was

A Question of Education

that had influenced the Council in bringing forward the Bill under discussion, but rather because in these democratic days it was considered only right and proper that a man who has become qualified by law should have a voice in the management of affairs affecting himself. He had every confidence in the men who would be elected to the Council, however, to believe that they would endeavour to make future pharmacists as competent as possible; therefore he had much pleasure in supporting Mr. Morley's motion. —Mr. J. C. Strother thought it was very regrettable that in days gone by a Bill was not brought forward including a provision dealing with

One Man, One Pharmacy,

then all the present-day trouble would have been wiped out.—Mr. G. E. Pearson was of opinion that if pharmaceutical chemists had the interests of the Society at heart, they would not object to chemists and druggists becoming members, because by admitting them to membership the Society would be strengthened and they themselves would therefore gain a greater advantage by having more power when dealing with any question affecting the craft.—Mr. Morley having replied, the motion was put and carried *nem. con.*

PUBLIC DISPENSERS' ASSOCIATION.

The first meeting of this newly-formed Association was held in the Bloomsbury Hall, Hart Street, W.C., on Friday, February 25, the Chairman of the Association, Mr. R. Welford, Colney Hatch Asylum, presiding, there being a moderate attendance.—The Hon. Secretary, Mr. G. F. Forster, read letters from Mr. Walter Hills, President of the Pharmaceutical Society; Mr. Michael Carteighe, Dr. A. P. Luff, and several other gentlemen, who, while regretting their inability to be present at the meeting, expressed their entire sympathy with the

Objects of the Association,

which are:—

1. To protect and further the interests of public dispensers and generally to improve their position.
2. To provide basis for consultation and united action in all cases of difficulty arising out of the nature and in the discharge of their duties.
3. To secure adequate remuneration for dispensers, and generally raise their status.
4. To hold meetings, institute lectures and demonstrations, promote discussions, and increase practical and theoretical knowledge of subjects pertaining to the calling.
5. To promote occasional social and pleasant evenings for members and their friends.

The Rules of Constitution

are (1) that "the Association shall consist of members and honorary members," (2) that "all duly qualified public dispensers shall be eligible," (3) that "the subscription for members shall be two shillings and sixpence per annum, payable by cash or postal order, on the 1st day of January in each year, to the Treasurer, Mr. S. B. Donnan, 28, Goring Road, Bowes Park, New Southgate, N."—The preliminary business having been despatched, the Chairman called upon Dr. H. Macnaughton-Jones to deliver the inaugural address.—Dr. Jones, on rising, was accorded a most hearty reception, and he at once proceeded with a somewhat lengthy but deeply interesting address, delivered with characteristic vigour, on

The Dispenser's Art: Its Demands, Claims and Responsibilities.

At the close of the address, which is printed at page 233, Mr. W. E. Miller (Vice-Chairman), St. Pancras, moved a vote of thanks to Dr. Macnaughton-Jones for his great kindness in coming to address the Association. He was sure they all owed him a deep debt of gratitude, and he hoped that the sentiments expressed in the address, and the advice given would bear fruit, and that an impetus would be given to all present to endeavour to take their proper place in the world, the place that pharmacy really gives to those whose calling in life it is. If they took Dr. Macnaughton-Jones' advice, and profited by it, he was sure there would be no need for the

Penny-in-the-Slot Pharmacy

of the present time. They, as pharmacists and chemists, were quite capable of doing all that is necessary in preparing drugs for use in the dispensing of medicines, and he hoped the practice of importing foreign ready-made preparations would soon cease. He was most strongly opposed to the medical staff of an establishment using anything that could not be made at home, and was of opinion that many of the drugs and chemicals which frequently appear on hospital and other contract sheets could be easily and economically prepared in their own laboratories. He had great pleasure in moving the vote of thanks to Dr. Macnaughton-Jones.—Mr. Goodall, Shoreditch, seconded, and Mr. Moore, St. Bartholomew's, supported the motion.—The Chairman, in putting the vote to the meeting, expressed his high appreciation of the honour done the

Association by Dr. Macnaughton-Jones, who had shown by his presence amongst them that they would have the sympathy and support of the medical profession, for he did not believo that Dr. Jones was alone, but that many of the medical profession were in sympathy with their endeavours to raise the status of their calling. —The vote of thanks was then accorded amid enthusiastic applause.—Dr. Macnaughton-Jones, in replying, said he supposed they all had a tendency to hark back to their first love and to early recollections. He reverted to his behind-the-counter days with mixed feelings, and should always have the strongest and kindest sympathy with the pharmacist. He had spoken about

The Nature and Character of Work.

Of course, a man might have high ideals concerning his calling, but he could not eat his breakfast on ideals, and if he went to bed on an empty stomach he began to lose respect for his ideals, therefore they must not take it from what he had said in his address that he did not appreciate the importance of remuneration, for he was practical man enough to hold that, as a rule, just as a man is encouraged in and satisfactorily remunerated for his honest labour, so also is he encouraged to advance in his art or profession. He could not help feeling that it is to be regretted that a great deal of the old dispensing art has a tendency to die out in Great Britain and other countries through the various "penny-in-the-slot" preparations referred to by Mr. Miller, which were so convenient for handing out in dispensing pharmacies and elsewhere. He still had the idea that each patient has to be prescribed for and their individual needs considered. Sometimes, no doubt, it was convenient to have preparations in some portable form, especially for carrying to other countries when it was most useful to have preparations in the various forms which modern elegant pharmacy has produced. But, he maintained that in the great majority of cases, if the physician was true to his own profession, he would not rely on those preparations, but would prescribe combinations in fractional doses which would require the greatest skill and accuracy on the part of the dispenser, and there should therefore be in the properly recognised dispensing department of any establishment a registered pharmaceutical chemist to dispense all preparations requiring skill in putting together. He thought that with such an Association as the one he was addressing, if right principles were maintained and continued in the face of any opposition, the meeting that night would mark an era of gradual advancement on the part of the dispensers generally of the United Kingdom. Nothing would give him greater pleasure than to see, in the future, the success and advancement of that Association.—The Chairman then urged all present to join the Association, and to persuade others to join, and to show the public that, as a body, dispensers are not mere hewers of wood and drawers of water, but a body of highly intelligent, educated, and trained men, entrusted with most responsible public duties.

EDINBURGH DISTRICT CHEMISTS' TRADE ASSOCIATION.

At a meeting held on Tuesday, February 22, 1898, at 9 p.m., Mr. Boa introduced a discussion on the subject of

Methylated Spirit without Rock Oil.

Having referred to the reasons which led to the addition of rock oil to the methylated spirit and the regulations prohibiting the sale on Sundays and after 10 p.m. or before 8 a.m. on Saturday and Monday, he said he had never had any sympathy with the measures adopted to render the spirit undrinkable by adding rock oil. There was no difficulty in telling a person who wanted to buy the spirit for drinking, and the adding of rock oil was a very weak device as a preventative. He thought it would have been much better if the Excise authorities had moved in the same way as they did against those who sold whisky illicitly. They might also make more strict inquiries as to the suitability and respectability of those to whom licences were granted. The objection to rock oil was that while it did not render the spirit undrinkable, it made it unsuitable for many technical purposes. For domestic use in lamps for heating coffee or invalids' foods, its bad odour was a frequent cause of complaint since this change was made. For cleaning windows and silver plate it was also unsuitable. In the manufacture of varnishes, fixatives, and furniture oil it was objectionable. In the former case it imparted a fluorescent appearance to the dry varnish. Photographers complained that it was unsuitable for varnishes and collodions, and they had to arrange with a methylater to get a supply free from rock oil. Formerly retail chemists used to supply considerable quantities to photographers in small quantities at a time, and he believed they preferred to buy it in that way. But now all that trade had passed away. Another point was that the Excise had been much freer in granting licences to dealers. Formerly licensed grocers could not hold a licence for methylated spirit, or were only allowed to sell in sealed bottles. Now they could sell it in small quantities. He believed the addition of rock oil had been without material effect in reducing the use of the spirit for drinking purposes, any diminution being due to the other regulations. These regulations, he thought, were quite sufficient. Another means would be a more judicious selection by the Excise of those getting licence to sell. He thought this measure pressed hardly on a great many persons in the community, and he did not know a good word that could be said for it. One reason why he thought they should seek to have this addition withdrawn was that it interfered with the making of many pharmaceutical preparations on a small scale, and compelled them to purchase from large manufacturers. Every self-respecting pharmacist preferred to make these preparations on his own premises.—Mr. Hill said he agreed with Mr. Boa that the addition of rock oil did not prevent the use of the spirit for drinking purposes. He had made some inquiry and found that those who had become habituated to methylated spirit as a beverage did not object to the rock oil at all. Their method was to add a quantity of water to the spirit and get a piece of loaf bread. They took a drink of spirit and then a mouthful of bread, and so on till the liquor was finished. In this way they said they got over the smoky taste and had the full luxury of the alcohol without any trouble at all. He had, shortly after the rock oil was introduced, a complaint from a practical photographer, who complained that the varnish "fogged" his negatives. The photographer was quite at a loss to account for the "fogging," but on having his attention drawn to the rock oil, he tried a varnish made with spirit free of rock oil, and found that the latter was the source of the trouble. The result was that he arranged with a methylater to get a supply of spirit free of rock oil. He agreed that nothing could be said in favour of this addition, and a good deal could be said against it, and he thought if the case were fairly represented to the Excise authorities, they might agree to withdraw the regulation.—Mr. Coats said he had no difficulty in telling a person who wanted to buy the spirit for drinking. He did not think the objections to rock oil were so serious as Mr. Boa represented. He used it for spirit varnish and had no complaints. He had not tried it for window cleaning or for cleaning plate. On the whole, however, he thought it would have been better if the spirit had been left as it was. Ultimately, after a prolonged discussion, the matter was remitted to the Committee, with powers to communicate with the Federation of Local Associations on the subject, and take any steps that might be considered necessary. The arrangements for the annual excursion were remitted to the Committee to report to next meeting, and the meeting then closed.

LIVERPOOL PHARMACEUTICAL STUDENTS' SOCIETY.

A meeting was held on Thursday evening, February 24, at University College, the President, Mr. Pierson, in the chair. Among the

Miscellaneous Communications

was a prescription shown by Mr. Frank Walker, running as follows:—

℞ Tinct. Ferri Perchlor.	.....	℥ii.
Magnesii Sulphatis	.....	℥iss.
Sp. Chlorof.	.....	℥iv. (?).
Syrupi	.....	℥ss.
Aquæ	ad.	℥vi.

The quantity of spirit of chloroform was evidently intended to be ℥iv., and not ℈iv., so the prescription was dispensed accordingly, and a note placed upon it calling attention to the fact.—The President asked if any member could tell him if the new photographic developer—rodinol—had any irritating action on the cuticle of those who used it, for a friend of his had had rather an unpleasant experience with it recently.—Mr. Marsden said he could not say anything of rodinol, but another somewhat similar body—metol—undoubtedly had, so that he generally used a holder extemporised with an elastic band to enable him to remove the plates from the solution during development without staining his fingers.—The subject of the expiring of the antipyrin patent was then brought up by Mr. Marsden, who wished to know whether in future,

when antipyrin was ordered, if phenazonum, B.P., might be used. He personally thought that it could, providing that it answered the tests and that no particular make or brand of antipyrin was specified. The members agreed with Mr. Marsden, and it was remarked that the insertion of characters and tests in the Pharmacopœia for phenazonum seemed to provide for the use of a similar body, whether it were sold as antipyrin, phenazonum, or analgesine.—Mr. Wyatt said that in France analgesine was invariably used, for the simple reason that the importation of antipyrin was prohibited. It might only be a coincidence, but the price of analgesine in France was never below that of antipyrin elsewhere, whilst he was in the country, so that there was reason to suppose that the German patentees had something to do with the control of this analgesine, though it was manufactured in France.—A prescription for syrup of glycerophosphates, *Robin*, had been the cause of some trouble to Mr. Pierson lately, and from the difficulty he had to get information concerning it, he was rather inclined to believe it was a proprietary article of French make; could any member enlighten him on the subject? Formulæ for various glycerophosphate syrups had appeared in the *Pharmaceutical Journal* frequently during the last two years, Mr. Wyatt said, and in addition the chemistry of the glycerophosphates had been discussed in the "Month" column of the *Pharmaceutical Journal*. He could not recollect if the formulæ were in the name of Robin or not, but even if they were it was not by any means improbable that a proprietary syrup of the same character should go by the name "Sirop glycérophosphatique Robin," as French discoverers were just as fond of running "specialités" as English or Americans (see *P.J.*, Feb. 26, p. 226, for these formulæ). An excellent paper on

Plant Defences

was then given by Miss E. M. Wood, who, by the aid of fresh and dried specimens of her own collection, and of a beautiful series of coloured botanical drawings she had prepared, explained the uses of thorns, spines, prickles, and hairs as protective agents during the life history of various plants. These were, however, not by any means the only protections plants had against animals. Water was an important one, as a glance at the *Alchemilla vulgaris* or lady's mantle would show. In this plant the leaves were so contrived that they held the dew or rain for a long time after the grass in their vicinity had become dry, and as cows and other ruminants dislike to graze off herbage with the morning dew thereon, the *Alchemilla* by this arrangement enjoyed immunity for a longer time than its fellows in the same pasture. In the case of *Dipsacus sylvestris*, water was conveyed to the roots by a special modification of the leaves as a protection from drought. Isolation by water was the protection of aquatic plants, although these were in some cases provided with hairs to keep off the water snails, as in *Victoria regia* and many of our own indigenous plants, the pond lilies, frogbit, water plantains. Grasses were protected by their sharp "awns," as well as by the large quantities of silica in their stems, the first being of use against animals, and the latter enabling the plants to maintain their position during high winds and in sandy places. Miss Wood concluded by a detailed account of the mechanism of the stinging glands of the common nettle and a brief glance at the protective effect of poisons and strong fœtid odours.—A good discussion followed, in which Messrs. Wardleworth, Walker, Marsden, and Pierson participated, and the meeting closed by felicitating Miss Wood on her paper and on the excellent illustrations she had provided for her interesting subject.

HALIFAX AND DISTRICT CHEMISTS' ASSOCIATION.

A meeting of this Society was held at the Old Cock Hotel, on Thursday, February 17, Mr. G. M. Cobb, President, in the chair. It was proposed by the President Mr. Cobb, and seconded by Mr. H. C. Brierley, Hon. Secretary, that Mr. H. W. Seely, F.C.S., be selected as a candidate for a seat on the P.A.T.A. Council. The whole Association promised him their votes.—A fine collection of marine algæ, collected and mounted by Mr. E. M. Holmes, F.L.S., the Pharmaceutical Society's Curator, was then exhibited by Mr. Clement Fielding. The collection was greatly admired.

The New Pharmacy Bill.

A special meeting of the Association was held on Tuesday, February 22, to which the whole trade of Halifax and district was invited, and a thoroughly representative gathering of pharmacists was the result, to consider an important communication from the Pharmaceutical Society. Both Major and Minor men were present, and it was proposed by Mr. Councillor Hebden "that th chemists of Halifax and District distinctly approve of the Pharmacy Bill." This was seconded by Mr. J. B. Brierley.—An amendment was moved by Mr. W. Haigh, who opposed Clause 3, and suggested that Major men ought to receive a Fellowship if Associates were to be granted membership. This received no seconder, and the proposition was carried with one dissentient. A deputation consisting of Messrs. Cobb, Seely, J. B. Brierley, Smithies (Elland), and Councillor Hebden, afterwards waited on the Borough members, asking for their support to the Bill, and were favourably received, the M.P.'s promising to give the matter full consideration.

MIDLAND CHEMISTS' ASSISTANTS' ASSOCIATION.

A meeting of the above Association was held on the 23rd ult. at the Exchange Restaurant, Birmingham, under the presidency of Mr. H. Jessop.—Mr. E. Osborne (one of the Hon. Secretaries) announced the receipt of a copy of a circular which had been sent by the Midland Pharmaceutical Association to the local members of Parliament requesting their support to the Pharmacy Acts Amendment Bill, and also the receipt of a letter from the Secretary to the Early Closing Association, acknowledging the contribution of a guinea from the Chemists' Assistants' Association. The principal business of the evening was the reading of a short paper by Mr. F. J. Walton on

The Necessity for Organising a Union of Chemists' Assistants.

Having referred to the various individual associations existing up and down the country, he asked the question whether as chemists' assistants they possessed the influence and held the position they ought to have? If not, was it possible to improve their position? He thought the majority of them would agree they did not hold the position nor exert the influence they might do. He claimed that when a man had passed the Pharmaceutical Society's examinations he had a right to vote and a voice in the selection of the gentlemen who were to control the action of the Society, and not be compelled to wait until he ran a shop on his own account. If they had a union of chemists' assistants representing all shades of opinion, it might become a power in the Pharmaceutical Society, and materially aid in raising it. His idea of a union was that its headquarters should be in London, with a president and two vice-presidents selected from the different associations in the country, and he thought there would be no difficulty in prevailing on one or two of their members to take up the position of secretary. There was no necessity for interfering with any of the existing associations, but by joining in a union they would strengthen each other. He wished it to be distinctly understood that he was not advocating a trades union, as the term was commonly understood, or anything in opposition to the interests of the employers. They were a young Association in Birmingham, it was true, but they were not inactive, and he hoped he was not going too far when he expressed the opinion that the first link in the chain of union might be forged in Birmingham. In answer to Mr. Osborne, Mr. Walton said his idea was to have a union of assistants apart from that of the masters.—Mr. H. S. Lawton thought that Mr. Walton had struck a keynote which would find an echo in the breast of every chemist's assistant, and that was the desire amongst them to improve their positions. That could only be done by united combination, and combination in the right direction could only tend to the good of those engaged in the same occupation. A union of chemist's assistants would inevitably tend to the elevation of the calling, because at the present time they did not, as educated men, receive that protection and recognition they deserved. He hoped the discussion Mr. Walton's paper had given rise to would be continued in different parts of the country, and ultimately lead to practical results.—Mr. F. Casson said that the idea of a union as set forth by Mr. Walton was an excellent one so far as it went, but in his opinion it did not go far enough. He did not see how they were going to get the advantages they claimed unless they were banded together like other trade unions. They must have wise leaders and a united force to enable them to cut off the supply of qualified assistants to company trading. They must have the power to do that, and if they could do it they would have the masters' sympathy in the matter of shorter hours and other privileges.—Mr. Osborne read a letter from Mr. Glyn-Jones, thanking the Association for its goodwill towards the P.A.T.A., and stating that at present the Committee had not

seriously taken into the consideration the formation of an assistants' branch. At the same time the Committee of the P.A.T.A. would be glad to receive suggestions on the point. Mr. Osborne said that he had it in his mind if they had an assistants' branch of the P.A.T.A., with a majority of assistants as members, they might have a bureau for assistants, which would prove most valuable.—The Chairman said that the fcderation of associations had been in his mind for a long time, and he thought it was a pity that they were without a union of some description. He recognised, in a proper sense, what Mr. Casson had said with regard to trades unionism, and that would no doubt follow in the wake of the fcderation of associations. If they were to get advantages, no doubt they must look after themselves. As chemists' assistants they were a floating population, and therefore if the associations would only combine they would be able to keep in touch with each other for general good.—The question of the desirability of joining the P.A.T.A. as a means of securing advantages was briefly discussed.—Ultimately, on the motion of the Chairman, seconded by Mr. Lawton, it was resolved to ask kindred associations to discuss the formation of a union of chemists' assistants, and to communicate their views upon the question to the secrctaries of the Midland Chemists' Assistants' Association, with a view to further action.—In the course of the evening two short papers were read by Messrs. F. Foster and T. H. Thomas.

THE CHEMISTS' AND DRUGGISTS' SOCIETY OF IRELAND.

The annual meeting of the northern branch of this Society was held at Belfast, on Friday, February 25, Mr. John Watson in the chair.—The Honorary Secretary presented

The Annual Report,

which stated that the year just closed has been in many respects one of the most encouraging in the history of the Society. The membership has been steadily advancing, and during the twelve months twenty-five new names had been added over those who paid their subscriptions in the previous half-year. The duties of the Law Committee had been exceedingly light during the year, inasmuch as comparatively few cases arose requiring investigation. The best interests of the trade were, however, carefully watched, and, if necessary, the machinery of the Society was ready to be set in motion at any time. The advisability of proceeding for an amended Pharmacy Bill has been discussed on various occasions, but the Committee felt that such an important step required the most careful consideration, and as the necessary details have not been perfected, no practical steps were taken. In the month of October a meeting of the trade was convened under the joint auspices of the Ulster Pharmaceutical Society and the Chemists' and Druggists' Society. The meeting was called for the purpose of hearing an address from Mr. Glyn-Jones on the aims and objects of the P.A.T.A., and was held in the Imperial Hotel. At the close of the address a resolution was unanimously and enthusiastically adopted, commending the P.A.T.A. to the trade and pledging those present to do their utmost to further its objects in the North of Ireland. A local committee was subsequently appointed, with Mr. Guiler, of the Pharmaceutical Society, and Mr. Rankin, of their own Society, as local secretaries. As the objects of the Association had met with almost universal approval, it was hoped that much good would result from its efforts to mitigate the evils of undue cutting. In May last the Committee was invited to join the Ulster Pharmaceutical Society in extending an invitation to the British Conference to visit Belfast in 1898. A meeting was convened to consider the matter, and in response to a resolution adopted on the occasion an invitation was extended under the auspices of the two societies, and, they were pleased to say, cordially accepted. Several meetings of the joint committee have since been held, and the prospects of being in the happy position of entertaining the Conference in the proverbial Irish style is now assured. The Committee unanimously appointed Mr. R. Diamond, solicitor, Donegall Street, as hon. solicitor to the Society, and it is hoped that members who may have trade grievances which require investigation will at the earliest moment bring the same under the notice of the Law Committee.—Mr. Samuel Gibson, the Hon. Treasurer, then submitted the financial statement, from which it appeared that, after paying all expenses, there was a balance to the credit of the Society of £33 2*s*. 9*d*. He intimated that the subscriptions had increased very considerably during the year, and that the prospects of the Society were eminently encouraging.—Mr. Lyttle, in moving the adoption of the reports, congratulated the Society on its sound financial basis.—Mr. Brown seconded the resolution, and both reports were unanimously adopted.

Election of Officers.

The election of officers was then proceeded with, and resulted as follows:—President, Sir James Haslett, M.P.; Vice-Presidents, Messrs. Thomas M'Mullam, W. Jamison, S. Clotworthy, Wm. Doig, S. Turkington, John Watson, William Lyttle; with S. Gibson, Hon. Treas., and W. J. Rankin, Hon. Sec. The following Committee were appointed:—Messrs. Samuel Acheson, Belfast; Henry Backhouse, Dundalk; James Brown, Belfast; John Campbell, Belfast; J. Freckleton, Belfast; Robert Cambridge, Carrickfergus; Jos. Douglas, Belfast; James Hogg, Belfast; W. J. Gibson, Belfast; John Gray, Armagh; Thomas Gillespie, Banbridge; William Lyttle, Belfast; James K. Miskelly, Belfast; John M'Clements, Newtownards: John M'Crea, Newry; Samuel M'Dowell, Belfast; Thos. W. Reynolds, Dungannon; James Richardson, Belfast; John H. Shaw, Belfast; Samuel Suffern, Belfast; and Jacob Walsh, Belfast; Hon. Solicitor, Mr. Robert Diamond, 46, Donegall Street, Belfast.

British Pharmaceutical Conference.

The Hon. Secretary reported that the progress which was being made with the Reception Fund was very encouraging, and the Committee hoped that the visit to Belfast would be a memorable one, as indications pointed in that direction at the present time.—Mr. Gibson said that each member of the Committee was doing his utmost to make the arrangements as perfect as possible, and they all earnestly hoped that the visit of the British Conference to the North of Ireland would be an exceedingly pleasant and profitable one. He expressed the hope that every member would try to attend the meetings of the Conference, for papers of an exceedingly instructive and interesting character were as a rule read and discussed. The committee in charge of the arrangements would very probably be providing excursions, which all the members of the Society would do well to patronise.—Several matters of local interest regarding the future well-being of the Society were discussed, and a very successful meeting concluded with a vote of thanks to the Chairman for presiding, and to Mr. Hugh Renton, the efficient Secretary of the Belfast and North of Ireland Grocers' association, for the Assistance he gave them at their meetings.

CAMBRIDGE PHARMACEUTICAL ASSOCIATION.

On Friday, February 25, at the Technical Institute, the members of the Association met to hear a very interesting and instructive discourse by Mr. F. J. Stoakley on

Silver.

Mr. Alderman Deck presided over a good attendance.—The lecturer, in a most lucid and practical manner, described silver in its state of absolute purity, and compared it with the standard silver of commerce, and proved experimentally the purity of the former, and presence of copper in the latter. He described the conditions under which it was found in Nature, stating that it was one of the few metals found in a free and uncombined state in Nature, and by practical illustration showed the various forms and colours of silver in a pure form. A practical illustration and theoretical explanation was then given of electro-plating, and lastly, the lecturer dealt with silver, in its relations to photograp hy, at some length, showing what progress photography had made since the chemistry of silver and its compounds had been more thoroughly understood.—An interesting discussion took place after the lecture, in which Messrs. E. Saville Peck, Ald. Deck, F. Sidney Campkin, E. W. Moss, G. McAvoy, and Bernard S. Campkin took part. A very hearty vote of thanks having been accorded the lecturer, Mr. F. J. Stoakley, in reply, thanked the members, and stated in reply to a question his opinion that it was not possible to obtain gold from silver, though under special conditions a substance having the appearance of gold had been obtained.

NORTH-EAST LANCASHIRE CHEMISTS' ASSOCIATION.

A special general meeting of the members of the North-East Lancashire Chemists' Association was held at Blackburn on Tuesday night to discuss the provisions of

The Pharmacy Acts Amendment Bill.

Mr. Councillor Critchley presided, and there was a good attendance.—The Chairman stated that Mr. R. Lord Gifford had written

to Mr. Woolley, of Manchester, and perhaps it would be well to read that gentleman's reply.—Mr. Lord Gifford said he wrote to Mr. Woolley with the idea of doing away with the objections of the Major men. He told Mr. Woolley that he did not think the matter of sufficient importance to divide them, and asked if he thought that by persisting in making this an act of legislation they were not retarding the introduction of something more important in the future.—The Secretary (Mr. Whitehead) read the following letter :—

Victoria Bridge, Manchester.
March 1, 1898.

Mr. R. Lord Gifford, Blackburn.

Dear Sir,—In reply to yours, this short Bill is, in my opinion, not the slightest obstacle to our going to Parliament next session or any time we like. Until we get this or a similar Bill passed it is no use our going to Parliament at all. At present we are a disunited body, and as such quite powerless for any good work. We must consolidate ourselves, and the cry so often raised, "What is the Pharmaceutical Society doing for us?" must be changed to "What are we doing for ourselves?" It has been abundantly proved that the Pharmaceutical Council is practically helpless in the matter of legislation without the trade at its back, and it now makes a generous and broad-minded offer to everyone to unite in forming a really strong body, and one that would make its wants known throughout the country, and those who wish well to pharmacy will do their utmost to forward this good work.—I am, yours faithfully, Geo. S. Woolley.

The Secretary, continuing, said that was an expression of opinion which was bound to be of weight as coming from one of the old members of the Council. The meeting had now to say what was the opinion of the chemists of the district as to the desirability of approaching the Members of Parliament for the district upon the matter.—Mr. Law : Could you tell us what the Bill proposes to do?—The Secretary read the text of the Bill and the explanatory notes issued by the Society.—Mr. Howarth remarked that if the Bill passed every Minor man would be able to be a member of the Pharmaceutical Society. It hardly looked fair to the Major men.—Mr. Law : What objection have the Major men to the Minor men?—Mr. Howarth : The Major men have won their degree by perseverance and study, and they ought to have some advantage and privilege over we Minors. It is only just and right.—Mr. Law : I do not see how the Major man is injured.—Mr. Howarth : Well, he thinks the Minor man has no right to call himself a pharmaceutical chemist.—Councillor Shorrock (Darwen) said that as Secretary of the Darwen Society he had consulted nearly the whole of the members in his district, and he found that they were all in favour of the Bill. With regard to the Major men, it certainly seemed to be a little against them, but at the same time he did not think the point was one of much importance. The Bill merely gave chemists and druggists power to vote and a voice in what was being done in the Council.—Mr. Lord Gifford : They always had the power to vote.—Mr. Shorrock : But not to be on the Council. He thought it was a proper thing that the chemists and druggists should be allowed to send up their representatives to the Council to put before it measures for the benefit of all parties. The Bill proposed to settle a point which under any other circumstances might have dribbled on for years. Having the unanimous support of the chemists of Darwen, he had written to Mr. J. Rutherford, M.P. for the division, asking him to support the measure, and he had replied that the matter should have his attention. He had also written to Mr. Bremridge, who had replied, "Thank you for your prompt opinion of the Pharmacy Bill. Your influence will, I am sure, be of great service to us.—Mr. Lomax (Darwen) remarked that at first he, as a Major man, was afraid that the Bill proposed an injustice to Major men, but on looking further into the matter he had modified his opinion. The main thing to be gained was the bringing of all chemists together. This of course would give greater power to Minor men, but another result would be that there would be more united action, and greater good to the whole body. Of course, at present, to be a member of the Pharmaceutical Society one had to pass the Major examination, unless he were registered as in business before 1868. There was not much opposition to the Bill except from Major men, and it did look a little hard after having gone through the Major that the Minors should be elected as members ; but after all he did not think there was much in it, for the Majors were still pharmaceutical chemists. Personally he thought all who had passed the examination, whether as Major or Minor, ought to be a pharmaceutical chemist. He could not understand the term to mean anything except a chemist in pharmacy as distinguished from an analytical chemist or manufacturing chemist. And that title belonged as much to the Minor as the Major. In giving the title to the Major alone a mistake had been made. If they had to get any benefit from the Pharmaceutical Society they would have to unite and sink their little bits of crotchets. Since the recent dinner at Blackburn there had been a number of Darwen chemists enrolled as members, and now there was not a chemist in the town who was not a member of the Society. That was the best way to help the Society, and by doing that they could demand almost everything within reason. He did not think the Bill would retard any further legislation, and he hoped it would receive the support of the Blackburn chemists.—Mr. C. Critchley thought that if the passing of the Bill would lead to an increase in the membership of the Society it ought not to be opposed.—Mr. Gifford moved that the Association support the Bill, and that the borough members be asked to assist in the measure becoming law. While proposing the resolution he wished to make one or two reservations. He thought the time had come for a general revision of the pharmacy laws. The Pharmaceutical Council pointed out that the measure would be known as "The Pharmacy Amendment Act, 1898," and that caused him to doubt whether Mr. Woolley's answer really met his views. As a Major man he was prepared to sacrifice anything in order to obtain unanimity in the trade, and, taking Mr. Woolley's letter as representing the spirit in which the Council viewed the matter, he had very great pleasure in moving the resolution.—Mr. Law said if they wanted anything doing they must do it themselves. He had not much faith in the Pharmaceutical Society as at present constituted. He thought it would be well if they could introduce new blood into it ; he did not care whether it was Major or Minor. He was willing to support anything which would be of tangible benefit to the chemists and druggists of the country. If they wanted to bring about unity, their best plan was to admit Minor men to the Council He thought he could get Sir Joseph Leese, M.P. for the Accrington division, to support the Bill, if he could persuade him it was for the good of the chemists and druggists of the country.—Mr. Howarth, as a Minor man, supported the resolution, but expressed the hope that if the Act passed the Major men would receive a due reward for what they had gone through.—Mr. Gifford : Give us a wider Pharmacy Bill.—Mr. Howarth : Yes, but we must be thankful for what we can get. In Blackburn they had one-man companies and drug stores, but in the past the Society had not assisted chemists in this matter, and he asked if it would help them in the future.—Mr. Gifford : Mr. Woolley says "help yourselves."—Mr. Howarth : Will they help us?—Mr. Gifford : Yes.—Mr. Howarth : If that is the case I am perfectly willing to support the Bill.—Mr. W. Wells : I do not understand what we gain by this Bill.—Mr. Gifford : An associate can go on the Council.—Mr. Wells : And it makes Minor men eligible for election?—Mr. Gifford : Yes.—Mr. Wells : That being so, I do not see why we should not support the Bill. I do not know anything to be gained if we do not support it, and I think in the long run the Major men will be benefited.—The resolution was then put to the vote and carried unanimously.—The meeting afterwards went into committee.

BRADFORD AND DISTRICT CHEMISTS' ASSOCIATION.

A special meeting of the chemists of Bradford and district was held at the Great Northern Hotel on Tuesday, March 1, to consider

The Pharmacy Acts Amendment Bill

now before Parliament.—Mr. Dunn, President of the Bradford and District Chemists' Association, occupied the chair, and, besides the local chemists, there were present representatives from Leeds, Shipley, Keighley, Dewsbury, and Queensbury.—The Secretary, Mr. S. N. Pickard, read the circular convening the meeting.—The Chairman then called upon Mr. Waddington, the local secretary of Pharmaceutical Society, to explain the Bill.—Commencing with the smallness of the Bill, the speaker remarked that it would be a stepping stone to higher things, when the Pharmaceutical Society represented the trade and not the House of Lords, the value of it being shown by the present opposition of a few pharmaceutical chemists and the apathy of a few chemists and druggists. He stated that the Pharmaceutical Society, as now constituted, did not represent the trade, and gave the number of pharmaceutical chemists and chemists and druggists on Register. Why was this state of affairs? 1. That chemists and druggists by examination cannot be on the Council, whereas chemists and druggists by virtue of being in business before 1868 could, but only in the proportion of seven out of twenty-three. 2. The subscriptions of both are the same—21*s*. 3. That the Pharmaceutical Society is an educational body and not a trade society in any way.

4. The apathy on the part of chemists and druggists who do not understand the Society's powers and responsibility. Describing the history of the Society and the Acts passed since its inauguration, with comments thereon, he mentioned the present privileges to be obtained from the Society, and described them as being only a foundation to build a handsome superstructure, which should benefit the trade largely. Reverting to the proposed Bill, he stated that now the Council had grasped the situation and was prepared to do away with the power of the Society's House of Lords, it was not mending, but ending, and making one house, it was a voluntary Bill proposed by the party at present in power, who simply said, come and help us. The effect of the Bill was to put 1300 chemists and druggists in the position of becoming members, part of whom were at present subscribers and associates having a vote, but being allowed no place on the Council. The title of M.P.S. he considered as of little value, and pharmaceutical chemists would still retain their superior title; but membership was valuable in enabling chemists and druggists to sit on the Council, and to elect the best men in the trade. After the Bill was passed there would be no excuse for chemists not joining the Society. It would be the duty of every chemist to join, and those not doing so would renounce voluntarily all right of criticism. What future Bills may be, depended on the present Minor men, and he related the following present injustices, viz. :—1, company pharmacy; 2, herbalists; 3, smallness of Poison List; 4, dispensing of qualified assistants to doctors; 5, plurality of business with unqualified assistants. In conclusion, Mr. WADDINGTON thanked the gentlemen who were present from other towns, and moved the following resolution :—

> That this meeting of pharmaceutical chemists and chemists and druggists of Bradford and district having considered the Pharmacy Acts Amendment Bill, now before Parliament, decides to support the same, as a measure of equity to chemists and druggists who form a majority of the trade, and also to sign requisitions to local members of Parliament asking them to support the Bill.

This was seconded by Mr. RIMMINGTON, and on being put to the meeting was carried unanimously. The discussion that followed was taken part in by the President (Mr. Dunn), and Messrs. Silson, Waddington, and Pickard (Bradford), Foster (Dewsbury), Kershaw (Keighley), and Pollitt and Anning (Leeds). The following petition was signed by every person present, and a canvass will be made of those chemists not present at the meeting :—

THE PHARMACY ACTS AMENDMENT BILL, 1898.

DEAR SIR,—

We, the undersigned chemists of Bradford and district, desire to draw your attention to the Pharmacy Acts Amendment Bill, introduced on Thursday, February 24, by the Honourable W. F. D. Smith, Member for the Strand division of Westminster.

When we point out to you that it affects the standing of 13,000 chemists in Great Britain, we think you will see the necessity for the alterations in the constitution of the Pharmaceutical Society which it embodies, seeing that a large majority of the chemists of Great Britain are at present prevented from taking any active part in the affairs of the Society and the membership of its Council, in whom is vested the administration of the Pharmacy Acts.

The Bill, of which we send you a copy, is drafted by the present members of the Society, and not by those whose position and privileges it is intended shall be enhanced by the operation of the Bill.

We would respectfully request that you will give this Bill your support, in order that it may be carried through the Houses of Parliament and placed upon the Statute Book.

We are, Sir, yours respectfully,

BRADFORD AND DISTRICT CHEMISTS' ASSOCIATION.

On Tuesday, February 22, at the Great Northern Victoria Hotel, a lecture entitled

Cellulose Products

was given before a moderate attendance of members of this Association by Mr. W. M. Gardner, F.C.S Mr. A. H. WADDINGTON occupied the chair.—The lecturer dealt with the subject in a masterly manner, describing the sources of cellulose, its preparations, and their chemical compositions. He described fully the following products of cellulose and their manufacture, viz. :—Paper (various kinds), Willesden canvas, acetic acid, acetone, methyl alcohol, amyloid, dextrin, glucose, collodion, artificial silk, gun-cotton, lustred cotton, and oxalic acid.—The lecture proved highly interesting and instructive, and was greatly appreciated, the lecturer being warmly applauded at the conclusion.—Messrs. Waddington, Pickard, Jackson, Carson, and Mitchell took part in the discussion which followed.—Mr. WADDINGTON proposed a vote of thanks to Mr. Gardner, which was seconded by Mr. JACKSON, supported by Mr. PICKARD, and carried unanimously.—Mr. GARDNER suitably replied.

LETTERS TO THE EDITOR.

THE USE OF THE METRIC SYSTEM BY PHARMACISTS.

Sir,—Having had difficulty in understanding the equivalents of measures of volume published in the *Pharmaceutical Journal* of February 26, and as others of your readers may have had the same experience, I have communicated with the Board of Trade and should like to explain in your columns how the apparent discrepancy between the equivalent of the litre in fluid grains and that of the kilogramme in grains may be accounted for. Since a litre is the volume of a kilogramme of water at 4° C., weighed *in vacuo*, and one kilogramme is equivalent to 15432·35369 grains, one is apt to think that a litre should equal 15432·35369 fluid grains, forgetting that the gallon, from which the fluid grain is derived, is the measure of a certain mass of water at 62° F., weighed in air. I am given to understand by the Board of Trade that in comparing the masses of imperial and metric volumes of water, the water should be respectively at 62° F. and at 4° C. The mass of water, which has, at 4° C., a volume of 28·4123 millilitres, weighs *in vacuo* 28·4123 grammes, or 438·469 grains. At 62° F. this relation of volume to weight is different, and the same mass has the volume of 28·4752 millilitres or 438·469 grain measures. From these equivalents of 28·4123 millilitres of water at 4° C. it will be seen that, while 1 litre of water at that temperature will weigh 15432·4 grains, it will have a volume equal to that of only 15398·3 grains of water at 62° F. It is well to bear in mind that since the units of volume are derived from standard masses of water under certain physical conditions, those masses and volumes of water are not interchangeable quantities unless the conditions remain constant.

London, February 28, 1898. HAROLD E. MATTHEWS.

Sir,—I have read your last issue with considerable interest, and have been struck with the difficulties raised with respect to so simple a measure as the adoption of the metric system. It seems to me that the waste of time and loss of accuracy entailed in the conversion of one system into another is quite unnecessary. The position in which the English chemist is placed is, if anything, simpler than that of his Jersey brethren, who have to make use of three systems of weights and measures, viz., local, English, and metric, and yet there seems to be no difficulty whatever entailed in their use. Local weights and measures must be used for retailing, English ones are used for dispensing English prescriptions and for making pharmacopœial preparations, whilst the metric system is employed in dispensing Continental prescriptions. It is undoubtedly useful to have a rough idea of the equivalents of these, but is not this as far as one need go?

London, March 1, 1898. P. E. F. PERRÈDÉS.

Sir,—As the metric system has been legalised in many countries in the course of the passing century, practical acquaintance with its working in those countries should be well worth any amount of theorising over the difficulties attending its adoption, and queries as to its advantages. Restricting myself to its use by pharmacists, I beg to say it does not rest with them at all whether it is to be generally adopted in dispensing. It will depend entirely on the prescribers. Those of them brought up under the old *régime* will mostly continue to order ounces and grains; but when a younger generation of medicos have been taught doses in grammes and cubic centimetres, then the pharmacist will have to invest in new sets of weights and measures, if he has not procured them before, and the two systems will be carried on contemporaneously until the old timers have so far died out that the authorities will declare avoirdupois as obsolete as troy and the old wine pint is with us now. Then it may be said of the pharmacists—

> Theirs not to reason why,
> Theirs but to do and—sigh

for the good "Old, well-tried, etc., system." The innovation will have to begin with the authors of text-books and the teachers in the medical schools, and the time of transition will depend on when they decide to drop the old, and confine themselves to the new system. After that it will rarely happen that the dispenser, to whom alacrity and accuracy are paramount, will have occasion to convert fractions of a grain into fractions of a gramme. Even now, thanks to your tables of equivalents, he can multiply 72, 8, and 6 by 0·06479. As to the "trivial error" of misplacing the point, in twelve years' experience I never knew an accident happen from it, which is more than can be said, perhaps, for the ℥, ʒ, and ℈i.

As I have said, both systems will have to be used by pharmacists as long as both are taught, and that may continue for generations, as it has done in South America, yet my native dispensers there had no more difficulty in using the one set of weights and measures than the other set, unless there was a calculation to be made, and then the trouble was not with the metric system. For my own part, at first it was like picking up the language; one had to think in the old and translate into the new, but by daily practice in a very few months one gets to think in the new. I used to mentally reckon from the litre or kilo (*e.g.*, in selecting the size bottle for a mixture).

Gm. or C.c.		
1000	=	℥35
500	=	17·5
250	=	8·75 ($8\frac{3}{4}$ ozs. or ℥8 ℥vi.)
125	=	$\frac{35}{8}$ = ℥35
200	=	$\frac{35}{5}$ = 7
100	=	3·5
50	=	1·75 = ℥14
25	=	℥7

Mixtures are usually prescribed not in decimal parts of a litre, but $\frac{1}{4}$ (250 C.c.), $\frac{1}{8}$ (125 C.c.), etc., and drops, 60· and 30· C.c. There could never be any doubt as to the quantity meant by the prescriber, especially if he complied with the law to write the quantities in words, *e.g.* { "5 centigrammes," "15 milligrammes," etc. It seems to me you, sir, have supplied opponents of the system with a more substantial argument than any they have urged. The "tables" reveal the sad truth that the new religion has already lost its sweet primitive simplicity. Schism has already begun with the difference of 34·1 grains between the litre and the kilo, where will it end? Will a balloon come back from the Pole with the heresy that the ten million metres is all wrong? Even then I suppose the Board of Trade will cling to its iridio-platinum cylinder, unless the L.C.C. sneaks it.

Liverpool, February 28, 1898. J. P. Catford.

Sir,—I am surprised that such a letter as that which appeared in your Journal of February 26 should have been written by Mr. McMillan. We in Aberdeen get many foreign prescriptions—Swedish, Russian, etc.—all written in the metric system, and have no difficulty in dispensing them. If my assistants could not do so they would be no use to me. It is also a common occurrence here for foreign sea captains to get medicine chests fitted under the metric system, which we successfully do. Mr. McMillan is not the only chemist in Great Britain, and others seem to be able to do what he cannot.

Aberdeen, March 1, 1898. David Ritchie.

A Study in Zoology.

Sir,—With many others I had hoped that since the unsuccessful attempt of last year to check the progress of things relating to pharmaceutical education, those responsible for the existence of your contemporary, the *Chemist and Druggist*, would veer round to a better state of mind; that the trade journal which next to our own possesses, we think, the most literary merit would generously recognise its mistake and mend its ways. This hope is once again doomed to extinction. Our Society is an institution founded with the object "of raising up a race of qualified men devoted to the practice of pharmacy as a distinct occupation."—'Historical Sketch,' preface by Redwood. The *Chemist and Druggist* by its own admission has desired "for the past forty years to get as much benefit as possible for the trade out of the reputation, the wealth, and the great opportunities which the Pharmaceutical Society enjoys" (p. 314, Feb. 19, 1898). So have I heard again and again from many quarters since prosecuting my little work as divisional secretary, and so have I had reason to suspect that the rancorous opposition of some and the unaccountable indifference of others are largely traceable to the malign influence of that trade journal. So it comes about that we have a fatal division in our ranks, there being first, the chemist who allows his trade to choke his pharmacy, and, second, he who loyally makes his pharmacy guide and govern his trade. In spite, sir, of the sophisms contained in the article I have just alluded to, I would not have referred to the subject but for the saucy invective contained in this week's issue on the same subject, page 353. As to the respective blood-suckers, if one may in this case answer foolishness by foolishness, it is plain that the *Sanguisuga Pharmaceuticalis* is identical with the *S. Seeandee*, for, by its own frank admission, this latter feeds upon the former as the babe at its mother's breasts—gets all it can out of the Pharmaceutical Society. Perhaps, however, a "transfusion apparatus" would be a better simile by which the life-blood is pumped from plump benevolence into the shrinking system of profligate veins. Taking all things into consideration, I must conclude, therefore—still speaking very foolishly—that the *Sanguisuga Seeandee* equals and is identical with the *S. Pharmaceuticalis*, because—

> The *S. Seeandee* of recent memoree
> Is said by the highest authoritee,
> A getter-out-of-all-it-can to bee,
> From the Pharmaceutical Societee—*Q. E. D.*

39, Church Street, Marylebone, N.W. J. C. Hyslop.
February 28, 1898.

The New Pharmacy Bill.

Sir,—From a letter which has been received from the Western Chemists' Association (London), it is evident that a false impression is abroad as to the attitude of the Manchester Pharmaceutical Association towards the Pharmacy Acts Amendment Bill. We therefore desire to put it on record that the Manchester Pharmaceutical Association is not opposing the Bill, but, on the contrary, is doing all in its power to promote its success.

(Signed) G. S. Woolley *President.*
Harry Kemp } *Vice-Presidents.*
William Kirkby }

Manchester, February 28, 1898.

Sir,—I have forwarded the appended memorial to Mr. H. C. Richards, M.P., as well as our own representatives, Messrs. Labouchere, Drucker, and Sir John Pender, and also enclosed a copy of the draft Pharmacy Bill. The signatures numbered twenty, all of which were chemists on the Register.

Northampton, Feb. 23, 1898. Frederick Chas. Ashford.

[Enclosure.]

We, the undersigned pharmaceutical chemists and chemists and druggists residing in Northampton, do hereby ask your earnest attention to the draft Pharmacy Bill which will be introduced into Parliament by the Hon. Fred. Smith, M.P., during this week, particulars of which are enclosed, and we beg to respectfully ask for your support and influence of same when it comes up for consideration. Thanking you in anticipation of an affirmative reply,

Yours respectfully. (*Signatures.*)

Sir,—In response to a circular sent out asking chemists in this town for their opinions of the Pharmacy Act, numerous replies to hand are all in support of the Bill. Some chemists as yet have not sent in a reply, but among Major men replying no opposition is evident here.

Cambridge, March 1, 1898. Bernhard S. Campkin.

The Orphan Fund.

Sir,—Referring to your issue of 26th ult., and your list of contributions in 1897 to the Society's Orphan Fund, how is it that the £5 donation from Glasgow Committee of B.P.C. is not included? This was sent along with the £10 for the Benevolent Fund, and the latter, I see, is duly entered in your list. Your correction will oblige.

Glasgow, March 1, 1898. John Walker.
Treasurer to Glasgow Committee B.P.C.

*** The Editor is not responsible in any degree for the Benevolent Fund and Orphan Fund lists, but on inquiry in the Secretary's office he learns that the Glasgow contribution was omitted through an oversight, along with several others. [Ed., *P.J.*]

The Applications of Emulsion.

Sir,—Your correspondent (Associate 5/6) will find some reference to emulsion and its applications in the 'Year-Book of Pharmacy' for 1867, page 36. The title of the paper is "Glycelæum, a Proposed Basis for Ointments," and its author was

Weymouth, February 28, 1898. T. B. Groves.

Nitragin.

Sir,—In reply to "P. H. J." (6/4), nitragin is manufactured by Meister, Lucius, and Brüning, Hoechst-on-Maine, the London address of the firm being 46, St. Mary Axe, E.C. Last season the firm did not stock any in London, but some was obtained for me from Germany. Experiments which I made on beans did not show any advantage from its use, there being no greater formation of root nodules and no larger yield of seed.

Spalding, February 28, 1898. E. Wightman Bell, F.C.S.

Medicine Stamp Duty.

Sir,—Referring to the article in last issue on medicine stamp duty, may I be permitted to say I do not agree with the author in the estimate he puts on the point raised by Dr. Symes. If the law says that the grocer or other unqualified dealer may not sell compound drugs unstamped, then the law should be put in force, whether the benefit such action would confer on the chemist be little or none. As a matter of fact, those chemists who are so unfortunately placed as to be in competition with grocers for the sale of the commoner medicines would have a considerable advantage over the grocer who was compelled to sell these medicines stamped. Again, I do not agree with the author when he says at the close of the article that there is really no occasion for a chemist to recommend his preparations in a dutiable manner. Now to my mind this is an extraordinary statement. The British Pharmacopœia contains the formulæ of many lozenges, liniments, ointments, pills, etc., suitable for domestic use. Yet on the container of none of these are we permitted to state the ailments for which they are useful. Is not that a pitiful position for us qualified chemists to occupy? And what is the effect on the public thus kept in ignorance of the uses of standard medicines? Just this—that they know far more about advertised nostrums, and resort to them just because they know most about them, while the contents of most of the bottles and pots ranged round our shelves are so far as the public is concerned left severely alone. Does the author imagine that chemists are satisfied with the permission to use the colourless phrases of which he gives examples? Such are of no value in assisting sales, and afford no information useful to the purchaser. And the author is aware of this, for in the preceding column he shows plainly that one who sells tinct. rhei co. with a label embellished with the smartest of pushful recommendations has a great advantage over him who does not so label it. The fact is these Acts are part of an antiquated system for raising money. They were not passed to protect the public, and they do not help but hinder the chemist. If they cannot be abolished, something ought to be done by our representatives to take chemists out of the ridiculous position they at present hold under them. It may or may not be right to tax proprietary medicines, but it is really too absurd that we qualified chemists are not at liberty to state the uses of the popular medicines of the Pharmacopœia. Our position apparently does no appeal to those who represent us, for the authorities at Somerset House did at one time offer some relief which for some reason was not accepted. I would like to see the question reconsidered.

Dundee, March 1, 1898. William Cummings.

Sir,—In the article on the medicine stamp duty in last week's Journal you appear to argue that the exemption relating to "all mixtures, compositions, or preparations," the properties, qualities, virtues, and efficacies of which are "known, admitted, and approved of in the prevention, cure, or relief of any disorder, malady, ailment, or complaint incident to or in anywise affecting the human body," is in reality no exemption at all, and in that sense you ask, Where does the exemption come in?—as if this provision of the Act had no significance. I venture to think, however, that this conclusion is erroneous, and that a real exemption was contemplated, of such a nature that, within certain limits, the use of medicines could be stated, without incurring liability to duty, by persons qualified to sell them, in so far as the qualities, virtues, and efficacies of those medicines were known, admitted or approved of in the prevention, cure, or relief of any disorder, etc. Thus, for instance, in the case mentioned of tinct. rhei co., B.P., the use of that preparation is known, admitted, and approved of as a remedy for diarrhœa, and the recommendation of the tincture for that purpose seems to be a thing provided for by the exemption, inasmuch as it is a recommendation known, admitted, and approved of, thus differing altogether from the recommendations of secret, proprietary or patented medicines, which are made in the interest of the proprietors of nostrums with the object of promoting their sale and, for that reason, render the medicines liable to stamp duty. This view of the matter appears to have been overlooked by the writer of the article, but it is a point to which attention was directed some years ago at Newcastle when the incidence of the medicine stamp duty was under discussion. The complaint then made was that a chemist could not describe the uses for which medicines are applicable without becoming liable under the Act. But if those uses are "known, admitted, and approved of," the exemption provided by the Act appears to apply to such cases and also to indicate the qualified persons to whom the exemption was intended to be applicable in practice. In any case, the elaborate statement of the third special exemption must be understood as meaning that something was to be exempted and that persons of a certain description were to be exempt from liability to stamp duty which would be incurred by other persons than those specified.

March 1, 1898. Pharmaceutical Chemist.

The Wholesale Druggists' Association of Canada.

Sir,—Referring to the remarks in your issue of February 26 regarding the dissolution of the Wholesale Druggists' Association of Canada, we fear your correspondent has been misinformed when he says that the retailers are not greatly exercised over the matter. Our firm joined the Wholesale Association at the earnest solicitation of many retailers, and they withdrew for the specific reason that the Wholesale Association had failed in its primary and vital object, namely, the benefit of the retail trade. So far from regretting the action of our firm, we may say that the retail trade are almost unanimous in endorsing the decision come to, and our firm has received a large number of letters expressing satisfaction with the attitude which has been taken up. We may say that the Canadian Wholesale Druggists' Association had no parallel institution in this country.

Liverpool, March 1, 1898. Evans, Sons and Co.

Some Explanations from Mr. Jeeves.

Sir,—I deeply regret that you did not extend the process of necessary condensation, employed in the reporting of my paper to the annotated criticism thereof which recently appeared in the Journal. You tell me that I have quite missed the point at issue, and confused conditions with objects to be striven for. Well, sir, I stand corrected but not convinced. I, in common with not a few members of the trade, was certainly under the impression that a chemist kept open shop for the grossly material object of making a living, and very occasionally a moderate fortune, and the conditions to be observed in the carrying out of this very unpharmaceutical object were any and every thing consistent with honour and straightforward dealing. Respecting education my points were that the Minor examination, as now conducted, is quite stiff enough for the requirements of the present-day chemist and druggist, but if the Pharmaceutical Society brings forward a scheme for raising its standard, that scheme should consist of more technical education, and the addition of such subjects as photography, optics, and veterinary medicine, a more or less elementary knowledge of which would be invaluable to a large number of the craft. I then went on to say that the present condition of things in the trade would, I thought, prove to be a tolerably lasting state of things, and I supported this statement by drawing attention to the rapid development of the more commercial part of our business, to the evolution of window dressing, and the fact that dispensing formed a microscopical portion of the business of some 70 per cent. of the trade. "Elegant pharmacy," I said, "is now the order of the day, and pills, capsules, plasters, tablets, etc., are turned out quicker, cheaper, and better by large wholesale firms with their up to-date machinery than by the small dispensing chemist with his tin pot modes of operation." Here I stated what I believe to be a fact, which I neither applauded nor deplored. So how you can interpret that into an advocacy of "penny-in-the-slot pharmacy" is beyond the ken of the "Brighton pseudo-prophet." I see nothing disparaging to the dispensing chemist in the fact that wholesale firms can, and do, with their specially-designed machinery, turn out better results than he can not possessed of their facilities. Why one should not openly acknowledge what to every sane man is obvious enough I cannot for the life of me see. And in spite of your prophetic warning as to the impending doom of the man who makes such an acknowledgment, I shall still cry "truth though the heavens fall." I am only a small dispensing chemist, and have sadly to confess that on my four-foot dispensing counter I really cannot turn out capsules, tablets, or plasters equal to those of first-class wholesale firms, whose space, machinery, and general facilities are almost unlimited. Why the confession of this obvious fact should lead you to the assumption of my holding a brief for a wholesale firm is just a little hard to conceive. In conclusion, I would emphasise the gist of my paper, which was this—that the business of a chemist and druggist, becoming more and more a commercial concern than a scientific calling, next to registration and the education that precedes it, it is essential for the would-be successful men to possess in addition to the *sine quâ non*

education and registration that business ability, by which, looking to no outside agencies such as the Pharmaceutical Society or the P.A.T.A., he goes full steam ahead, self-reliant and self-confident, that by his own energies and merits alone can he attain to the goal of successful pharmacy. I am no opponent of the Pharmaceutical Society; far from it. I also very highly respect its Council, composed of good men and true, whose commercial enterprise has provided them with the means and leisure necessary for the execution of their responsible duties, and not one of whom would, I am sure, endorse your sentiments respecting their humbler associate, who advised his fellow-craftsmen to use their brains.

Brighton, February 21, 1898. Arthur T. Jeeves, A.P.S.

Sale of Food and Drugs.

Sir,—In your issue of February 19 you refer to the report expressing the views of the Council of the Society of Public Analysts on the Sale of Food and Drugs Bill, introduced in the House of Commons last session by the President and Secretary of the Local Government Board. The Select Committee of the House of Commons laid stress on the paramount necessity of the constitution of a board or court of reference, having power to lay down standards and perform various other important functions. The Council of the Society of Public Analysts urges the desirability of comprising in this board or court of reference one or more public analysts. You, sir, criticise this proposition by stating that, "Not content with adding to their only legitimate function of adulteration detector, that of director of prosecutions, as is only too frequently the case, public analysts wish in addition to constitute themselves part of a final court of appeal, which shall decide whether or not their methods of procedure are justified, and their results accurate." This, sir, surely indicates on your part a misapprehension as to the meaning or functions of the court of reference. It was never suggested, either by the Select Committee, or by the Society of Public Analysts, that the court of reference should have anything whatever to do with matters of appeal. Possibly the confusion into which others beside yourself have fallen in this matter is due to the somewhat unfortunate use of the word "court." What is actually proposed is not intended for a moment to be what is ordinarily understood by a "court," but a Board or Standing Committee possessed of functions advisory and legislative rather than administrative. Even in the draft Bill prepared and submitted to the Select Committee by the Society of Public Analysts—a document quite distinct from Mr. Kearley's Bill, to which you also refer—it was never suggested that the existing machinery for the examination of samples connected with disputed cases of alleged adulteration should be altered. That draft Bill, indeed, actually provided that the Government laboratory acting under the direction of the Commissioners of Inland Revenue should be, as heretofore, the laboratory to which disputed analyses should be referred. The functions of the proposed "Court" of Reference are altogether different, and are very fully laid down in the report of the Select Committee. Among these contemplated functions are the prescribing of standards and limits of the quality and purity of food, and no doubt analytical investigations would often form an important part of the duty of such a committee—but not the revision of the decisions or opinions of public analysts in connection with particular samples forming the bases of prosecutions, which would be dealt with, as at present, in the Government laboratory. The Select Committee of the House of Commons desired that the committee should include the principal officer of the Government laboratory, nominees of the Local Government Board and Board of Agriculture, one or more analysts of repute, and representatives of the General Medical Council, the Institute of Chemistry, and the Pharmaceutical Society, other scientists whose services were available and whose presence on the committee might be expected to lend weight to its decisions also finding places thereon. If the object of constituting such a committee is to obtain the fullest possible light on the composition of food and drugs as a means of detecting and putting down their adulteration, surely steps should be taken to ensure the presence on that committee of representatives of the body of officers, the business of whose lives it is to study this very question. To exclude public analysts from such a committee of reference would necessarily be to emasculate it, and render it a sham; and it appears to me that, on the part of anyone really comprehending the proposed functions of the committee, a desire to exclude public analysts is very difficultly reconcilable with an honest desire that such committee shall efficiently perform the duties which the Select Committee of the House of Commons proposed should be entrusted to it. If it were really proposed that such court of reference should be a court of appeal, as you, sir, forgetful of the Select Committee's report, admit that you imagine to be the case, the exclusion of public analysts, for which you ask, might be justified; as would most decidedly be the exclusion—which, however, you do not suggest—of any representative of the Pharmaceutical Society, as representing a class of individuals, the members of which from time to time might be in the position of defendants before the court. But the proposed committee or "court" would really have nothing whatever to do with defendants, or with the hearing of appeals or cases of any kind, and the Select Committee of the House of Commons properly recommended that the Pharmaceutical Society, as well as the General Medical Council, should be represented, in order to give advice and assistance on the Board on the questions of the variations in quality and purity of drugs. It has already been noted above that in the constitution of the Committee or "court" as recommended by the Select Committee of the House of Commons the principal officer of the Government laboratory is included *ex officio*, as well as one or more analysts of repute. If the one or more analysts of repute do not include representative public analysts, it is surely obvious that the Court or Committee would be deprived of members pre-eminently fitted to take part in its deliberations, while at the same time there would be lost the very desirable opportunity which such Board would afford of frequent deliberation, through their respective representatives, between the public analysts and their official brethren in the Government laboratory, for which at present, apart from the matter of personal courtesy, there is no recognised provision.

Bernard Dyer, D.Sc., F.I.C.
President of the Society of Public Analysts

17, Great Tower Street, London, E.C., February 22, 1898.

OBITUARY.

Baxter.—On February 21, Gilbert Buchanan Baxter, Chemist and Druggist, Blackburn. Aged 30. Mr. Baxter was an Associate of the Pharmaceutical Society.

Greaves.—On February 24, Abraham Greaves, Pharmaceutical Chemist, Rye Hill, Chesterfield. Aged 82. Mr. Greaves had been a member of the Pharmaceutical Society since 1853, and was at one time local secretary for the district. He was born near Hucknall Torkard, and commenced business as a chemist at Ironville in 1837. In 1869 he obtained the Chesterfield business (still retaining that at Ironville), from which, on the completion of sixty years of active business life, he retired at the close of 1896. For many years he took an active part in public affairs, and was one of the first members of the Brampton Local Board, and was connected with the Brampton and Walton School Board from the outset. On the extension of Chesterfield borough he was elected as one of the first members for the West Ward (Brampton), and retained the seat until his retirement last November. He was the first Chairman of the Brampton and Walton District Council, and consequently took his seat on the Bench at the Chesterfield Petty Sessions. At the time of his death he was Chairman of the Shirland Gas Company.

Pugh.—On February 24, George Pugh, Chemist and Druggist, 71, Milson Road, London, W. Aged 64. Mr. Pugh, who was one of the earlier associates of the Pharmaceutical Society and the last of his race, was buried in the grave of his mother and brother at Highgate Cemetery on March 1. He was born at Cheltenham and educated at its Grammar School. For some years he was the managing assistant of Mr. Thomas, the photographic chemist, of Pall Mall, afterwards the manager of Messrs. Treacher and Co., Bombay, latterly the London representative of the North British Chemical Co. Amongst the mourners last Tuesday was his old Bloomsbury fellow-student, John Attfield, and amongst the wreaths was one from the widow of another fellow-student, Evan Thomas Prosser, formerly of Colchester, the last manifestations of School of Pharmacy friendships formed in the session 1853-54.

Saccharin and Para-Saccharin.—According to Hefdman, 1 gramme of saccharin is soluble in 132 C.c. of ether; a mixture of 65 parts of saccharin and 3 parts of para-saccharin requires 2900 C.c. of that solvent to dissolve it, while pure para-saccharin requires 7800 C.c. to dissolve 1 gramme.—*Rev. Pharm.*, n.s., iv., 253.

ANSWERS TO QUERIES.

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

BOTANICAL.—So far as can be judged from your sketches, it is *Draparnaldia glomerata*, Ag. [*Reply to* D. J.—5/20.]

OWNERSHIP OF PRESCRIPTION.—We are not aware that the point has yet been decided. [*Reply to* ENQUIRER.—6/5.]

SHEEP DIP.—We do not profess to know the composition of proprietary preparations. [*Reply to* A. B. C.—5/27.]

INFLUENZA POWDER.—Probably a mixture of quinine sulphate, 3 grains, and sodium salicylate, 10 grains, would be most useful. The liability to stamp duty will depend upon the wording of the label. Send a label to Somerset House, and ask whether or not it renders the preparation liable. [*Reply to* TAKA.—524.]

NITRAGIN.—This germ fertiliser for leguminous crops is prepared by Meister, Lucins, and Brüning, Hoechst-on-Maine, Germany (see letter by Mr. Bell at page 251). Write to the London agents, 46, St. Mary Axe, E.C. [*Reply to* P. H. J.—6/4.]

STAINING AND MOUNTING.—Cross and Cole's 'Modern Microscopy' (Baillière, 3*s.* 6*d.*), and Squire's 'Methods and Formulæ' (Churchill, 3*s.* 6*d.*) contain all you require. We cannot recommend the book you name. [*Reply to* MICROSCOPE.—6/10.]

SEEDS USED FOR DYSENTERY.—They are the seeds of *Plantago ispaghula*, and serve as a very useful demulcent and astringent in diarrhœa. It is better to take a teaspoonful of the seeds than an infusion, as they then give off the mucilage gradually in the alimentary canal. [*Reply to* H. H.—6/1.]

THE MICROSCOPE IN BOTANY.—Yes, certainly you should procure a microscope, and do all your botanical histology practically. It is the only way to learn the subject properly, and you will find the work extremely interesting. Use the books recommended in the Students' Number of the *Pharmaceutical Journal*, published last autumn. [*Reply to* W. E. B.—5/15.]

ISINGLASS CEMENT.—Heat the isinglass in a covered vessel on the water-bath with a little glacial acetic acid, until it is thoroughly softened and forms a stiff mass, then gradually add more acid until it produces a thick solution which is of uniform consistence and just fluid while hot. Then run into wide-mouth bottles and close with good corks. [*Reply to* REBATE.—5/28.]

SUPPOSITORIES OF BELLADONNA AND TANNIN.—Yes; you should add one drop of water to the extract of belladonna to soften it. Then rub down perfectly smooth with a few drops of the oil of theobroma in a warm mortar. Mix the tannin with another portion of the oil of theobroma, and add to the first mixture with constant trituration. Let the mass be nearly set when you pour it into the moulds. [*Reply to* D. J.—5/21.]

VARNISH FOR PAPER LABELS ON DRAWERS.—Sandarach, 20; mastic, 8; camphor, 1; methylated spirit, 48. Digest together with a little pounded glass, shaking occasionally for several days. Then allow to settle bright, and use the clear liquid, after sizing with gelatin. You should size and varnish the labels directly the paste is dry. Under the circumstances the peeling off is not to be wondered at. [*Reply to* S. H.—5/23.]

LIN. CAMPH. B.P. WITH JAPANESE CAMPHOR.—The Japanese flowers of camphor which we have met with in England have not been quite so free from the last traces of oil as the English preparation, and has given distinctly more colour when treated with concentrated sulphuric acid; but it has not contained so much oil that the odour has been so pronounced as you state is the case with what you have had in Hong Kong. Unless we see a sample of your camphor we cannot express an opinion on it. [*Reply to* H. H.—5/34.]

AMERICAN DIPLOMA.—No foreign qualification to practise pharmacy is recognised in Great Britain. [*Reply to* W. G. K.—6/15.]

COMPRESSED TABLETS.—We understand the tablets you send consist of "lactopeptine," and are supplied by J. Morgan Richards, 46, Holborn Viaduct, E.C. [*Reply to* FEROX.—5/13.]

ANALYTICAL CHEMIST.—No qualification is necessary, but you would do well to obtain that of the Institute of Chemistry. Write to the Secretary, 30, Bloomsbury Square, London, for particulars. [*Reply to* A. H. P.—5/31.]

'ZEITSCHRIFT F. UNT. DER NAHRUNGS U. GENUSSMITTEL.'—The London agents of this paper are Asher and Co., 13, Bedford Street, Covent Garden, W.C., and the annual subscription price is twenty shillings, postage additional. [*Reply to* P. H. J.—6/4.]

AMMONIACAL SOLUTION OF PHENOL.—The strength is not specified in the original paper. [*Reply to* J. C. F.—6/18.]

CHILDREN'S COUGH MIXTURE.—Ammonium bromide, 2 drachms; ipecacuanha wine, ½ fl. oz.; oxymel of squills, 1 fl. oz.; tincture of senega, 2 fl. drachms; glycerin, 1 fl. oz.; syrup of lemon, to make 4 fl. ozs. Dose, one teaspoonful. [*Reply to* J. R. P.—6/3.]

COLORATION OF AMMONIUM ACETATE SOLUTION.—We are glad to hear that our advice on this subject has been of service to you. Doubtless the cause was a trace of organic impurity, either in the acid or in the ammonia. [*Reply to* T. D.—6/12.]

PERFUME FOR TOILET OATMEAL.—(1) Neroli oil, 2 fluid drachms; oil of *Myrcia acris*, 30 minims; oil of petit grain, 10 minims; oil of lignaloe, 5 minims; oil of rose geranium, 5 minims. (1) Tincture of orris, 2 drachms; ionone, 30 minims; amyl acetate, 1 minim; terpineol, 1 drachm. [*Reply to* REBATE.—5/29.]

SACCHARIN.—There is no import duty upon saccharin in this country. The "importation and sale" of the article you name cannot be an infringement of any patent; it is the process by which it is produced that may or may not be so. The word "saccharin," however, could not be used, as that is protected and reserved for benzoyl-sulphonic-imide, produced by a certain process. It could be sold under the official title of "gluside," if not produced by a process already patented. [*Reply to* M. P. S.—6/7.]

MEAT AND MALT WINE.—If you use a wine of sufficient alcoholic strength it should not become sour. See that your malt extract is not markedly acid; it is sometimes so. You will do better to use the liquid malt extract, which contains a considerable amount of alcohol. Extract of beef, 1 oz.; warm water, 2 ozs.; liquid extract of malt, 4 fl. ozs.; simple elixir, 4 fl. ozs.; sherry, to produce 2 pints. Rub the beef extract smooth with the water, add the malt and the elixir, then gradually the wine. Set aside for several days, decant, and filter bright through powdered pumice-stone. Of course you know that all such preparations require a wine licence. [*Reply to* F. W.—6/6.]

CLEANSING COLOURED CLOTHS.—*Red*: The aniline dyes are not very satisfactory for this purpose. A more satisfactory preparation is made by boiling together crushed cochineal, 6 ounces, and salts of lemon, 4 ounces, in 1 gallon of rain or distilled water, and straining. This will do for either red or scarlet cloth. *Yellow* cloth is best cleaned with a solution of the best soft soap and ox-gall; or with soap and pipe clay. The two latter should be prepared in the form of a paste, using the requisite quantity dissolved in water as required. Another good general cloth cleanser is made by mixing equal parts of fuller's earth and soft soap. The cloth is first moistened with water, then rubbed with the mixture, allowed to dry, then rinsed with warm water, and rubbed clean. An ounce of ox-gall to every half pound of the mixture improves it. [*Reply to* NEMO.—5/17.]

COMMUNICATIONS, LETTERS, etc., have been received from

Messrs. Andrews, Ashford, Ashton, Atkinson, Barker, Bayley, Beer, Bell Brierley, Butler, Campkin, Cannon, Catford, Cox, Cummings, Curtis, Davies Dobbin, Duncan, Dunlop, Dunning, Eberlin, Evans, Fell, Forster, Gibbard, Groves, Hill, Jackson, Jones, Keen, Kemp, Kerr, King, Levin, Marsden, Mathias, Matthews, Miller, Parry, Pring, Ritchie, Ross, Ruff, Thursfield, Twinberrow, Vallet, Walker, Watson, Williams.

THE PHARMACY OF CANTHARIDES.*

BY PROFESSOR H. G. GREENISH, F.I.C., F.L.S., AND HAROLD WILSON.

For some years past the efforts of pharmacists have been directed to the regulation of the strength of potent remedies. The standardisation of drugs and of preparations made from them has been the subject of many contributions to current pharmaceutical literature, and many suggestions have been made by which such regulation of the strength of potent remedies may be effected. The majority of suggestions have been based upon one of two principles. Either a definite quantity of the pure active constituent of the drug is dissolved in a suitable medium, or the preparation is made from the drug itself, and the proportion of active constituent is regulated by assay.

Now in all cases in which the action of the drug depends upon the presence of more than one constituent, the assay, depending on the determination of one only of those constituents, cannot give an accurate indication of the relative value of the drug. It may be sufficiently accurate to be of service in regulating the potency of the drug within reasonable limits, as in the case of opium, or those limits may be so wide that the assay is devoid of real value, and this latter is the case with all assays in which constituents varying much in their effects are determined together.

A further difficulty is presented by such drugs or preparations as those in which the active constituent is present in so small a proportion, or associated with such other substances, that its accurate determination is a matter of great difficulty.

This is the case with cantharides. The active principle—for we have no reason to suppose the existence of more than one—is present in proportion so small that the assay of most of the official preparations of the drug is impracticable. Of the desirability of regulating the strength of such potent remedies there can, we think, be no question, and it appears to us equally certain that uniformity in them can be obtained by one means only, viz., by preparing them from the pure definite active constituent, cantharidin. Fortunately, the preparation on the large scale of this substance in a state of purity is a matter of no difficulty.

It appeared to us that before we could offer formulæ for preparations made from pure cantharidin to replace those at present official, made from the crude drug, we must know what proportion of cantharidin is really extracted in making the preparations from the drug. We had no definite knowledge of the degree to which the flies are exhausted by the various menstrua used in the official preparations. These menstrua include water, proof spirit, acetic acid, acetic ether, and olive oil, and complete exhaustion, or even uniformly incomplete exhaustion, by such varied menstrua could not be anticipated. Moreover, there is no doubt that the cantharidin is present in the drug in two forms, viz., partly as "free" cantharidin, soluble in chloroform, and partly as "combined" cantharidin, insoluble in chloroform, varying in their solubilities.

We determined, therefore, to proceed as follows:—

First, to obtain a quantity of powdered cantharides of good quality and determine accurately the cantharidin contained in them.

Second, to prepare the official preparations from these assayed flies and determine the proportion of cantharidin extracted.

Third, to propose new formulæ based upon these assays.

Assay of Cantharides.

Numerous processes have been devised and recommended for the assay of cantharides, but none appeared to us free from objection.

The method adopted by one of us* involved the use of petroleum spirit to remove fixed oil from powdered cantharides, and alcohol to wash the cantharidin before weighing it. Both of these solvents dissolve cantharidin, and the corrections made for such loss are of doubtful accuracy.

Gunn's† process is open to the same objection as regards the use of petroleum spirit. Moreover, he dries moist cantharides containing free cantharidin and decolorises with animal charcoal the solution of cantharidin extracted; both operations involve the risk of loss of cantharidin, for this substance volatilises in notable quantity at the temperature of a water-bath, as we have proved by experiment.

Nagelvoort‡ avoids the loss in drying the cantharides by conducting this operation at a temperature of 130° F., but the crude cantharidin is washed with bisulphide of carbon and decolorised with animal charcoal, both of which operations involve loss of cantharidin.

Braithwaite§ extracted African blistering beetles (*Mylabris bifasciata*) with acetic ether, evaporated to dryness, and washed the residue thoroughly with carbon bisulphide, then sparingly with rectified spirit until colourless, the alcoholic washings removing not more than two or three milligrammes of cantharidin. In working upon *Cantharis vesicatoria* we have found that both carbon disulphide and rectified spirit remove notable quantities of cantharidin, and consider acetic ether an unsuitable solvent for the assay, as it extracts some substance that chloroform does not, and this renders the residue more difficult to obtain in a pure state.

Baudin‖ exhausts cantharides with chloroform to remove the cantharidin which exists in them in the free state, and then with chloroform acidified with hydrochloric acid to liberate cantharidin that may occur in a state of combination, in which state it is insoluble in chloroform, determining, therefore, both "free" and "combined" cantharidin. The crude cantharidin is washed with carbon disulphide, for which a correction is made. We have not found chloroform acidified with hydrochloric acid a suitable menstruum for extracting combined cantharidin, nor can we approve of a "correction" for washing with carbon disulphide.

The chief objection to these processes lies not in defective exhaustion of the cantharides, but in loss sustained during the purification of the cantharidin. Although petroleum spirit and carbon disulphide dissolve very small quantities of pure cantharidin, they take up notable quantities in the presence of the fat, to remove which they are usually employed, and especially is this the case when a chloroformic solution of fat and cantharidin is evaporated; part of the cantharidin crystallises from the fat but part remains dissolved in it, and this is carried into solution by petroleum spirit and similar solvents. We have found by experiment quantities varying from 8 to 18 milligrammes thus dissolved by petroleum spirit when employed for removing the fat. From the outset we determined, if possible, to collect and weigh the whole of the cantharidin present. The method of making corrections for the use of carbon disulphide, petroleum spirit, or alcohol is unreliable, as our experiments do not indicate that the same proportion is always removed.

In the following assay process we actually recover the cantharidin removed with the fat. We have also devised a method for separating the whole of the cantharidin from the green resinoid matter with which it is so closely associated, and have thus obviated the necessity of a correction for alcohol.

* Read at an Evening Meeting of the Pharmaceutical Society, on Tuesday, March 8.

* *Pharmaceutical Journal* [3], x., 729.
† *Chemist and Druggist*, vol. xliv., p. 480.
‡ *American Journal of Pharmacy*, vol. lxiii., p. 12.
§ *Pharmaceutical Journal* [3], xviii., 247.
‖ *Journ. de Pharm. et de Chimie* [5], vol. xvii., 391.

Determination of Total Cantharidin.

20 grammes of the flies in No. 40 powder are mixed in a small mortar with 25 C.c. of a mixture of—

Glacial Acetic Acid	1 volume.
Rectified Spirit	2 volumes.
Chloroform	3 volumes.

The moistened mass is covered over for about an hour, and then either allowed to dry spontaneously or at a slightly raised temperature. This is easily accomplished without loss of cantharidin. The dried mass is then packed in a Soxhlet extractor and exhausted with chloroform, the latter being first used to rinse out the mortar used.

About one hour will usually suffice for complete extraction if the substance be well packed, but complete exhaustion should always be ascertained by removing the flask with the chloroformic solution, and continuing the extraction with a little fresh chloroform.

The chloroformic solution thus obtained is placed in a separator containing a little water, and the acetic acid, which passes into the water, is almost, but not quite, neutralised with solution of potash, and the whole well shaken.

The chloroformic layer is run off into a glass dish and evaporated, cautiously towards the end. The residue consists of fat, in which can be seen crystals of cantharidin. The fat is removed by washing with petroleum spirit (the washings being set aside), leaving in the dish crystals of cantharidin mixed with a green substance of a resinous nature. This residue is allowed to dry, and is then washed with successive small quantities of absolute alcohol until all green matter is removed, and perfectly white cantharidin remains. The alcoholic washings are carefully evaporated.

The cantharidin, dissolved or mechanically removed whilst washing out the fat with petroleum spirit, is now recovered; 20 C.c. of 10 per cent. solution of caustic potash are added to the petroleum spirit solution, and the mixture warmed until the fat is completely saponified; during this process most of the petroleum spirit is dissipated. The soap solution thus produced is diluted with warm water and transferred to a separator, sufficient petroleum spirit being added to dissolve the fat acids when liberated; it is now acidified with hydrochloric acid, when the fat acids rapidly rise and dissolve in the petroleum spirit. The aqueous layer is quickly run off from beneath the petroleum spirit solution into another separator, the petroleum spirit solution washed with water and the washings added. The cantharidin is then removed by shaking with successive quantities of chloroform as long as cantharidin is removed; this must be ascertained. In the chloroformic solution thus obtained the residue from the alcoholic washings of the crystallised cantharidin is dissolved.

The chloroform now contains in solution chiefly cantharidin and the green resinous matter previously mentioned. It is placed in a separator and shaken with lime water, containing excess of calcium hydroxide suspended in it, and solution of common salt, the latter causing the chloroformic layer to separate more readily.

In this way the cantharidin passes into aqueous solution, probably as cantharidate of calcium, whilst the chloroformic layer containing green resin and colouring matter is rejected.

The aqueous solution is filtered, acidified with hydrochloric acid, and shaken out with chloroform as before. This chloroformic solution is added to the cantharidin previously separated evaporated cautiously, dried in a desiccator, and weighed. In this way a crystalline residue of cantharidin only very slightly coloured is obtained.

Determination of Free Cantharidin.

This is accomplished in the same way as the determination of total cantharidin, with the exception that the drug is not moistened with the acetic acid mixture before extraction, and, no acetic acid being present, the washing of the chloroformic solution with water becomes unnecessary.

Determination of Combined Cantharidin.

The proportion of combined cantharidin present has been determined by difference between cantharidin yielded in determining total cantharidin and that obtained in determining free cantharidin.

We have found by experiment that no cantharidin is lost in filtering the solution obtained by shaking the chloroformic solution of cantharidin with milk of lime and salt solution; at least, when the quantity of cantharidin present is small, as it always is where this process has been employed by us. A test experiment showed that 100 C.c. of the filtered liquid contained ·027 gramme of cantharidin in solution at 15° C. From these figures it will be seen that if a large quantity of cantharidin be present a correspondingly large quantity of milk of lime must be employed.

We have also checked the method employed for recovering cantharidin from its solution in fat by an experiment with a known weight of cantharidin dissolved in fat free from cantharidin; the whole of the cantharidin was recovered.

Although the process is somewhat lengthy we have the satisfaction of knowing that loss of cantharidin has been carefully guarded against.

Assay of Cantharides.

Cantharidin in 20 grammes.

	Free.	Combined.	Total.
No. 1	·1025	·011	·1135
No. 1	·1005	·01	·1105
Mean	·1015	·0105	·112
No 2	·101	·034	·135
No. 2	·102	·035	·137
Mean	·1015	·0345	·136

Cantharidin per cent. (mean).

No. 1	·5075	·0525	·56
No. 2	·5075	·1725	·68

That cantharides vary considerably in the proportion of cantharidin they contain is so well known that although we have examined several samples we quote only the two above as good commercial specimens, showing a considerable difference in the amount of combined cantharidin they contain. We chose sample 2 for making the official preparations, with the view of determining, if possible, the action of the menstrua on the combined as distinct from the free cantharidin.

Assay of Official Preparations of Cantharides.

Liquor Epispasticus.

Preparation.—Five ounces of powdered cantharides from sample 2 were moistened in a mortar with 3 fluid ounces of acetic ether, packed in a cylindrical glass percolator, and allowed to stand for twenty-four hours. The mortar was then rinsed with acetic ether, which was poured on the packed drug, and percolation allowed to proceed until exactly a pint had been collected.

Assay.—Eighty C.c. (equivalent to 20 grammes of cantharides) were measured off and allowed to evaporate. From the residue, consisting principally of fat and cantharidin, the latter was separated by removing the fat with petroleum spirit, and then washing with alcohol; to the residue of pure cantharidin thus obtained was then added that recovered from petroleum spirit and alcoholic washings, as detailed in our assay process.

Cantharidin found = ·141 gramme.

As our assay of this sample of cantharides showed that 20 grammes contained ·136 gramme of cantharidin, it is evident that acetic ether dissolves both free and combined cantharadin.

The marc was assayed and found to have been completely exhausted.

The free acid usually present in commercial acetic ether probably liberates the combined cantharidin, which then passes into solution.

The excess of 5 milligrammes in the cantharidin found over that calculated is probably due to adhering impurity, which acetic ether brings into solution, and from which the cantharidin can only with difficulty be separated.

Tinctura Cantharidis.

Preparation.—One ounce of powdered cantharides from sample 2 was macerated for seven days with 4 pints of proof spirit with occasional agitation.

The tincture was filtered off into a tared vessel as completely as possible, and weighed = 2055·5 grammes. The filter paper containing the whole of the marc was weighed whilst wet, allowed to dry spontaneously, and again weighed. Loss by drying or weight of tincture dried on marc = 51 grammes.

Assay of Tincture.—20 C.c. of 10 per cent. solution of potash were added to fix the cantharidin, the spirit was distilled off, and the solution evaporated to about half a pint. It was then strained into a separator through glass wool, acidified with hydrochloric acid, and shaken out with chloroform.

From this chloroformic solution the cantharidin was recovered as detailed in our assay process.

Cantharidin extracted = ·171 gramme.

Assay of Marc.—The residue was treated in exactly the same way as in our determination of total cantharidin.

Cantharidin extracted = ·023 gramme.

Now the 51 grammes of tincture retained by the marc contain ·004 gramme, therefore the calculated results are :—

Cantharidin extracted	=	·175
,, not extracted	=	·019
		·194

One ounce of cantharides from sample 2 contains ·193 gr. cantharidin. The extraction of both free and combined cantharidin is, therefore, practically complete.

Emplastrum Calefaciens.

Preparation :—20 grammes of cantharides from sample 2 in No. 40 powder were infused in 100 grammes of boiling water for six hours with frequent stirring.

90·9 grammes of liquid were then separated by straining and pressing, leaving 10·4 grammes in the marc, the latter figure being found by loss in weight by drying. The cantharidin was then determined first in the strained liquid and subsequently in the marc.

Assay.—I. Strained Liquid : It being impossible to shake out cantharidin by means of chloroform from an aqueous infusion of cantharides, on account of its emulsifying properties, the following method was adopted :—

The infusion was made alkaline with solution of potash and evaporated to dryness on a water bath, adding asbestos wool towards the end of the process. This wool on which the extract had dried was then packed in a Soxhlet extractor, acidified with glacial acetic acid, and extracted with chloroform. The chloroformic solution was placed in a separator with water and the aqueous layer nearly neutralised with solution of potash. After vigorous shaking the chloroformic layer was run off into a large separator and shaken with a large quantity of milk of lime and salt solution. The aqueous solution was filtered off, acidified with hydrochloric acid, and treated with chloroform in the usual manner.

Cantharidin extracted = ·079 gramme.

II. Marc with Liquid Dried on.—This was assayed by the method for total cantharidin, previously described.

Cantharidin found = ·051 gramme.

Now by calculation the 10·4 grammes of infusion retained by the marc contained ·009 gramme. The result is therefore as follows :—

Cantharidin extracted by water	=	·088 gr.
,, left in flies	=	·042 gr.
		·130 gr.

As 20 grammes of sample 2 cantharides contain ·136 gr. of cantharidin, a loss of ·006 gr. has been incurred in the assays.

Considering the exceedingly small extent to which cantharidin in the free state is soluble in water, these results are somewhat surprising.

Possibly here the cantharidin passes into solution as an ammonium salt, as when solution of potash is added to the infusion during estimation ammonia gas is given off. It would be interesting to know if any appreciable quantity of cantharidin is actually dissolved in the free state by the water, or brought into solution by other bodies dissolved, but the importance of the subject from the point of view of this paper did not warrant us in so great an expenditure of time as the settling of this point would entail.

That the cantharidin is actually in solution we have proved by filtering the solution through kaolin, and then estimating, when results have been obtained identical with those given in the above determination.

Emplastrum Cantharidis.

Preparation.—Four ounces of powdered cantharides from sample 2 was taken, and with them exactly 12 ounces of the official plaster was prepared.

Assay.—A quantity of this plaster was melted over a water-bath and poured on to a filter supported in a hot water funnel, the mixture of filtered fats, etc., being collected in a tared flask.

Fat, etc., filtered off = 67·5 grammes.

This was dissolved in 50 grammes of hot petroleum spirit and poured into a separator standing in warm water and containing 200 C.c. of 10 per cent. solution of potash mixed with the same quantity of boiling water. The solution was acidified with hydrochloric acid, the aqueous layer run off into a flask, made faintly alkaline with solution of ammonia, and filtered through kaolin to remove suspended resin. By repetition of this treatment traces only of cantharidin were removed. The filtered solution was placed in a separator, acidified with hydrochloric acid, and shaken out with chloroform.

As this chloroformic solution was coloured the cantharidin was removed from it by shaking with milk of lime and salt solution, the aqueous layer filtered, acidified, and again shaken out with chloroform, which, on evaporation, gave a residue of cantharidin with some resin, so it was washed with 1 C.c. of absolute alcohol, leaving a residue of perfectly pure cantharidin.

Weight of cantharidin	=	·066
Correction for alcohol	=	.001
		·067

It will be seen that 1 gramme of the filtered plaster contains about 1 milligramme of cantharidin.

Now, 40 grammes of filtered plaster correspond to 20 grammes of powdered cantharides ; by calculating, from the above assay we find that of the ·136 gr. of cantharidin present in 20 gr. of flies, ·040 gr. is dissolved and ·096 gr. undissolved. The residue was not assayed, for the assay is extremely difficult, the wax and resin being particularly troublesome.

Judging from analogy with the ointment, we may say with a fair degree of certainty that no combined cantharidin is extracted, but that is a matter of relatively small importance when we consider the small proportion of total cantharidin which passes into solution. It must also be observed that by keeping the plaster melted at the raised temperature necessary for filtration, facilities must be given for even more cantharidin to pass into solution than would be the case in preparing the plaster by the official process; the proportion of cantharidin is therefore probably above rather than below that of the present official plaster.

Unguentum Cantharidis.

20 grammes of cantharides in No. 40 powder from sample 2 were macerated with 100 grammes (120 C.c.) of olive oil for twelve hours with occasional stirring. The mixture was then subjected to the temperature of a water bath for 15 minutes with constant stirring, placed in calico and pressed.

Oil pressed out	=	98 grammes.
,, left on flies	=	12 grammes.

The cantharidin was then determined first in the oil removed, and then in the residue after pressing.

Assay 1. Oil expressed.—The oil was completely saponified by warming with solution of potash; calcium hydroxide was then added in excess, and the liquid filtered off from the calcium soap thus produced. This liquid was acidified with hydrochloric acid and the cantharidin removed by shaking with successive quantities of chloroform.

The chloroformic solution of cantharidin was carefully evaporated.

Cantharidin found = ·044 gramme.

To this must be added the cantharidin retained by the oil left on the flies which is found by calculation to be ·006, making the total quantity extracted by oil ·050 gramme.

II. Residue of flies with 12 grammes of oil.—The flies were transferred from the calico to a beaker and stirred with petroleum spirit, the mass being transferred to a filter, washed with more petroleum spirit and allowed to dry.

The dried flies were packed in a Soxhlet extractor and extracted with chloroform, the cantharidin being recovered in the usual way.

The petroleum spirit washings (containing the oil from the marc) were treated in the same way as the oil in the previous determination, and the cantharidin added to that obtained from the dried flies.

Cantharidin found = ·041 gr.,

of which ·006 were contained in the oil left on the flies, leaving a difference of ·035 free cantharidin not extracted by oil.

The residue of flies was now removed from the Soxhlet extractor, moistened with acetic acid mixture, and allowed to dry. It was then packed again and exhausted with chloroform, and the cantharidin recovered as detailed in our assay process.

Cantharidin found (combined) ..... = ·034

Results, therefore, are:—

Cantharidin extracted by oil	=	·050
,, left in flies (free)	=	·035
,, left in flies (combined)	=	·034
		·119
,, present in 20 grammes of flies used	=	·136
	Error	·017

In this preparation it will be seen that nearly two-thirds of the free cantharidin has been extracted by the oil, or nearly half a milligramme to each gramme of oil, whilst the combined cantharidin has not been extracted at all.

Acetum Cantharidis.

We have found the official method for making this preparation quite impracticable. The heating with acetic acid, to which the cantharides are subjected, results in the production of a magma which resists all attempts at percolation. By pressure we succeeded in obtaining a certain amount of liquid, but we were unsuccessful in our attempts at assay. The liquid pressed out possessed in a remarkable degree the property of emulsifying chloroform; the substance possessing this property could not be removed by precipitation with alcohol; direct evaporation would probably lead to loss of cantharidin, and we could not devise any means of getting rid of the acetic acid without losing cantharidin. We therefore abandoned any further attempts at this assay.

There is one official preparation of cantharides with which we have not dealt, viz., charta epispastica. Blistering paper made by the official process has proved so unsatisfactory that its existence will probably not be prolonged beyond that of the present pharmacopœia. No one could consider the formula to be or ever to have been in harmony with our knowledge of the active constituent of the drug. Should such a preparation be required by the medical profession, there would be no difficulty in devising a suitable formula based upon the results of our work.

Summary.

Our results, showing the action of the various menstrua upon the cantharidin contained in 20 grammes of cantharides, may be tabulated as follows:—

Liquor Epispasticus.		
Cantharidin in flies		·136
,, extracted		·141
Excess		·005
Tinctura Cantharidis.		
Cantharidin in flies		·136
,, extracted by spirit	·123	
,, left in flies	·014	·137
Excess		·001
Emplastrum Cantharidis.		
Cantharidin in flies		·136
,, extracted		·04
,, left in flies (by difference)		·096
Emplastrum Calefaciens.		
Cantharidin in flies		·136
,, extracted by water	·088	
,, left in flies	·042	·130
Deficiency		·006
Unguentum Cantharidis.		
Cantharidin in flies		·136
,, extracted by oil (free)	·049	
,, left in flies (free)	·036	
,, ,, ,, (combined)	·034	·119
Deficiency		·017

The following table shows the weight (or volume) containing 1 part of cantharidin:—

Emplastrum Calefaciens	5454
,, Cantharidis	1500
Liquor Epispasticus	588
Tinctura Cantharidis	12963
Unguentum Cantharidis	2653

Guided by these figures we propose that preparations made from pure cantharidin, and containing it in the following proportions, should replace the corresponding preparations made from the drug.

	Found.	Proposed.	Dieterich.
Acetum Cantharidis		1 in 2000	
Emp. Calefaciens	1 in 5454	1 in 5000	
Emp. Cantharidis	1 in 1500	1 in 1000	1 in 289
Liq. Epispasticus	1 in 588	1 in 300	1 in 316.
Tinct. Cantharidis	1 in 12963	1 in 10000	
Ung. Cantharidis	1 in 2653	1 in 3000	1 in 1306.

The third column contains the proportion of cantharidin recommended by Dieterich.*

* *Pharmaceutical Journal* [3], xiv., p. 169.

Suggested Formulæ.

The following formulæ have been devised so as to represent as nearly as possible the present official preparations. We have purposely abstained from offering suggestions for new preparations.

Liquor Epispasticus.

Cantharidin		1 part.
Castor Oil		6 parts.
Resin		3 parts.
Acetic Ether	up to	300 fluid parts.

Dissolve.

The castor oil and resin have been added to replace the natural fat of the cantharides; such an addition is necessary to aid the absorption of cantharidin by the skin. The resin renders the oil sufficiently viscid and adhesive to prevent it from easily leaving the spot upon which it has been painted.

Collodium Vesicans.

Pyroxylin		1 part.
Blistering Liquid	(as above)	40 fluid parts.

Dissolve.

This preparation has been tested, and it has been found that when applied to the arm it raises a blister in about eight hours.

Tinctura Cantharidis.

Cantharidin		1 part.
Chloroform		100 fluid parts.
Rectified Spirit	up to	10,000 fluid parts.

Dissolve the cantharidin in the chloroform and add the rectified spirit

Acetum Cantharidis.

Cantharidin		1 part.
Glacial Acetic Acid		200 fluid parts.
Acetic Acid	up to	2000 fluid parts.

Add the glacial acetic acid to the cantharidin, then the acetic acid, and dissolve on a water bath.

The strength of this preparation has been based on the assumption that, by the process now official, the whole of the cantharidin would be removed from flies of average strength (containing ·5 per cent. of cantharidin).

Unguentum Cantharidis.

Cantharidin		1 part
Chloroform		a sufficiency.
Yellow Wax		499 parts.
Olive Oil		2500 parts.

Dissolve the cantharidin in a small quantity of chloroform by the aid of heat, add this to the wax and oil previously melted on a water bath and stir well. Continue the application of heat till the chloroform is dissipated, then stir till cold.

This preparation made 1 in 2000 (instead of 1 in 3000) raises a blister when applied on lint. The strength recommended by Dieterich (1 in 1306) appears to us to be much too strong.

Emplastrum Cantharidis.

Cantharidin		1 part.
Chloroform		a sufficiency.
Yellow Wax		in equal proportions
Prepared Suet		
Resin		999 parts.

Dissolve the cantharidin in a small quantity of the chloroform by the aid of heat, and add to the other ingredients previously melted together on a water bath, and stir well. Continue the application of heat till the chloroform is dissipated, and stir till cold.

This yields an excellent preparation, easy to spread and separating well from the blister produced. We have tried it on the arm, and find that it blisters well in from five to six hours. Dieterich recommends 1 in 289, but we consider that unnecessarily strong.

Emplastrum Calefaciens.

Cantharidin		1 part.
Chloroform		a sufficiency.
Olive Oil		199 parts.
Resin Plaster		4800 parts.

Dissolve the cantharidin in a small quantity of chloroform by the aid of heat and add the olive oil; now add this mixture to the resin plaster previously melted on a water-bath and stir well. Continue the application of heat till the chloroform is dissipated.

On trial this plaster has been found to cause redness of the skin, but no blister.

These formulæ possess two great advantages over those at present official, viz., the definite strength of the product, and the ease with which they can be prepared. They make but little demand upon the time or skill of the pharmacist, and yet we venture to think they are not wanting in elegance or efficacy. They indirectly place at the disposal of pharmacy commercial drugs that are at present excluded, and yet are more active than the official. Chinese, as well as other blistering beetles, might be utilised as a source of cantharidin. The definition of this substance would be attended with little difficulty, for its physical, chemical, and physiological characters are well marked.

We regret that our experiments were commenced too late to be of service to those till recently engaged in compiling a new edition of the Pharmacopœia. We think, however, that is is not too soon to commence work on its successor. We also think it extremely desirable that suggested formulæ should be offered for free criticism before they are made official, and we bring forward these suggestions, in a spirit of constructive criticism, for the first Pharmacopœia of the next century.

THE VITTÆ OF CARAWAY FRUITS.*

BY HAROLD E. MATTHEWS.

Some months ago it was suggested to me by Professor Greenish that it would be interesting to investigate the origin and development of the vittæ of one of the official umbelliferous fruits. Acting upon that suggestion I recently made a histological examination of the flower and fruit of *Carum carui*.

The material on which I worked was collected at the Royal Botanical Society's gardens in 1896, and preserved in a weak aqueous solution of formic aldehyde. It consisted of caraway flowers and fruits, and specimens were selected from among them representing six successive stages of development from flower-buds to mature ripe fruits.

The material was dehydrated with alcohol and imbedded in paraffin. A series of transverse and longitudinal sections was made by means of a rocking microtome, and the sections, when stained appropriately and cleared with clove oil, were mounted in Canada balsam. The preparations thus made show the mode of origin of the vittæ and several steps in their subsequent development

The fruit of *Carum carui* is a cremocarp, and in each of its two mericarps there are six vittæ. Four of these are situated on the dorsal surface, alternating with the five ridges, and two of them on the commissure. They extend longitudinally down almost the whole length of the fruit, and are of considerable size.

Besides the vittæ there are five other secretory cavities of much smaller dimensions, one of which accompanies each of the vascular strands which form the five characteristic ridges on the dorsal surface of the mericarp. The cavities are situated outside the bundles and are not very conspicuous.

The transverse section of a young flower-bud of *Carum carui* shows the relatively broad wall of the bicarpellary ovary surrounding two small loculi in which the rudimentary ovules are just discernible. The bundles which ultimately form the characteristic ridges arise as five groups of elements, differing from the parenchyma of the ovary wall by the smaller cross section of the cells composing them and by the presence of vessels thickened in a spiral manner. The sixth bundle, situated on the commissure originates similarly. At a very early stage in the development of the flower-bud six secretory cavities arise deep in the tissue of the carpel and close to its inner wall; these are the rudimentary vittæ.

In addition a similar gland is formed in the parenchyma of the

* Read before a meeting of the School of Pharmacy Students' Association on Friday, February 18.

carpel outside the vascular bundle of each of the five rudimentary ridges.

The mode of formation of all these glands is schizogenous. Three or four contiguous rows of cells extending vertically through almost the whole length of the carpel become filled with a dense substance of a brownish colour. They then split away from each other and leave a small cylindrical cavity where their angles were before united.

The glands of the bundles are permanently circular in cross section, and are lined with a definite epithelium, which persists until the fruit is fully grown, but becomes obliterated when it

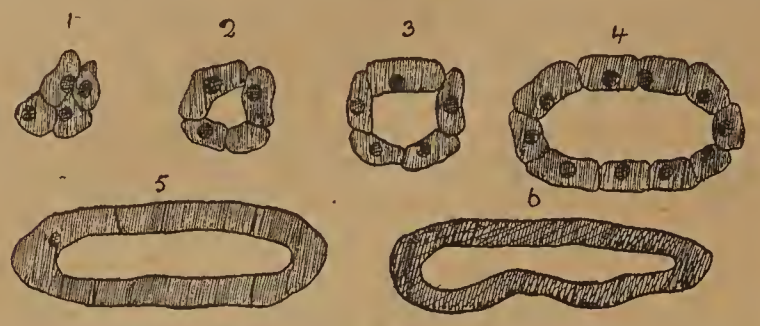

FIG. 1.—DEVELOPMENT OF VITTÆ OF CARAWAY.—1-6, Successive stages: 4, epithelium fully formed; 5, cells of epithelium becoming obliterated; 6, homogeneous wall of vitta as seen in ripe fruit.

ripens. These glands do not increase greatly in size, being approximately two or three times as large in the mature fruit as they are in the youngest flower buds. But the glands which arise deep down in the tissue of the carpel and ultimately form the vittæ undergo considerable changes as to their structure, shape, and dimensions. They lose their circular outline at an early stage, and become more or less elliptical in shape, while their size increases greatly and their epithelial cells become larger and more numerous. The epithelium of the vittæ is composed of cells arising by the multiplication of the cells which split apart to form the original cavity. These epithelial cells are of a brownish

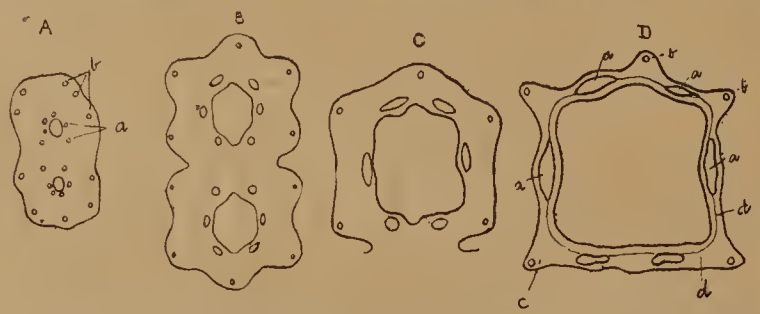

FIG. 2.—STAGES OF DEVELOPMENT OF CARAWAY FRUIT.—A to D, successive stages; *a*, Vittæ; *b*, *c*, ducts of the ridges; *d*, compressed cells of pericarp.

colour, and quite distinct from the surrounding cells, but in spite of their colour nuclei are seen in them up to an advanced stage in the development of the vittæ.

As the ovule grows, the parenchyma lying between the rudimentary vittæ and the inner ovary wall becomes compressed and the cells obliterated. The cells of the pericarp do not keep pace with the rapid growth of the ovule, and so are gradually compressed in a radial direction.

The vascular tissue undergoes considerable development, and, as a consequence, five prominent longitudinal ridges are formed on the outer face of the mericarp. The intervening depressions in which the vittæ lie become less pronounced, so that the mericarp assumes a shape which is more or less pentagonal in cross section. Further radial compression of the cells of the pericarp takes place as the ovule continues to increase, until the pericarp becomes reduced to a very narrow band of tissue with a large ovule within it.

The elliptical cross section which the vittæ assumed shortly after their formation undergoes a slight modification in consequence of the changes in the pericarp, the vittæ become elongated tangentially, but the wall has resistant properties which enable it to retain a convex shape on the side towards the ovule.

At this stage the nuclei of the epithelial cells cease to be visible, and the cells become filled with a dense dark-brown substance showing no differentiation from the walls of the cells, which therefore become obliterated. The epithelium is thus seen to be the only layer concerned in the formation of the vitta wall. It loses all evidence of cellular structure, and finally appears to be quite homogeneous.

Further compression causes the vittæ to assume a slightly irregular shape, elongated and elliptical in cross section.

With the exception of the vascular tissue of the ridges and the vittæ, the structure of the pericarp becomes almost entirely obliterated as the fruit ripens, owing to the great radial pressure to which the cells are subjected; and finally, the ovary wall, which originally was relatively broad, becomes a narrow peripheral layer, and besides the enormous vittæ and the vascular tissue, shows very little structure.

The conclusions of this investigation may be briefly summed up as follows:—The vittæ of caraway fruit arise schizogenously deep in the tissue of the ovary wall, and are lined by an epithelium. The nuclei of the epithelial cells disappear, and the cells become filled with a dark brown substance, which forms with the cell walls one thick homogeneous wall to the vitta. The band of tissue lying outside the vittæ, and constituting the bulk of the ovary wall, then becomes almost entirely obliterated, so that the vittæ are finally situated on the outer surface of the pericarp, although they had their origin deep in its interior.

SELECTED FORMULÆ.

LUBRICANT FOR SOUNDS, BOUGIES, ETC.

The following lubricant is soluble in water, and, therefore, does not coat the mucous surface with a protecting layer; the greasy lubricants which are generally used prevent proper contact of aqueous injections and other medications, since they are insoluble in water. Powdered soap, 6; glycerin, 100; thymol, 1. Dissolve the soap in the glycerin on the water bath, then add the thymol in powder.—*Jour. Pharm. d'Anvers.*

ESSENCE OF VIOLETS WITH IONONE.

Tincture of Florentine orris roots, 3000 parts. Distil off on the water bath 2000; and add to this distillate, extract jasmin, 100; extract of mignonette, 100; extract of cassia, 200; rose water, 200; spirit, 95 per cent., 300; ionone, 16; linalool, 10; oil of orris, 2; essence of musk, 15; essence of civet, 2. Set aside for two or three weeks and filter.—*Pharm. Zeit.*, xlii., 423.

RECIPES FOR OIL FOR THE HAIR.

Orange Blossom: Olive oil, 450; sweet almond oil, 50; oil of lemon, 15; oil of bergamot, 7·5; neroli oil, 1; crystalline nerolin, 0·1. *Rose*: Olive oil, 450; castor oil, 50; palmarosa oil, 15; African geranium oil, 15; oil of cloves, 3; otto, 0·15. *Ylang-ylang*: Olive oil, 450; sweet almond or castor oil, 50; lignaloe oil, 10; cananga oil, 7·5; African geranium oil, 4; ylang-ylang, 3; wintergreen oil, 0·5; oil of nutmeg, 0·2. *Heliotrope*: Olive oil, 450; almond oil, 50; oil of cloves, 15; oil of lignaloe, 6; bergamot, 5; oil of cedar wood, 2; heliotropin, 1; vanillin, 0·4. *Violet*: Olive oil, 450; sweet almond oil, 50; oil of orris, 10; bergamot, 7·5; lavender oil, 6; oil of cedarwood, 5; sandalwood oil, 4; wintergreen, 1. *Macassar*: Olive oil, 400; bergamot, 4; bitter almond oil, 1·5; African geranium, 2.—*Pharm. Zeit.*, lxxii., 515.

PHARMACEUTICAL SOCIETY.

EVENING MEETING IN LONDON.

At the ordinary Evening Meeting of the Pharmaceutical Society of Great Britain on Tuesday, March 8, the chair was taken at 8 o'clock by Mr. Walter Hills, President of the Society.—The first paper read was on

Pharmaceutical Preparations of Cantharides,

by Professor Greenish and Mr. Wilson. The paper is printed at page 255; and gave rise to the following discussion :—

The President said this was a very interesting and practical paper. He was glad it had emanated from the pharmaceutical laboratory of the Society, and hoped it was the precursor of many others of similar character. If they were all equally valuable they would thoroughly justify the existence of that department. He also agreed with the authors that it was not too soon to begin to work for the next Pharmacopœia. He should be glad if Professor Greenish could give any further information as to the combined cantharidin and say what it was associated with, and if it was as efficacious as that in the free state. With regard to the comparative efficacy of different preparations, such as liquor epispasticus and the ointment, he presumed care was taken to apply equal quantities to equal surfaces, otherwise he did not see how a comparison could be made. The specimen of emplastrum cantharidis submitted was certainly superior to what they were in the habit of sending out.

Mr. Martindale said it was highly desirable that more definite preparations of cantharides should be adopted, and he agreed with the suggestion that pure cantharidin should be used instead of the crude article. The difficulty was, however, that the pure article was difficult of solution, and when dissolved by the aid of heat readily crystallised when cooled. Chloroform, which was recommended as the solvent, had its advantages, but when the solution cooled the cantharidin separated in crystals, which were somewhat difficult to manage. Acetone and formic acid were good solvents, and so also was acetic ether, which was used in the present Pharmacopœia, and was more satisfactory than the one named in the 1867 Pharmacopœia, which was glacial acetic acid, followed by ether, to displace it. That was rather a difficult process to carry out, but it made a good liquor epispasticus, in fact, better than the one in the present Pharmacopœia. He was glad to see that the preparation suggested was stronger than the present one. The old preparation, made as directed in 1867, was by no means to be despised, for he remembered once being directed to apply it to a hospital patient's knee, when it not only produced a severe blister, but a considerable amount of strangury. When applied to a small surface to produce quick and efficient blistering it had of late been disappointing, particularly when applied behind the ear or on the temples by aurists or oculists, and he thought the collodion preparation would be a great desideratum in such cases. The question whether the acetum cantharidis was a useful preparation was discussed in a very early volume of the Journal, and Professor Redwood was of opinion that its effect was to a considerable degree due to the action of the glacial acetic acid, others held different views, but he could corroborate what had been said as to the difficulty of making it. It got into a kind of magma which would not percolate, and was very difficult to deal with in any way. He remembered on one occasion, when an apprentice, having, with the assistant, to make some emplastrum cantharidis, and his master thought they had sprinkled the flies in when the mixture was too hot, and that the cantharidin must be volatilised to a considerable extent. He had learned lately, however, that that was quite a mistake, and that it almost wanted digesting. At any rate, it should be fairly warm, and kept warm for some time, in order to make an efficient plaister and get the cantharidin dissolved in the vehicle. He should like to know if cantharidin sublimed readily, and also in what form the combined cantharidin existed. It formed salts with alkalies, and cantharidates of soda and potash had been at one time recommended for hypodermic injection as a cure for phthisis. It was very curious that in making the emplastrum calefaciens, the active principle was taken up by water, seeing that cantharidin was almost insoluble in that liquid.

Professor Greenish said it was so curious that the experiment was repeated three times, but there was no doubt that it was actually dissolved.

Mr. John Umney remarked that liquor epispasticus made with absolutely pure acetic ether, containing no alcohol and no acetic acid, was not nearly so efficient as when it was made with impure acetic ether containing acetic acid and alcohol. That was what might be expected from the liberation of the combined cantharidin, and also from the escarotic action of the acetic acid on the skin when the liquid was applied. He noticed that Professor Greenish proposed a standarised solution of cantharidin in acctic ether, of the strength of 1 in 300, and a liquor epispasticus, having a strength of 1 in 600, and he should like to know if a solution could be made using twice the quantity of flies in the same amount of solvent, in other words twice the strength of the pharmaceutical preparation. As the solubility in acetic ether was said to be 1 in 160, he should presume it could. With regard to making acetum cantharidis by the warm process, he remembered attempting to get some made in that way soon after the 1885 Pharmacopœia came out, but his laboratory assistant suggested that if it were wanted again he had better make it himself, and since then he had always employed the cold process.

Mr. Allen said he was quite sure this paper would well repay careful study. The most important point was the suggestion of formulæ which could be easily adopted, and would give definite results, and anyone who did that deserved the thanks of all practical pharmacists. As he understood, Professor Greenish was not particularly charmed even with his own formula for liquor epispasticus, and seemed to suggest that the crystalline cantharidin was to some extent occluded by the resin.

Professor Greenish said the acetic ether rapidly evaporated, and as there was not much fat present unless successive applications were made, there was not much active principle left to penetrate the skin.

Mr. Allen said he would like to know if any experiments had been made to test the comparative efficacy of the present liquor and the one now suggested. Something which could be relied on as a rapid vesicant was a great desideratum, and it appeared that the collodion would more nearly answer the purpose. He noticed that there were exhibited four potent preparations, which were all colourless, and it occurred to him that if the pharmacy of the future were to resolve itself into the solution of alkaloids in colourless menstrua, very great care would be required in dispensing and handling them.

Mr. Sage agreed with Mr. Umney that pure acetic ether would not extract the whole of the cantharidin. In making comparative experiments some years ago, owing to complaints that the 1885 liquor epispasticus would not blister, he found that the 1867 preparation contained more cantharidin than the 1885, but there was no doubt that the acetic acid used in the former had some influence on the result. On the other hand it seemed rather a retrograde step to give up the old method; he thought rather it should be improved. He had found that by treating the cantharides with acid and a little alcohol, drying them and then extracting with acetic ether he got a much larger proportion of the cantharidin than by following the Pharmacopœia method. He found it more soluble in chloroform than anything else, though acetone was largely used commercially. He had found that cantharidin had a very strong sternutatory effect, for on one occasion having somewhat overheated the solution it set him sneezing so that he was obliged to leave business for the day.

Mr. Collier said cantharides was useful for many purposes, for stimulating lotions and hair washes, as well as for blisters. His experience had shown him that in regard to the latter there was a great difference in the susceptibility of different individuals to the action of such applications, and it was also necessary that certain precautions should be observed in applying them. In many persons the skin required to be cleaned and softened before the blister would act. But on the whole, if due care were taken in these respects, he had found the present preparations satisfactory, and they were largely used at the institution with which he was connected.

Mr. Holmes said there were two important suggestions in this paper; first, that the proportions in the preparations should be given in the metric system, and secondly, that pure cantharidin should be used instead of the flies. It was well known that both Spanish and Chinese flies varied very greatly in the amount of cantharidin they contained, and it would be much more satisfactory to have a uniform product. He could confirm what Mr. Collier had said about individual susceptibility varying. He would like to ask whether, in the case in which the cantharidin

appeared to be dissolved by water, it was the free cantharidin or the cantharidate which was dissolved; secondly, whether the authors had any experience as to the action of heat on the cantharidates causing the setting free of cantharidin; and thirdly, whether any difference had been noticed in the efficacy of preparations made with lanolin and with vegetable fat.

Mr. Sturton asked if Professor Greenish had had any experience of other vesicants, such as Burt's liquor vesicatorius, which was brought to his attention by a surgeon some time ago, who said that the liquor epispasticus was unsatisfactory. It was said to raise a blister in less than half the time of the official preparation.

Professor Greenish, in reply, said they had carefully abstained from proposing any new preparation as yet, but had simply suggested new formulæ for those at present in use, and even in these very possibly experience might suggest further improvements. He could not say with certainty in what form the combined cantharidin existed, but in all probability it was either as a magnesium or calcium salt of cantharidic acid. It was difficult to ascertain the relative efficacy of the liquor epispasticus and other preparations, as it must be remembered that the quantity of liquor one could paint on a part was very small, and would contain much less cantharidin than would be found in the quantity of ointment which could be placed on a piece of lint. If the liquor was to be used as a vesicant its application must be repeated several times. He was aware that acetone and formic acid had been used as solvents, but he did not think either of them had any advantage over chloroform, which was already in the Pharmacopœia, whereas they were not. Some solvent had to be used, because crystallised cantharidin was very slowly soluble in any fat, and not quickly even in chloroform in the cold, but it dissolved readily on warming, and could then be mixed with fat, and on the water bath the chloroform was readily dissipated. Cantharidin volatilised pretty freely, and no doubt in drying cantharides after treatment with acid, as was sometimes done in assaying, cantharidin was lost by volatilisation. Under such circumstances it could be seen subliming on the sides of the dish, but they had not succeeded in recovering the cantharidin in the residues by sublimation. He had very little doubt that the glacial acetic acid in the old formula would considerably aid the action of the cantharidin. There was no doubt that if cantharides were added to melted fat in making the plaster, and it was kept hot for some time, a larger proportion of the cantharidin went into solution, but that was, in his opinion, an additional reason for abandoning that method in favour of an easier and more definite one. He did not know whether the age of the emplastrum cantharidis had any influence on the amount of cantharidin dissolved, but probably it had. In making the liquor epispasticus they were careful to use, not absolutely pure acetic ether, but one such as would ordinarily be found in commerce. The one they used contained traces of acetic acid, but not any large proportion of alcohol; and this extracted the whole of the cantharidin, which absolute acetic ether would not. They had not experimented with double the quantity of flies, but he had very little doubt that such a quantity would be practically exhausted. A liquid preparation which would rapidly produce vesication was no doubt a desideratum, as the application of a plaister in some cases, as behind the ear, was inconvenient; for such purposes he thought the collodion would be valuable. It would be easy to add some colouring matter to the clear preparations if desired, but he should not himself recommend it. They had not noticed the sternutatory effects mentioned by Mr. Sage. They had confined their experiments to themselves, but the existence of personal idiosyncrasies in this matter was well known. It was pointed out by Mr. Squibb that it was desirable to wash the skin not only with soap and water, but in some cases to add a little dilute acetic acid. They had not any experience as to the action of heat on the cantharidates, but he did not think it would have any dissociating effect on cantharidic acid combined with alkalies, such as soda, potash, lime, or magnesia, but it might with ammonia. The condition in which the cantharidin extracted in making the emplastrum calefaciens became soluble in water had puzzled them greatly, and no doubt it was a point on which various theories might be suggested, but he was content with recording the fact. It was not a new fact, because the method of boiling with water was recommended many years ago as a means by which cantharides could be assayed, but it was shown afterwards that only incomplete exhaustion was effected. No doubt lanolin, being a fat easily absorbed by the skin, would be very suitable to use in conjunction with a solution, but they could not employ it because anhydrous lanolin was not over soluble in acetic ether, and no means presented itself for making a preparation which should contain a fair proportion of cantharidin, and at the same time be so viscid that a fair amount could be applied They tried a solution in chloroform containing about one-third of its weight of lanolin, and one in 800 cantharadin, but when painted on the skin and covered with lint it only reddened it, whereas a solution of cantharidin, one in 300, would blister. In conclusion he ought to say that the whole of the experimental work had been carried out by Mr. Wilson under his supervision, and some of the operations dealing with very small quantities of cantharidin in large quantities of fat, resin, wax, etc., were very tedious.

The President then moved a vote of thanks to the authors, which was carried unanimously.

Recent Additions to the Museum.

Mr. Holmes next drew attention to some recent additions to the Museum, including both donations and purchases. First came some specimens of *Rhamnus purshiana*. He had been told that sometimes this bark gave a deep yellow infusion, which was probably due to a mixture of *R. crocea* being present; *R. californica* was also occasionally mixed with it. As a rule the last had a paler colour, and was covered with lichens. There was a very fine specimen presented by Mr. Moss; this was covered with mosses, which he had submitted to Mr. Mitten, the great authority on mosses, who said they were characteristic of the region in which this bark was found. When moss covered a bark it generally prevented lichens growing there, and consequently the purplish-brown tint characteristic of *R. purshiana* bark was shown much better on this specimen than was often the case. Next came some specimens of rhatany, of which there were exhibited the three kinds known in commerce, viz., Savanilla, which had not been obtainable in commerce for many years; the Para, which had been for many years in commerce, but was now somewhat scarce; and Peruvian, which was now more abundant. There was a difference in the practical working of these varieties which he did not think had been sufficiently noticed. Mr. Naylor had prepared for him a tincture of the Para and Peruvian of the Pharmacopœia strength, and although there was not much difference in their appearance, when water in the proportion of 1 to 7 was added the Peruvian gave a cloudy solution, whilst the Para remained clear. Some soap nuts had also been recently presented by Messrs. Hearon, Squire, and Francis. These were the product of *Sapindus mukorossi*. Concerning these, Mr. Holmes said the use of vegetable substances containing saponin has of late years considerably increased. Until quite recently, however, quillaia bark and soap root have been the articles chiefly used. For washing silk, wool, and other fabrics which are likely to be injured by the caustic action of the free alkali or alkaline carbonate, always present in a solution of soap, these two products have been chiefly employed. Quillaia also has largely entered as a constituent into some varieties of soap, and has been employed as a hair wash. For the latter purpose, however suited it may be for the use of Chilian ladies, it is somewhat objectionable to Europeans on account of the unpleasant odour of the tincture. Another purpose for which these vegetable soaps have been used is for the preparation of frothing liquids to give a foamy appearance to aërated waters and alcoholic beverages, and a preparation for this purpose has been made from the fruits of various species of Sapindus, imported from the East or West Indies. Hitherto those imported have been dark in colour and derived apparently either from *Sapindus saponaria* of the West Indies, or *S. trifoliatus* from the East Indies. The fruit to which attention is directed at present is of a pale colour, and might therefore prove useful in some cases in which a dark colour would prove objectionable. These fruits are evidently procurable in considerable quantities, since Dr. G. Watt ('Dict. Econ. Products of India,' vol. vi., pt. II., p. 468) states that the export from the Kumáon forest division amounts to twenty tons per annum. He also quotes a statement to the effect that "some of the tinctorial results for which the Indian dyer is famous can only be produced, it is said, if the fabric be first washed, the fruits of this tree being used as a detergent." It was further suggested that, as plants containing saponine are very rarely attacked by insects, a preparation of the fruits might be worth trial as an insecticide for use in green-houses. A specimen of the crystalline principle of *Daviesia latifolia* had been presented by Mr. Bosisto, of Melbourne. This had been examined by Dr. Paul, who was of opinion that it was a principle not yet described, and was probably of the nature of a glucoside. Specimens of the ingredients forming the essence of lemon and

consisting of the terpene, citral, and citraptene, in the proportions in which they occurred in the ordinary essence, were presented by Messrs. Clayton and Jowett. Two specimens of ipecacuanha represented the two commercial varieties, viz., Carthagena and Rio, and the alkaloids obtained from one pound of each drug. These valuable alkaloids had been presented by Mr. Whiffen. The Carthagena contained much more cephaeline and the Rio more emetine, the former alkaloid being now considered more active as an emetic. The various specimens of asafœtida were interesting from several points of view. The amount of impurity or ash found in this drug varied considerably, ranging from 1½ to 4½ per cent. in the tears which generally came from the Persian Gulf, up to pehaps 12 per cent. in tears of bad quality from Bombay, in which the impurity consisted largely of small flints broken up and mixed with the drug. In ordinary lump asafœtida the impurity varied from 20 to 60 per cent., 36 to 40 being quite usual. When the drug was powdered, which it had to be for making pills, all these impurities went into the powder. In making strained asafœtida, the resin had to be taken out with spirit and the gum with water, and there was a loss of oil during the evaporation, so that the resulting drug was not the same in composition. In his opinion the pure tears only should be used for this purpose, and they only cost about a fourth more than very inferior lump. Of the specimens of the synthetic perfumes presented by Messrs. Schimmel and Co., the jasmine and neroli were specially noteworthy. It was impossible to distil jasmine flowers, so that the perfume had to be extracted by the enfleurage process. This artificial scent was a wonderful imitation, and was both strong and permanent. There was also ionone, which had a powerful odour of violets, and geraniol, the chief principle in otto of roses. There were also a few volatile oils which could be used for making culinary essences for use at times when fresh herbs could not be obtained. Next came a bottle of Japanese wood oil obtained from a euphorbiaceous plant. Some years ago Mr. R. H. Davies read a paper, which was published in the *Pharmaceutical Journal* [3], xv., p. 636, on this oil, and another quite recently by Mr. Dering in the *Journal of the Imperial Institute*. It was largely used in China, where it took the place of linseed oil, and had certain advantages and certain drawbacks. It was drying oil, and when exposed to the air in a thin layer it dried to a white opaque film in twenty hours, whilst linseed oil required sixty hours. Being opaque it was not suitable for some purposes, but was very useful for others, and was worthy of more attention than it had yet received in this country. Some of the newer perfumes having been shown, attention was next called to two oils of amber. One was supposed to be true oil of amber, and was worth about 16*s.* per lb., while the other was sold at 1*s.* or 1*s.* 6*d.*, and obviously could not be obtained from amber. He understood it was produced by the destructive distillation of rosin. In this process a somewhat acid liquid first came off, then a light oil or spirit, known as rosin spirit, and the next product was the thick oil known as rosin oil, a drying oil which was used for many purposes, including the manufacture of printing ink. Another, a bright variety, was used, he was informed, for adulterating linseed oil. Rosin spirit was largely used in making varnishes. Mr. Hart, of Trinidad, had sent a nut called *Omphalea megacarpa*, which was tasteless, and the oil from it was practically tasteless and odourless, and was said to act as efficiently as castor oil without giving so much discomfort; this had already been described in the *Pharmaceutical Journal*. Lastly, there were some specimens of india-rubber from New Guinea, presented by Messrs. Lewis and Peat, one of which was much harder than ordinary rubber, more like gutta percha, and might no doubt be useful for special purposes.

Mr. J. Umney said the different behaviour of tinctures of rhatany when mixed with water was described some years ago by Mr. Braithwaite.

Mr. Moss said he felt much indebted to Mr. Holmes for taking the trouble to identify the cryptogams on the cascara bark, though he knew he was always anxious to clear up any point which was of interest to pharmacists. He should like to know if any opinion had been formed as to the age of the mosses, and, if so, whether that would not be some indication of the age of the bark. He had recently learned from inquiries on the Pacific Ocean that cascara ought not to be described as a shrub, but rather as a tree, and sometimes it was a fairly large tree. One could understand that in different localities the plants would grow to different sizes. He was told that the cascara preferred a damp situation and a loamy soil.

Mr. Holmes, in reply, said one of the mosses might be the growth of one or two seasons, and another species from its size he should think might be five or six years old. The size attained by the plant varied very much with the situation in which the plant grew. Of the two British species, *Rhamnus cathartica* grew only on chalk or limestone in dry situations, and the other, *Rhamnus frangula*, as a rule, in damp sandy woods. About Sevenoaks he had not seen bushes of the latter with a stem larger than his wrist, but on the banks of the Teign he saw one of which the stem was a foot thick, and was a different looking plant altogether. He ought to have stated that he was indebted to Mr. Naylor for determining the amount of ash in the various commercial samples of asafœtida.

The President then proposed a vote of thanks to Mr. Holmes, which was carried unanimously.

DONATIONS TO THE LIBRARY.

At a meeting of the Library, Museum, School and House Committee, on Wednesday, March 9, the Librarian presented the following report of donations:—

To the Library (London).

Radcliffe Library, Oxford:—Catalogue of books added during 1897.

M. A. Petit, Paris:—'Sur deux nouveaux alcaloidos'; 'Contribution à l'étude de la pilocarpine,' etc., 1897.

Pharmaceutical Society of Ireland:—Calendar, 1898.

Surgeon-General, U.S. Army:—Index-catalogue of Library, second series, vol. 2, 1897.

H.M. Secretary of State for War:—'Army Medical Department Report for 1896.

T. B. Browne, Ltd, London:—'The Advertisers' ABC.,' 1898.

Messrs. Street Brothers, London.—'Street's Newspaper Directory,' 1898.

Mr. W. Martindale, London:—'Journal of the Sanitary Institute,' vols. 17-18.

Colonial Pharmacy Board, Cape of Good Hope:—'The Medical and Pharmacy Register,' 1897.

Mr. J. C Sawer, Brighton:—Waller's 'German-English Medical Dictionary, 1884; 'Klinisches Recept-Taschenbuch,' 1883; 'Memoirs of a Stomach.'

To the Library (Edinburgh).

Victorian Pharmaceutical Association:—'Victoria Pharmaceutical Register, 1897.

THE ANNUAL DINNER.

A general meeting of persons interested in the Annual Dinner of the members of the Pharmaceutical Society and their friends took place in the Council Room, 16, Bloomsbury Square, London, W.C., on Wednesday last. Mr. Walter Hills, the President of the Society, presided, and among those present were Messrs. Arkinstall, Eastes, Albert Cooper, Humphrey, Hopkin, Martindale, J. H. Mathews, R. A. Robinson, G. S. Taylor, and Dr. Paul. It was agreed to hold the Dinner on Tuesday, May 17 next, at 6.45 for 7, and the choice of place once more fell upon the Hotel Cecil, though it is to be in the Victoria Hall of that ample building instead of in the Great Hall, which received the Festival diners last year. The price of tickets was fixed at one guinea (including wine), and the usual—one might almost say time-honoured—arrangements for defraying the cost of entertaining guests were also agreed to. After some discussion it was decided that this, the twenty-fifth Annual Dinner, should be graced with the "harmony of sweet sounds"—in other words, that the oratory should be diluted with music. Details were left to the care of a strong Committee, and gentlemen desirous of supporting the President and contributing to the success of the Dinner are requested to communicate their willingness to be enrolled as Stewards to Mr. Bremridge, the Honorary Secretary, 17, Bloomsbury Square, London.

Determination of Phenol in Soap.—Klopine publishes the following method for the assay of phenol in carbolic soap:—Ten grammes of the shaved soap are introduced into a capacious flask with a few fragments of pumice stone and 200 C.c. of 5 per cent. sulphuric acid. This flask is connected on one hand with another flask, which serves as a steam generator, and on the other hand with a condenser attached to a receiver. Steam is then blown through the boiling soap solution, and carries over the phenol. Distillation is continued until 100 C.c. of distillate are obtained, which is then thoroughly cooled, filtered, neutralised with soda, and extracted with ether until no reaction is given by the aqueous solution with ferric chloride. The ether is then evaporated and the phenol either weighed or determined volumetrically.—*Journ. de Pharm.* [6], vi., 165.

LINNEAN SOCIETY OF LONDON.

At the meeting held on Thursday, February 17, Dr. A. C. L. Günther, M.A., F.R.S., President, in the chair.—Professor G. B. Howes exhibited

Specimens of Dog-Fishes.

(1) *Scyllium canicula* from the egg-case, and (2) *Scyllium catulus* prematurely hatched, which he had received from his friend and former pupil, Mr. E. W. L. Holt, of the Marine Biological Laboratory at Plymouth. The specimens showed the dorso-lateral and caudal placoids which led Filippi to propose the species *Scyllium acanthonotum*, shown by Dr. Günther to be based upon a developmental character, and had in recent years been the subject of some interesting speculations by Paul Meyer. For comparison he exhibited also an embryo from the purse of *Callorhynchus antarcticus*, showing a similar set of organs, and gave reasons for surmising that they are not merely transitory vestiges, but of service to the animal while encapsulated within its egg-case.—Mr. J. E. Harting next exhibited a nearly

White Variety of Mus Rattus,

recently obtained in Carnarvonshire, and made some remarks on the difference of haunts and habits in the two species *M. rattus* and *M. decumanus*, and on their usual antagonism. In reply to Mr. H. J. Elwes on the question of occasional hybridism, he stated that no well-established case of the kind had been recorded, although some years ago Mr. Barrett Hamilton had described (*Zool.*, 1888, p. 141) a suspected hybrid which was partly brown in colour, partly black, and exhibited some other intermediate characters. He referred to the so-called Irish rat, *Mus hibernicus* of Thompson, which was now regarded as a permanent black variety of *Mus decumanus* not confined to Ireland. Mr. F. N. Williams then read a paper on

Arenaria,

one of the larger genera of Caryophyllaceæ, which now includes a considerable number of species. *Alsine* and others, usually included as sections of the genus, he thought should be regarded as distinct genera; *Alsine* and *Arenaria* being distinguished by the same cardinal character which separates *Lychnis* from *Silene*. The genus under revision includes species (of which 168 are enumerated) distributed chiefly throughout the north temperate zone, though in the new world a few occur in South America. A few species which extend toward the Tropics occur at considerable elevations on mountain-ranges, reaching, for instance, 19,000 feet in the Himalayas of W. Tibet. In this revision, for the formation of primary groups, the two associated characters relied on are the number of teeth formed by dehiscence of the ripe capsule, and the structure of the disk. An examination of several series of specimens, especially of those of the better known forms growing *in situ*, shows these two characters to be fairly constant, and suitable for the definition of primary groups, although in habit and aspect species of *Alsine* are not readily distinguished from those of *Arenaria*. The author's descriptions are confined to species recognised during the last fifty years (from 1848 to 1897 inclusive), the others being cited in their proper place by name and references.—Mr. G. S. West next read a paper on the histology of the salivary, buccal, and harderian

Glands of the Colubridæ,

with notes on their tooth-succession and the relationship of the poison-duct. The unicellular buccal glands were described especially as concerning their striated free-border, and together with other of the gland-cells treated in relation to their mode of discharge and the presence of "proliferating cells" believed to functionally replace them. The labial glands, which the author regards as mucus-forming, were shown to have their ducts beset in all *Colubridæ* examined by secretory cells similar to those of their alveoli. The parotid gland and poison-duct were next considered; the latter was shown to be much convoluted in the *Hydrophiinæ*, and special attention was given to mucus-secreting glands besetting it already described by Emery in *Naja haje*, accessory alveoli similar to which were discovered, the admixture of this large amount of mucus in the parotid saliva being regarded as peculiar to the Ophidia. Concerning the teeth, it was shown that in *Bungarus* and *Platurus* the poison-fangs are developed not as in Cobra in a single series, but as in the Viperines in two which are parallel; and reason was given for regarding the non-striate muscular cushions present at the bases of the fangs of the *Hydrophiinæ* as representatives of the sphincter muscles of the poison-ducts of the *Crotalidæ*.

NOTICES OF BOOKS.

'Nozioni di Analisi Chimica,' by Dr. Icilio Guareschi (Torino), is an excellent little work of some 170 pages, on chemical analysis. It is such a work as, placed in the hands of a beginner in analytical chemistry, will be found exceedingly well adapted for leading him step by step to the higher branches of applied chemistry. It describes the more important apparatus employed in the laboratory, the operations necessary, and the various reactions, in such a manner as to make all the points clearly understood. It is, moreover, capitally well illustrated. 'Nozioni di Analisi Chimica' is quite worthy of an English translation.

The 'Pocket Formulary,' by Dr. Ludwig Freyberger (London: Rebman Publishing Company. 6*s.* 6*d.* net.), is devoted to the treatment of the diseases of children, and its object is to give the busy practitioner, in a concise and handy form, all the information which may be required as regards the treatment of those diseases by drugs. The monographs are arranged in alphabetical order, and include brief accounts of the properties and uses of medicaments, therapeutics, incompatibles, and doses, besides treating of correction of taste and giving examples of formulæ, together with particulars of antagonists and antidotes. Most of the drugs and preparations referred to are official, and those that are not are distinguished by a variation in the type employed for the names. An appendix includes lists of pharmaceutical preparations suitable for local or hypodermic application, and a therapeutical index gives completeness to the work. It is very tastefully produced, in a most compact and convenient form for the pocket.

'General Elementary Science,' edited by William Briggs, M.A. (London: W. B. Clive, 3*s.* 6*d.*), is a work specially produced to meet the requirements of intending candidates at the University of London Matriculation examination. The new subject in the syllabus—General Elementary Science—includes (1) elementary mechanics; (2) elementary heat, light, and electricity; (3) very elementary chemistry. The wisdom of encouraging such a superficial knowledge of the various sciences may well be doubted, but in any case a handy book is now available, in which all the branche are efficiently treated for examination purposes. The first section is ably dealt with by Professor Bryan, D.Sc., F.R.S., and A. G. Cracknell, M.A., the physics by John Don, M.A., B.Sc., and the chemistry by Drs. G. H. Bailey and Frank Beddow. Such an array of talent was surely never before displayed in connection with so slight a work, but the result is a thoroughly practical book, well arranged for the desired purpose.

'Guide pratique pour les Analyses de Bactériologie Clinique,' is the title of a useful little book of 300 pages, compiled by Léon Feltz and Félix Bouillat (Paris: J. B. Baillière et Fils. 3 fr.) The authors are both pharmaciens of the 1st class, and they have endeavoured to produce a practical guide for the use of medical men and pharmacists, dealing especially with clinical bacteriological analysis. The earlier chapters are devoted to technique and fully illustrated. Then follow detailed descriptions of the more important pathogenic bacteria, coloured illustrations being introduced to show the results of staining by special methods. The analysis of milk, water, urine, etc., receive much attention in the latter part of the book, and tables showing the characteristics of pathogenic microbes are followed by a very complete index. The book is a marvel of cheapness, and it is doubtful if a similar work could be produced at anything like the same price in this country.

The Metric System for Pharmacists.

Equivalents of Weights from 1 Troy Ounce to 1 Grain.

Imperial Weight. Grains.		Metric Weight. Grammes	Imperial Weight. Grains.		Metric Weight. Grammes.
480	[1 ℥	31.103	210		13.607
478·4		31	208.4		13.5
470		30.455	205		13.284
470.7		30.5	200.6		13
463.0		30	200		12.960
460		29.807	195		12.636
455.3		29.5	192.9		12.5
450		29.159	190		12.312
447.5		29	185.2		12
440		28.512	185		11.988
439.8		28.5	180	[3 ℥	11.663
437.5	[1 av. oz.	28.350	177.5		11.5
431.1		28	175		11.340
430		27.864	170		11.016
423.4		27.5	169.8		11
420	[7 ℥	27.215	165		10.692
416.7		27	162.1		10.5
410		26.568	160		10.368
408.3		26.5	154.3		10
401.2		26	155		10.044
400		25.919	150		9.719
393.5		25.5	146.6		9.5
390		25.271	145		9.396
380		24.624	140		9.072
385.8		25	138.6		9
378.1		24.5	135		8.748
370.4		24	130.9		8 5
370		23.976	130		8.424
362.7		23.5	125		8.100
360	[6 ℥	23.327	123.5		8
354.9		23	120	[2 ℥	7.775
350		22.679	115.8		7.5
347.2		22.5	115		7.452
340		22.032	110		7.128
339.5		22	109.37	[¼ av. oz.	7.088
331.8		21.5	108.0		7
330		21.383	105		6.804
324.1		21	100.3		6.5
320		20.736	100		6.480
316.4		20.5	95		6.156
310		20.088	92.6		6
308.6		20	90		5.832
300.9		19.5	85		5.508
300	[5 ℥	19.439	84.9		5.5
293.2		19	80		5.184
290		18.792	77.2		5
285.5		18.5	75		4 860
280		18.144	70		4.536
277.8		18	69.5		4.5
270.1		17.5	65		4.212
270		17.495	61.7		4
262.3		17	60	[1 ℥	3.888
260		16.848	55		3 564
254.6		16.5	54.69	[⅛ av. oz.	3.544
250		16.199	54.0		3.5
246.9		16	50		3.240
245		15.878	46.3		3
240	[4 ℥	15.551	45		2.916
239.2		15.5	40		2.592
235		15.228	38.6		2 5
231.5		15	35		2.268
230		14.904	30.9		2
225		14.580	30	[½ ℥	1.944
223.8		14.5	29.3		1.9
220		14.256	27.8		1 8
218.75	[½ av. oz.	14.175	27.0		1.75
216.1		14	26.2		1.7
215		13.932	25		1.620
			24.7		1.6

Imperial Weight. Grains.	Metric Weight. Grammes.	Imperial Weight. Grains.	Metric Weight. Grammes.
24	1.555	11	0.713
23.2	1.5	10.8	0.7
23	1.490	10 1	0.65
22	1.426	10 [½ ℈	0.648
21.6	1.4	9.1	0.6
21	1.361	9	0.583
20.1	1.3	8.5	0.55
20 [1 ℈	1.296	8	0.518
19.3	1.25	7.7	0.5
19	1.232	7	0.454
18.5	1.2	6.9	0.45
18	1.166	6.2	0.4
17	1.102	6	0.389
16.9	1.1	5.4	0.35
16	1.037	5	0.324
15.4324	1	4.6	0.3
15	0.972	4	0.259
14.7	0.95	3.9	0.25
14	0.907	3.1	0.2
13.9	0.9	3	0.194
13.1	0.85	2.3	0.15
13	0.842	2	0.130
12.4	0.8	1.9	0.125
12	0.775	1.5	0.1
11.6	0.75	1	0.065

Equivalents of Weights from 5 Grains down.

Grains In decimal fractions.	Grains In common fractions (approximate).	Grammes.	Grains. In decimal fractions.	Grains. In common fractions (approximate).	Grammes.
5	5	0·324	0.43	7/16	0.028
4.5	4½	0.291	0.39	2/5	0.025
4	4	0.259	0.37	3 8	0.024
3·5	3½	0.226	0.31	5/16	0.020
3	3	0.194	0.24	1/4	0.016
2.5	2½	0.162	0.18	3/16	0.012
2	2	0.130	0.12	1/8	0.008
1.5	1½	0.097	0.06	1/16	0.004
1	1	0.065	0.05	1/20	0.0032
			0.04	1/25	0.0027
			0.033	1/30	0.0022
			0.028	1/36	0.0018
0·94	15/16	0.061	0.025	1/40	0.0016
0.93	9/10	0.060	0.02	1/50	0.0013
0.88	7/8	0.057	0.017	1/60	0.0011
0.82	13/16	0.053	0.015	1/64	0.0001
0.77	4/5	0.050	0.01	1/100	0.0006
0.76	3/4	0.049	0.008	1/128	0.0005
0.69	11/16	0.045	0.0065	1/160	0.0004
0.62	10/16	0.040	0.005	1/200	0.0003
0.56	9/16	0.036	0.003	1/320	0.0002
0.5	1/2	0.032	0.0015	1/640	0.0001

CORRECTIONS TO PREVIOUS TABLES.

Most of the following corrections to the tables of metric equivalents recently published are repeated, in order that they may not be overlooked by readers. The Editor will be obliged to any reader who may point out further errors that may be detected :—

Page 209, col. 1, line 24, read "1 Mile = 1,609,342.6 Millimetres."
Page 209, col. 1, line 26, read "1 Grain = 0.0648 Gramme."
Page 209, col. 2, line 15, read "Inches × 0.0254 = Metres."
Page 211, col. 1, line 54, read "77.2" Grains, *not* "74.2."
Page 211, col. 2, line 8, read "Millilitres × 0.035 = Ounces (fluid)."
Page 211, col. 2, line 11, read "Ounces (fluid) ÷ 0.035 = Millilitres."
Page 211, col. 2, line 21, read "Fluid Grains" as "Imperial Measure."
Page 212, col. 1, line 2, read "Fluid Grains" as "Imperial Measure."
Page 212, col. 1, line 50, read "437·5" Fluid Grains, *not* "435.7."
Page 212, col. 1, line 57, read "14.798" Millilitres, *not* "14.394."

THE STUDENTS' PAGE.

EXPLANATORY NOTES ON THE B.P.

SPIRITUS ÆTHERIS NITROSI.—If alcohol be heated with nitric acid alone some of the alcohol is oxidised to aldehyde by the nitric acid, the latter being reduced to nitr*ous* acid. The nitrous acid reacts with more ethyl alcohol to form ethyl nitrite. The distillate obtained in this way and containing chiefly aldehyde and ethyl nitrite dissolved in unchanged alcohol constituted the original sweet spirit of nitre, the nitric acid being at one time formed in the process from potassium nitrate and sulphuric acid. The process in the present Pharmacopœia directs the addition of copper wire, with the intention of thereby reducing the nitr*ic* to nitr*ous* acid, and so increasing the yield of ethyl nitrite. The nitric acid is added in two portions, so as to moderate the rate of reaction. The exact part played by the copper may be interpreted in several ways. Note, however, that the residue after distillation contains the excess of metallic copper with blue crystals of copper sulphate. Probably, however, copper nitrate is first formed, since sulphuric acid of the strength employed has no action on copper. Copper nitrate being first formed would, however, be decomposed by sulphuric acid with regeneration of nitric acid and production of copper sulphate. It is obvious that in the formation of copper nitrate the hydrogen of the acid is displaced by copper—

$$Cu + 2HNO_3 = Cu2(NO_3) + 2H,$$

but this hydrogen never appears as the free elementary gas, but reduces some more of the nitric to nitrous acid.

$$HNO_3 + 2H = HNO_2 + H_2O.$$

The nitrous acid then reacts with alcohol to form ethyl nitrite and water—

$$C_2H_5OH + HNO_2 = C_2H_5NO_2 + H{\cdot}OH,$$

while the copper nitrate is acted upon by the sulphuric acid—

$$Cu2(NO_3) + H_2SO_4 = CuSO_4 + 2HNO_3.$$

Adding these four equations together we get the form in which the initial and final conditions of the reacting substances are usually represented—

$$Cu + HNO_3 + H_2SO_4 + C_2H_5OH = C_2H_5NO_2 + CuSO_4 + 2H_2O.$$

This equation only represents the formation of ethyl nitrite, which, however, is the most valuable constituent of the product. Numerous other reactions occur, which are of subsidiary importance.

Spirit of nitrous ether, when freshly and properly prepared, should be neutral. When old it becomes acid either from oxidation of aldehyde to acetic acid or the hydrolysis of the ethyl nitrite by some of the water present with production of nitrous acid—

$$C_2H_5NO_2 + HOH = C_2H_5OH + HNO_2.$$

The ethyl nitrite should be present to the extent of 2 to 3 per cent. When kept, however, it gradually disappears, partly owing to the decomposition mentioned above and partly to volatilisation, for the boiling-point of ethyl nitrite, 17° C., is so low that it readily escapes, even at ordinary temperature, from the alcohol in which it is dissolved.

The proportion of ethyl nitrite present is determined by measuring the volume of nitric oxide obtained when potassium iodide and dilute sulphuric acid are added to a known volume of the spirit. These two reagents practically yield hydriodic acid, which is very commonly used as a reducing agent in organic chemistry. In the present instance ethyl nitrite, which is an ester of nitrous acid and consequently a derivative of nitrous anhydride (nitrogen trioxide), N_2O_3 yields the lower oxide NO.

$$C_2H_5\text{—}O\,\vdots\,\text{—}NO$$
$$HI$$

The equation usually given is—

$$C_2H_5NO_2 + KI + H_2SO_4 = C_2H_5OH + NO + I + KHSO_4.$$

From this it is evident that 75 grammes of ethyl nitrite (M. Wt. $C_2H_5NO_2 = 75$) will yield 30 grammes of nitric oxide (M. Wt. $NO = 30$) But we know that 30 grammes of nitric oxide measure 22·32 litres at 0° C. and 760 Mm. pressure, because 2 grammes of hydrogen under the same conditions measure this volume, and nitric oxide is fifteen times heavier than hydrogen. Hence 22·32 litres of nitric oxide, or 22,320 C.c., will be obtained from 75 grammes of ethyl nitrite, from which it follows that each C.c. of nitric oxide evolved indicates $\frac{75}{22320}$ gramme of ethyl nitrite in the spirit of nitrous ether taken for analysis. The maximum B.P. requirements are that the spirit shall yield seven times its volume of nitric oxide at 15°·5 C. and 760 Mm. pressure. If, therefore, 5 C.c. of spirit be taken one ought to obtain 35 C.c. nitric oxide under the conditions mentioned. To find the percentage of ethyl nitrite if this volume of gas be obtained proceed as follows:—

35 C.c. nitric oxide at 15.5° C. will measure

$$\frac{35 \times 273}{288{\cdot}5} = 33{\cdot}1 \text{ C.c. at } 0^\circ \text{ C.}$$

$$\text{Now } 22320 \text{ C.c. NO} = 75 \text{ grammes } C_2H_5NO_2$$

$$\therefore\ 1 \text{ C.c. ,,} = \frac{75}{22320} \text{ ,, ,,}$$

$$\therefore\ 33{\cdot}1 \text{ C.c. ,,} = \frac{75 \times 33{\cdot}1}{22320} \text{ ,, ,,}$$

$$= {\cdot}111 \text{ ,, ,,}$$

Therefore the 5 C.c. of spirit of nitrous ether contain ·111 gramme of ethyl nitrite. Taking the specific gravity of the spirit as ·845, 5 C.c. will weigh ·845 × 5 = 4·225 grammes.

Now 4 225 grammes sp. æth. nit. contain ·111 gramme $C_2H_5NO_2$.

$$\therefore\ 1 \text{ ,, ,, ,, ,, ,,} \frac{{\cdot}111}{4{\cdot}225} \text{ ,, ,,}$$

$$\therefore\ 100 \text{ ,, ,, ,, ,, ,,} \frac{{\cdot}111 \times 100}{4{\cdot}225} \text{ ,, ,,}$$

$$= 2{\cdot}63 \text{ per cent.}$$

Note, in passing the isomerism of the nitrites with the nitro derivatives of the hydrocarbons, the empirical formula for both being $R\text{—}NO_2$ where R stands for any organic radicle. They are distinguished by their behaviour towards hydrolytic and reducing agents. In the case of nitro-compounds hydrolysis is not effected and an amine $R\text{—}NH_2$ is obtained by treatment with nascent hydrogen. For these reasons the nitrogen is considered to be linked directly to the carbon of the radicle, and the formula assigned to the nitro compounds is consequently $R\text{—}N\genfrac{}{}{0pt}{}{\nearrow O}{\searrow O}$ In the case of nitrites, under similar circumstances, hydrolysis is easily effected with formation of an alcohol R—OH, and nitrous acid or a salt thereof, while reducing agents also produce an alcohol and ammonia or hydroxylamine. In these reactions the nitrogen is removed from the hydrocarbon radicle, and the formula assigned to nitrites is R—O—NO, which shows that the nitrogen is linked to the radicle, not directly, but through oxygen. Compare the sections on nitro-compounds and esters of nitric and nitrous acids in your text-book of organic chemistry.

SULPHUR PRÆCIPITATUM.—When sulphur is boiled with slaked lime and water a complex mixture of various compounds results, consisting of calcium sulphides and salts of thio acids, of which thiosulphuric acid may serve as a type. When hydrochloric acid is added these calcium compounds are decomposed with formation of soluble calcium chloride and deposition of sulphur, the latter resulting directly from the instability of the corresponding hydrogen compounds or being formed by reaction between other decomposition products, chiefly hydrogen sulphide and sulphurous acid. The absence of ash when this product is burned excludes the use of an old form, milk of sulphur, containing calcium sulphate, which is obtained by using sulphuric in place of hydrochloric acid in the process of manufacture.

SULPHUR SUBLIMATUM.—Prolonged exposure to air and moisture results in the partial oxidation of sulphur to sulphuric acid; hence old samples may redden moistened blue litmus paper. If arsenic sulphide be present this is extracted by digestion with ammonia, forming a soluble sulph-arsenite of ammonium analogous to the compounds obtained in qualitative analysis when the sulphides of the second group are treated with ammonic hydrate or sulphydrate. The filtrate consequently leaves a residue of arsenic sulphide when evaporated.

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PROPOSED AMENDMENT OF THE SALE OF FOOD AND DRUGS ACT.

The Bill introduced by Mr. Kearley to consolidate and amend the law relating to the sale of food and drugs is, in most of its essential features, the same as the one introduced by him during the previous session of Parliament, and generally described at the time in this Journal. The provisions of Clause 38, however, relating to the establishment of a Board of Reference, have been altered both in regard to the constitution of the Board and as to its powers. It is now proposed that, in addition to the principal officer of the Government Laboratory, the Board shall include three persons nominated by the Local Government Board, two of whom shall be public analysts, a person nominated by the Board of Agriculture, and persons to be nominated respectively by the General Medical Council, the Institute of Chemistry, the Pharmaceutical Society, the London Chamber of Commerce, the Association of Chambers of Commerce of the United Kingdom, and the Federation of Grocers' Associations of the United Kingdom. The nominations and the appointment of members of the Board are to be subject to approval by the Local Government Board, but it is not stated how the appointments are to be made. The persons nominated as above are to have power to elect three persons representing the principal trade interests affected by the measure to act with them as members of the Board of Reference. This proposed constitution of the Board would afford considerable opportunity for the authoritative expression of opinion on the various subjects which require to be taken into consideration in exercising the powers proposed to be conferred on the Board. It should therefore be useful as a means of removing many of the difficulties which have arisen in the administration of the Food and Drugs Act. Among the most important of its functions will be the settlement of standards for the composition of foods and drugs for the amount of dilution, of deterioration, or natural poverty to be allowed in such articles, and the kind and amount of foreign substances to be allowed for the preservation or flavouring of articles of food. The settlement of those points so as to meet the views of all persons interested and competent to form an opinion will necessarily involve a very considerable amount of work, and from the nature of the evidence given before the Select Committee it may be expected that in some instances at least no little difficulty will be experienced in arriving at agreement. That probability appears to have been anticipated by the provision that the Board shall have power to make rules and regulations as to the right of audience of persons whose interests are affected by the questions under consideration by the Board to call for documents and papers, and compel the attendance of witnesses, and by the further provision that the duties and powers of the Board may be varied from time to time by order in Council.

Another very important function of the Board will be the making of regulations as to the qualification of analysts and inspectors appointed under the Act as well as the form of certificates to be used, and the wording of labels to be used in the sale of mixed or altered articles. In addition to these duties, the present Bill provides that the Board is to have a general power to institute investigations as to the composition of articles of food and drugs, new forms of adulteration or the methods of examination or analysis to be adopted, and to report the results of such investigations to the Local Government Board. The persons appointed members of the Board of Reference are to hold office for three years and be eligible for re-appointment at the end of that period on being nominated and approved as above stated. The definitions, standards, limits, and regulations of the Board are to be fixed by resolutions, each of which is to be subject to approval by the Privy Council, and when approved is to be advertised in the *London Gazette* and become binding in law on the expiration of one month from the date of advertisement. The remuneration of the members of the Board is to be fixed by the Local Government Board and paid out of moneys provided by Parliament.

In order to facilitate the administration of the Act it is provided that inspectors shall have power to purchase samples of food or drugs exposed for sale by retail or deposited in any place for that purpose, and persons refusing to sell, or wilfully obstructing any officer in the course of his duties, or otherwise attempting to prevent their due execution, are to be guilty of an offence under the Act. Inspectors are also to have access at all reasonable hours to public or private sale rooms, warehouses, stores, etc., where food or drugs are offered or deposited for sale, and to purchase, seize, or procure samples. The same may also be done at the port of entry, at the place of delivery, or at any railway station or other place during transit, and for that purpose the inspectors are to be empowered to break open any packages in which food or drugs may be contained. At the hearing of prosecutions the production of the analyst's certificate is to be sufficient evidence of the facts therein stated unless the defendant requires the analyst to be examined as a witness. From Clause 32 it appears to be intended that in the production of evidence for defence the only certificates admissible are to be those of public analysts. In disputed cases the justices or Courts of Appeal are, on request of either party, to cause the article in question to be sent to the Commissioners of Inland Revenue for analysis by their chemical officers. The penalty incurred by conviction under the Act is to be for a first offence a sum not exceeding twenty pounds; for a second offence within two years not less than five pounds or exceeding fifty pounds, and for a third offence within two years, the penalty is to be not less than twenty pounds nor exceeding one hundred pounds, or in the discretion of the justices, imprisonment with or without hard labour for

a period not exceeding three months. In the case of a second conviction the Court or justices may in addition to the penalty inflicted order a notice of the facts to be affixed to the premises occupied by the offender, for a period not exceeding twenty-one days, or to be published by advertisement in newspapers as the Court may direct, and at the cost of the person convicted.

It will be seen from these details of the Bill introduced by Mr. Kearley that the contemplated legislative provisions against adulteration are very stringent, and that in the event of their becoming law the means of punishing offenders will be very considerably extended. The decision of all questions as to what is to constitute adulteration within the meaning of the Act, will be in the hands of the Board of Reference, and consequently the constitution as well as the action of that Board will be matters of the utmost importance to the general public, and to all traders likely to be affected by its decisions. One great advantage of the settlement of such questions will be greater facility of administration. Public analysts will no longer be required to give opinions as to what should be the nature, substance, and quality of articles demanded by purchasers—whether admixtures of any kind in articles of food are to be held as adulterations, by reason of altering their composition, being dangerous or injurious to health, or in the case of compounded drugs, by reason of affecting injuriously their quality or potency—nor will there be any occasion for them to consider themselves called upon to offer such opinions.

THE PHARMACY BILL.

The Pharmacy Acts Amendment Bill passed its second reading on Monday last unopposed. It was on the paper on the previous Thursday, but was not fortunate enough to go through. The Committee stage of the Bill is fixed for Thursday, March 17. The chief feature of the second reading was the evidence, given in a fairly full House, of sympathy with the objects of the measure and a desire that the reasonable reform it proposes should be carried out. If the Bill should be unfortunate in its later stages, it has at least served a useful purpose in educating Members of Parliament on pharmaceutical matters and enlightening them as to the existence and aims of the Pharmaceutical Society. But we are hopeful that no one will wish to hinder the further progress of this little bit of pharmaceutical home rule.

LONDON UNIVERSITY REFORM.

The second reading of the London University Commission Bill occupied the House of Lords on Friday, the 4th instant, for half an hour or so. The Duke of Devonshire, in moving the second reading, stated that the project of reconstructing the present University on the lines recommended by the Gresham University Commission has the overwhelming support of scientific and teaching opinion. It was only opposed by a certain number of persons who obtained their degrees at a more or less remote period, and who had not been brought into very close touch with the progress of university teaching in other parts of the country. This is a particularly dignified way of saying that the opposition is behind the times, and is composed only of antiquated graduates who cannot appreciate modern requirements; but it seems nevertheless calculated to stimulate the opponents of reform to greater activity. The Bill passed its second reading without debate, and passes to Committee.

ANNOTATIONS.

The Registered Chemists of Great Britain have responded nobly to the appeal for support of the Pharmacy Acts Amendment Bill, which passed its second reading on Monday last, and it is satisfactory to find that the spirit still survives which animated the chemists and druggists of half a century ago—who contended so strenuously in defence of their craft. For there appears to be good reason for anticipating that concerted action of a similar nature may shortly be necessary. It is notorious that, for some years past, the Privy Council has steadily refused to accede to the recommendation of the Council of the Pharmaceutical Society, that carbolic acid and other substances should be scheduled under the Pharmacy Act, 1868, as poisons. A question on the subject was asked in the House of Commons on Tuesday, by Mr. S. Woods, Member for Walthamstow, and in reply the Secretary of State for the Home Department explained that he understands the Privy Council thinks it inexpedient to include carbolic acid in the Poisons Schedule, but that body is of opinion, nevertheless, that regulations should be made with regard to the sale of that and other poisonous substances. In accordance, therefore, with that idea, a Bill has been prepared, and will shortly be introduced into the House. Now this matter will require watching very carefully, in case the regulations proposed by the Bill should be incompatible with the principle embodied in the Act of 1868, in accordance with which it is to the public interest that registered chemists should be the sole recognised retailers of scheduled poisons. If the Privy Council, in its promised Bill, takes the position that no special qualification is required in the public interest for the sale of certain poisonous substances, it might subsequently be thought that neither is such qualification required for the sale of poisons now scheduled. And that would imply a total reversal of the policy of the past thirty years, during which the necessity of an educational qualification of chemists and druggists has been amply proved to be indispensable in the interests of the public.

The Proposed General Index to the *Pharmaceutical Journal* has called forth an editorial in the *Journal of Pharmacology*, in which it is stated that the remarkable progress in pharmaceutical journalism across the Atlantic is largely due to the influence of this Journal, whose files "constitute our most important record of pharmaceutical progress published in the English language." This passage is quoted with becoming modesty. At the same time regret must be expressed that though the Journal is regarded in America as "a record which is simply indispensable to every scholarly pharmacist," the projected general index, the appearance of which is anticipated with much satisfaction by our American contemporary, is still apparently a thing of the dim and distant future. The publication of the index is yet far from assured, not more than half the necessary amount having been promised in subscriptions, and unless much greater interest is taken in the matter by those on whose behalf we originally undertook to make the necessary arrangements, it is greatly to be feared that the project will fall through entirely. As a means of affording a further opportunity to those who have not as yet intimated their desire to possess a copy of the proposed general index, an order form will be found in this week's inset. This should be at once filled up and forwarded to the Editor.

The Alleged Decay in the Art of Prescribing, to which Mr. Edmund White once more directed attention in our columns

last week, is engaging the attention of medical practitioners no less than pharmacists, and curiously enough, remarkable confirmation of Mr. White's remarks was afforded in last week's *Medical Press*. It is pointed out that the divorce between medicine and pharmacy inaugurated by the Royal College of Physicians of London threatens to open up a new era in British practice. For though a practitioner who dispenses his own medicines is not likely to go far wrong, as he will hesitate to send out "a grumous concoction of uncertain hue, in view of the reproaches which he may receive on the morrow," prescriptions brought to pharmacists to dispense cause one "to wonder by what occult process of reasoning they have been lucubrated." It is urged that the moment the medical student is absolved from the obligation of acquiring a practical knowledge of pharmacy, the way is paved to technical errors of the most reprehensible kind, the error being rendered the more serious by the fact that the peccant prescriber would probably highly resent any remonstrance, however guardedly put, on the part of the dispenser.

That Three Months' Experience with a hospital dispenser is but a sorry substitute for the year or two which medical students formerly passed as pupils to a dispensing practitioner, few if any persons are prepared to deny, but the remedy is not so obvious. Even the prolonged period now devoted to medical studies is being steadily encroached upon by the need of extra time for other subjects, and it appears hopeless to anticipate that any counter-revolution will be effected which shall have the result of reinstating the old system of apprenticeship in medicine. How then is the newly-fledged practitioner to know what to prescribe, and why should we marvel at the growing tendency on his part to favour factory-made remedies, the manufacturers of which supply him also with ready-made therapeutics to fit? As the *Medical Press* observes, it is so much easier, under the circumstances, to order a tablet containing this or that combination of drugs, than to formulate, with due regard to official requirements a mixture that can be dispensed properly. According to our contemporary, this decadence is yearly becoming more manifest, and if other licensing bodies follow the example of the London College, it must inevitably proceed *crescendo*.

Complaint in The Matter is Attributed by this medical writer to the pharmacist, whose technical skill is, on the other hand, rendered superfluous by the necessity of dispensing ready-made medicaments at "cutting" prices, or on the other hand, he is too severely taxed by having "to combine the uncombinable." But the tendency of the whole business is more to the disadvantage of medical men than pharmacists, for it encourages the already too widely-prevalent practice of self-medication. The services of pharmacists will probably always be required, if only to supply factory-made remedies to the public, but what will the medical position be when the habit the profession now does its best to inculcate has become chronic? Possibly, the only important result will be to hasten the day when the prescribing of unnecessary physic will be a thing of the past, and though, meanwhile, the use of quack remedies by the public may have largely increased, the balance of advantage may actually be on the side of mankind at large. Not, however, that the prospect will be one of unmixed cheerfulness for the average medical man, for he will then be compelled to learn his business much more thoroughly than he appears to do at present. Doubtless, the fittest will always survive, both in medicine and in pharmacy, but woe to the unprepared who cannot rise above the practice of rule-of-thumb and dependence upon tradition.

The Qualifications of Public Analysts are, in some instances, more talked about than realised, for though the members of that estimable class of public servants are generally assumed to be specialised chemists, they not unfrequently manifest a remarkable lack of sweet reasonableness in matters pertaining to their craft. In last week's Journal we were able to record the fact that strong opposition had been offered at a recent meeting of the Institute of Chemistry to a proposal for improving the qualification of members of the Institute, desirous of holding the appointment of public analyst. That proposal was designed to meet the views of the Local Government Board, a body with ideas on the subject under consideration which do not entirely commend themselves to all existing public analysts. Fortunately, however, the opposition was foiled, and the Institute of Chemistry has taken one more step in the right direction. The outcome of the labours of that body may not manifest themselves fully for some years to come, but no doubt need be entertained that, sooner or later, the effect of those labours will be to fit public analysts for a position that many of them now aspire to rather than deserve.

The Editor of the 'Practitioner' endorses this view in the latest issue of his eminently readable paper, and expresses the opinion that the qualification of the Institute of Chemistry will one day be as obligatory for public analysts as that of the Pharmaceutical Society is for chemists and druggists. His objection, that the certificate of the Institute does not yet afford sufficient evidence of a man's competence, will doubtless be met by the decision henceforth to require of all candidates presenting themselves for the final examination in the analysis of food and drugs, a competent knowledge of therapeutics, pharmacology, and microscopy. In Austria it has recently been decided that not only must the advanced studies of candidates for the post of public analyst be pursued in the medical faculty of a university, but the medical officers of health are to exercise a general supervision and control over the laboratories, besides being responsible for all reports and prosecutions, and medico-legal investigations in criminal actions. As the *Practitioner* remarks, the elaborate scheme for the training and qualification of public analysts in Austria will be a revelation to persons accustomed to, and satisfied with "the haphazard way in which such functionaries are made in this country, with little or no inquiry into the means by which they acquire their knowledge."

Dr. Ludwig Mond was presented last week—at a dinner of the Salt Chamber of Commerce, held at Northwich—with a silver casket containing an illuminated address "in celebration of his gift of the Davy-Faraday Institution to the nation," as the *Times* report puts it. Referring to that report, a correspondent of the same newspaper, who signs himself "M.R.I.," has since stated that it gave an impression of the facts, which can scarcely be regarded as strictly accurate. What actually was conveyed to the managers of the Royal Institution by Dr. Mond's deed of gift was the house adjoining the Royal Institution in Albemarle Street, with the fittings, furniture, and apparatus it contained, the total cost of the gift being about £38,000. The balance of the £100,000 popularly supposed to have been presented either in cash or its equivalent to the Royal Institution by Dr. Mond is only to be paid within a period of thirty years from the date of the deed of gift, and it does not follow of necessity, from the wording of the deed, that it need ever be paid at all. For the present, interest on the balance of £62,000, at the rate of 2¾ per cent., is being paid by Dr. Mond to provide the necessary income for the proper carrying on of the Davy-Faraday Laboratory, but that

income may cease at any time, and in the event of three half-yearly payments being withheld, Dr. Mond or his representatives may be released from further obligation to pay either interest or capital.

An Almost Inevitable Result of that contingency would be the closing of the Davy-Faraday Laboratory, which the Royal Institution could not possibly maintain out of its own resources, and as a matter of fact, the Laboratory would become a veritable white elephant. The gift of Dr. Mond, therefore, magnificent as it undoubtedly is, cannot be regarded as perfect and complete in itself. Nor is it in any sense a gift to the nation, for while it is conducted on its present lines it must remain equally open to all the world. The *Times* correspondent sums up the matter by stating that Dr. Mond's annual payments "only suffice to meet expenditure imposed by himself, and may be stopped at any moment. They do not suffice to pay for supreme scientific direction, which is given gratuitously by the professors of the Royal Institution; but, on the other hand, the Royal Institution enjoys the present benefit of a certain amount of accommodation for its own purposes in the adjoining building." This may appear very much like looking the proverbial gift horse in the mouth in a minutely careful manner, but the facts as stated are substantially borne out by the terms of the deed of gift, and if explanation of the true position of affairs should tend to render the existence of the Davy-Faraday Laboratory more secure, as an integral part of the Royal Institution, which has done such good scientific work of the highest class for nearly a century, nothing but good can come of it.

The Sale of Cough Mixture Containing Morphine has brought trouble upon a Derby chemist. The label on the bottle did not indicate that the preparation was poisonous, and as the death of an elderly woman to whom the mixture had been administered was found to have been accelerated by the morphine, a Coroner and his jury severely censured the chemist "for not complying with the law relating to the sale of drugs." The Coroner said it was perfectly clear that the seller had contravened the Act of Parliament, which, in his opinion, required that the cough mixture should be labelled "Poison" and also registered as a poison. Presumably the latter opinion was based on the idea that the sale of a mixture containing morphine is the sale of a poisonous vegetable alkaloid, which must be dealt with according to the provisions applying to poisons in Part 1 of the Schedule. But whether that be so or not, the Coroner was very decided in his views regarding the necessity of the public being protected, and he said he had not the slightest hesitation in stating that the seller had been guilty of a dereliction of duty in not conforming to the Statute. This is strong language and unfortunately, so far as can be judged from the newspaper report, somewhat justified by the circumstances of the case.

The Annual Dinner of the Members of the Pharmaceutical Society and their friends will be held in the Victoria Hall, Hotel Cecil, London, on Tuesday, May 17, at 6.45 p.m. (see p. 263). The President of the Society will take the chair, and those who are desirous of acting as stewards are requested to send in their names at once to Mr. Richard Bremridge, 17, Bloomsbury Square, London, W.C.

The Practice of the Public Analyst is henceforth to be raised to the ranks of a liberal and learned profession in Austria, and the diploma to that of a university degree. The *Maturität Examen* must first be passed from a *Gymnasium* or *Realschule*, the standard of attainment required being equal to that of an ordinary degree in arts at our older universities. The first part of the curriculum which must then be entered upon—for some subjects in which the diploma of pharmaceutist may be accepted as equivalent—comprises courses in inorganic, organic, and practical chemistry; experimental physics; and theoretical and practical botany, whilst it is followed by an examination in all the subjects, including the setting-up and construction of apparatus. The second part of the curriculum occupies three full years, and during that time the would-be analyst must perfect himself in chemical analysis, the microscopical examination of foods, water analysis, toxicology, and a knowledge of the normal composition and adulteration of foods, drugs, and poisons. Other trifles to be thrown in by the way, are courses on the principles of hygiene, physiology of dietetics, elementary bacteriology, practical physiology and physiological chemistry, forensic chemical analysis, sanitary law, and the law and practice of the courts in public health and medico-legal procedure. To crown all comes the final examination in all the subjects specified, and after that the successful student may become a candidate for the post of public analyst.

Mr. Barnard S. Proctor, of Newcastle-on-Tyne, has recently retired from active business, and it has been suggested that, in order to acknowledge his services to pharmacy, his genial assistance, and his educational work, some tangible token of esteem should be presented to him. A Testimonial Committee has accordingly been formed, consisting of the members of the Council of the Newcastle-on-Tyne Chemists' Association, who have power to add to their number. The form which the testimonial will take, and other details, will be arranged in due course. Meanwhile, it is proposed that the presentation shall take place at a time and place suitable to Mr. Proctor's convenience, the state of his health being such that it is desirable to leave the matter open at present. It is also suggested that, to mark the occasion, a dinner be held, and Mr. Geo. F. Merson, 24, Newgate Street, Newcastle-on-Tyne, Hon. Secretary to the Committee, will be glad to hear from anyone who is prepared to support the movement.

The Junior Army and Navy Stores shareholders assembled last week to hear the chairman of that joint-stock concern explain to them his view of a recent unfortunate incident, when an American ham was sold from the Stores as Irish. He said his committee felt that the charge that the Stores were in the habit of doing such things was untrue, and all salesmen now employed by the company are required to sign a declaration to the effect that they will not knowingly sell any article or commodity under a false or misleading description. This is a healthy sign, but it is difficult to see that it affords sufficient justification for the chairman or shareholders to complain because an opportunity has been afforded to every retail shopkeeper and competitor to fling a stone at the Stores. Most stores—and especially those run by civil servants—compete more or less unfairly with retail tradesmen, and it would be nothing short of miraculous if the latter failed to take advantage of any opportunity of this sort that may present itself to them.

The Kinninmont Prize, which is awarded on the results of an annual competition instituted by Mr. Alexander Kinninmont, takes the form of a gold medal and books. The examination is held in Glasgow, in May or June of each year, those eligible to compete being chemists' assistants in Glasgow and the counties of Argyle, Ayr, Bute, Dumbarton, Dumfries, Kirkcudbright, Lanark, Renfrew and Wigtown, who have complied with the stipulated conditions. The subjects of examination are botany, and magnetism and electricity. Intending competitors should send in their names before the end of April to Mr. W. L. Currie, 223, Byres Road, Glasgow.

Pharmaceutical Transactions.

CHEMISTS' ASSISTANTS' ASSOCIATION.

On Thursday, March 3, the King's Hall, Holborn Restaurant, was occupied by nearly three hundred chemists' assistants and their friends, assembled at the

Twentieth Annual Dinner

of the Association. Mr. T. Morley Taylor, President, was in the chair, supported by Mr. Walter Hills, President of the Pharmaceutical Society, Sir Dyce Duckworth, M.D., Mr. G. T. W. Newsholme, Vice-President of the Pharmaceutical Society, Mr. Michael Carteighe, Mr. C. B. Allen, Mr. W. Warren, Mr. R. Bremridge, Mr. W. H. Martin, Mr. Tyrer, Mr. Umney, Mr. Wills, Mr. Wootton, Dr. Charles Symes, President of the British Pharmaceutical Conference, Dr. B. H. Paul, Dr. W. H. Martindale, Dr. J. Attfield, Professor J. Reynolds Green, Mr. J. H. Mathews, President of the Western Chemists' Association (of London), and many other gentlemen well known in pharmaceutical circles.—After an excellent dinner the President, in a few happy and witty sentences, proposed the toast of "The Queen," which was most loyally received, the national anthem being heartily sung.—Mr. F. W. Gamble then gave

The Medical Profession.

He said the toast of the medical profession required no enunciation to an assembly of chemists. The art of pharmacy took its origin from the profession of medicine, and under the fostering care of the Pharmaceutical Society had come to fill an important function under the parental roof. It was to be regretted that the subject of pharmacy should be in course of relegation to the background of the medical curriculum, since through the consequent decadence of prescribing, pharmacy would be injuriously affected no less than medicine. The advancement of learning during the last decade had in no branch of science been more apparent than in that of medicine. In their admiration of those who have wrought this advance they must not forget that many of the foremost workers had been members of their own ranks. He coupled with the toast of the medical profession the name of Sir Dyce Duckworth.—Sir Dyce Duckworth, in responding, expressed his thanks for the hearty way in which the toast had been received. He felt that the high place accorded to it on the programme was a very great compliment to the profession, in whose name he was proud to reply. There had always existed a cordial feeling between medicine and pharmacy, even in the old days when chemists were known as druggists, but during the past twenty or thirty years the general and scientific education of pharmacists had advanced to such an extent that it was a platitude to say that the relations between the two professions grow closer and closer as the years rolled on. The pharmacists of to-day entered upon their work with enormous advantages over those of his own early days, having received an education at the hands of men in the forefront of the profession, and they were, therefore, better qualified to uphold the honourable and dependable position that pharmacy has attained in this country. Pharmacists as a body were one of the most moral bodies in the body politic. He could not remember ever having heard of one of its members being convicted of "infamous conduct," perhaps his friend on the left (Mr. Carteighe), in the course of a long connection with the Pharmaceutical Society, might have known of a few isolated cases, but they had not got into the public press, as did such cases in his own profession. That was a great deal to have to affirm, but it proved that the public were well justified in placing confidence in pharmacists, and that confidence had placed them in a dependable position as parts of the body politic. Speaking of the study of pharmacy by medical men, he thought it does not receive as much attention now as it did in past years, and in that respect the profession would be the poorer, because he believed that medical men cannot do their duty to their profession and to their patients capably and well without a good pharmaceutical training. Some might say that the time of the students of medicine is now spent in gaining more useful knowledge, but he contended that a good knowledge of pharmacy is very essential in a thorough medical education. Sir Dyce concluded his remarks by referring to the forthcoming British Pharmacopœia, which, he said, they might hope to see in a few weeks' time, and he was sure it will be a mine of interest and a source of great credit to those who have had most to do in preparing it, as it will far surpass anything of the kind that has previously been published.—Mr. C. E. Robinson said that, in proposing

The Pharmaceutical Society,

it was necessary to say only a few words. It was with great pleasure that they saw not only the Pharmaceutical Society so well represented that night, but also every branch of pharmacy and those connected with it. In addition to having present the President, Vice-President, several Councillors, examiners, and professors of the Society, they had many of its members and also many who would have the opportunity of becoming members, if the efforts of the Council were successful in passing the Pharmacy Acts Amendment Bill, and he hoped they would not fail to take advantage of it and become members of the Society. He did not claim that the Pharmaceutical Society is a perfect organisation. If it was, many people would have nothing to grumble at and nothing to write about, but the Council had shown that it has the best interests of the craft at heart in extending the basis of its membership, and he was glad to say that the Pharmaceutical Society has some of its most loyal supporters amongst the members of the Chemists' Assistants' Association. He had pleasure in coupling with the toast the name of Mr. Walter Hills.—Mr. Hills thanked the company for the cordial way in which they had received the toast, so kindly and sympathetically proposed by Mr. Robinson. He was always exceedingly pleased to be at a gathering of the Chemists' Assistants' Association, because he knew that, as a representative of the Pharmaceutical Society, he would receive a hearty welcome. Another reason why he was pleased to meet the members of the Association was because he believed that the views which they corporeally hold are those marked by progress and moderation. When he used the words "progress and moderation" he did not mean them in the same sense as applied to the two parties who had that day been struggling for the seats on the London County Council. They were dictionary words with a definite meeting. Those who were true Progressives desired to progress with moderation, and true Moderates also desired to progress with moderation, and he thought the views given expression to by the C.A.A. had those special marks. He claimed for the great body of the Pharmaceutical Society that they also are progressive, and when he said the Society he meant the Council, for the Council is, or ought to be, what the members of the Society make it. He believed that as a Council they should be a kind of concentrated essence, made *secundum artem*, of the whole Society, and that it should contain, as it were, the active principles of the drug, and if it does not contain the active principles of the drug, then it does not represent the Society. He contended that the Council does represent the great body it is supposed to represent, and he claimed for the Society that its recent actions have been marked by progress and moderation. The Pharmaceutical Society is not perfect, and he did not claim perfection as one of its qualities, but it had done much for the body it represents, and would still do more in the future. Mr. Hills then gave two instances whereby the actions of the Society have been marked by progress and moderation. The first being in respect to the amended Bye-laws, which had received the approval of Her Majesty's Privy Council, and he thought no one would deny that they were in the direction of progress because they would raise the standard of education. They had, as it were, placed a six-barred gate instead of a three-barred one before those desirous of entering pharmacy, and the Society was to be congratulated that after 1900 the test for preliminary education will practically be the same as that required by the General Medical Council, thus tending to raise the standard of education amongst pharmacists The second instance was that of the new Pharmacy Bill, which, he said, was then in an interesting condition. It had been drafted in a spirit of moderation, the Council having carefully avoided two extremes. They had not taken what extreme parties on either hand had proposed, but had taken a moderate view of the matter, which they thought was the right one, and which will in due time greatly increase the power of the Pharmaceutical Society. The Bill had been introduced into the House of Commons by the Hon. F. W. Smith (Strand) and it was down on the agenda of the House of Commons that evening, and if the House was not counted out before that came on he had every reason to believe that it would be brought forward for the second reading. If there should be any opposition that night he hoped they would get over the difficulty later on in the

session, and in that case he might appeal to that large and influential gathering to use their influence with Members of Parliament to induce them to support the Bill. He would also appeal to all who have the interests of the Pharmaceutical Society at heart to do all that they can to further those interests in a right direction. The instances mentioned showed that the Society does combine the great principles of progress and moderation so essential to all good public work, and he thought they could not have a much better motto than "*Festina lente.*" On behalf of the members and Council of the Pharmaceutical Society he thanked them most heartily for the kind way they had received the toast, and he could assure them that, as President of the Pharmaceutical Society, he wished every possible success to the Chemists' Assistants' Association.—Dr. C. Symes then proposed

The Chemists' Assistants' Association.

He thought that an association with some 200 members and 50 patrons did not require any apology for its existence. They could not help admiring those gentlemen who, notwithstanding long hours and tedious duties, meet together to devote their spare time to the study of subjects connected with their calling, and he was sure that such study would bring the members to the front rank in the course of their career. He felt that he was there that night as the representative of the British Pharmaceutical Conference, and he thanked them very much for the recognition thus given to the Conference, which did the same kind of work as the C.A.A. and similar associations were doing. He hoped there were many men present who would become creditable members of the Conference. He wished all success to the C.A.A.—The President responded, and in the course of a lively speech said that at this time, when it is necessary for all registered chemists, who themselves appreciate the value of their work and legal responsibilities, to combine in order to obtain recognition of the same, the C.A.A. was not behind in the work of organisation. The Council of the Association had for two or three years taken every possible step to induce assistants to join, and although there was a falling off each year, they had managed to keep up the membership at about one level, fifty new members being enrolled during the present session. At the last meeting of the Association he had intended to bring forward the subject of trades unionism in pharmacy, but unfortunately was prevented by illness. What he wished to have said was briefly that union amongst assistants is in some form necessary, but whatever methods were employed to form a union they must keep in view the fact that they will be the future proprietors and masters, and he was of opinion that no method that could be employed would be more powerful for good than the formation and support of associations of a mutual character, such as the Chemists' Assistants' Association, of London.—Mr. G. E. Pearson then proposed "The Visitors," coupling with it the names of Mr. J. H. Mathews and Mr. G. T. W. Newsholme.—Mr. Mathews and Mr. Newsholme replied, the latter in the course of his remarks stating that he could not help feeling the immense power for good an association such as the Chemists' Assistants' Association could be. For years there had been a considerable amount of apathy connected with the calling of pharmacy, but he was of opinion that the apathetic state was beginning to pass away. It had been very gratifying to himself and to the President of the Pharmaceutical Society and the members of the Council to see the great amount of enthusiasm that had been raised by the Bill now before Parliament, and that enthusiasm alone, by bringing about a more efficient local organisation, would result in good to the whole craft.—The toast list was interspersed with songs and musical sketches by popular artists, accompanied by Mr. A. T. Rugman, which added much to the pleasure of the evening. The dinner was a decided success, praise being due to Mr. G. Roe, the Vice-President of the Association, for the admirable arrangements well carried out under his able supervision. "Auld Lang Syne" was the last item on the programme, and was heartily sung.

PHARMACEUTICAL SOCIETY OF IRELAND.

The monthly meeting of the Council was held on Wednesday 2nd instant, at 67, Lower Mount Street, Dublin. The President, Mr. R. J. Downes, was in the chair, and the other members of Council present were the Vice-President (Mr. Beggs), the Hon. Treasurer (Mr. Grindley), and Messrs. Kelly, Conyngham, Porter, and Dr. Walsh. In reply to a letter from the Privy Council, the Registrar was directed to say, in reference to a proposed new regulation that candidates entering for examination and afterwards failing to present themselves should forfeit half the examiner's fee, that the Council did not desire to reserve to themselves a power of dispensing with the forfeit in cases where the candidates showed cause for absence. Letters were received from Mr. A. L. Doran in reference to an intimation from the Council that he should conduct the examination in general and pharmaceutical chemistry in such a manner as to include recognition by the candidates of the chemical substances of the Pharmacopœia by their physical characteristics as well as by chemical tests. Mr. Doran maintained that the kind of recognition in question belonged to the materia medica branch of the examinations and not to that of the examiner in chemistry ; and he objected to conform to what he believed to be a strained interpretation of the Council's regulation on the subject.—It was ordered that Mr. Doran should be informed that the Council adhered to their requirement.—Two letters were read from Mr. H. R. Scott, a licentiate of the Society, in Johannesburg, in reply to one from the Registrar, asking for information. Mr. Scott said that in the South African Republic, a licentiate of the Irish Society might register on sending his original certificate together with a fee of £12 10*s.*, and on opening a pharmacy he was required to pay an annual fee of £10 for licence. In the Orange Free State the same regulations prevailed excepting that the registration fee was £3. Mr. Scott advised Irish pharmacists not to come out if they had prospects of a comfortable livelihood at home, but if they did come not to sign agreements for three years or any other period.—Professor Tichborne was named as a delegate to the International Congress of Hygiene and Demography to be held at Madrid on April 10.—Thanks were voted for a donation from the Pharmaceutical Society of Great Britain of their Calendar for 1898.—On the motion of the President some amendments were made in the regulations respecting the examinations, which included requirements that candidates at the Preliminary should "translate an easy English sentence into Latin," and that those presenting for the licence should "read in full the Latin prescriptions given to them to translate." Other business having been disposed of, the Council adjourned.

IRISH PHARMACISTS' ASSISTANTS' ASSOCIATION.

At a meeting of this Association on March 4, Mr. W. J. Hardy, President, in the chair, Mr. Robinson, late examiner to the Pharmaceutical Society, delivered a lecture on

Pharmacy in Ireland.

He began by recapitulating the circumstances which in 1875 led up to the Pharmacy Act (Ireland). Pharmacy up to twenty-three years ago was exclusively in the hands of the apothecaries, and it consisted of the compounding of prescriptions and the sale of drugs. Illegal dispensing was largely carried on, and this, combined with the gradual decline in public favour of the "Hall" licence, first suggested to a number of leading druggists in Dublin the idea of forming themselves into a committee with the object of having a Pharmacy Act passed. This they were enabled to do through the energy and zeal of the then chairman, Mr. E. M. Hodgson. The first pharmaceutical Council was composed of men animated by a high sense of their responsibility, and who were determined to establish a race of thoroughly qualified licentiates capable of carrying on the business with credit to themselves and the Society. At the passing of the Act most of the assistants were engaged in apothecaries' halls, and as they regarded their "halls" as stepping-stones to the medical profession, they regarded the new Society as an interloper. Against such prejudice the Council had to fight, their task being to prove that a pharmaceutical chemist could be a good business man and as much a gentleman as if he styled his concern an "apothecaries' hall" or a "surgery." That the Council succeeded in their efforts was fully exemplified by the fact that the pharmacist of to-day is justly proud of his qualification, which, as regarded the curriculum, is second to none in the kingdom. It was no uncommon thing to see as many as forty candidates presenting themselves for examination at one time, and it was gratifying to the examiners that such was the case. The Licence examination was next spoken of, and its merits and demerits pointed out at some length. It was a test requiring study, reading, slow thought, and good experience. The lecturer was in favour of exempting from at least a portion of the pharmacy subject a candidate who had previously qualified at the Assistants' examination, and who at one time had satisfied the examiners in that subject. The compounding might, he thought, be reasonably dispensed with, as no assistant ought to get a certificate unless his compounding was equal

to all the requirements of a pharmacy. The pharmacy of the "seventies" was a practical one indeed, every chemist and apothecary manufactured his own tinctures, liquors, pills, ointments, infusions, etc. The raw material was handled in every pharmacy of repute, and the assistant was enabled to gain an intimate knowledge of his work sufficient to last a lifetime were it not for the occasional appearance of a new B.P. The pharmacist of to-day was surrounded by a regiment of patent and proprietary medicines in the shape of coated pills, capsules, compressed drugs, concentrated infusions and tinctures, liquors for syrups, spread plasters, etc., to all of which the medical faculty was daily becoming more partial, and woe betide the pharmacist who omitted to furnish his compounding room with the thousand and one articles referred to. The much-debated question whether pharmacy should be called a trade or a profession was touched upon. It became a business when the highly qualified medical man who conducted a pharmacy combined the sale of *Sapo mollis* in pennyworths across the counter and was surrounded by kegs of putty. chandlery, and white lead. It was a profession when all things were in keeping with the name, when a request for a jar of blacking evoked a horrified glance from the gold-spectacled, sedate, and dignified pharmacist. The lecturer gave statistics of the population of the chief cities and towns in Ireland, and showed in how comparatively few of those places it was possible to conduct successfully an exclusive pharmaceutical trade. A mixed business outside the larger towns was absolutely necessary, but it was quite possible to carry on a professional trade, notwithstanding. Allusion was made to the recent manifesto by certain Dublin pharmacists against the sale of quack medicines, and the speaker said it became a nice question, What was the limit of professional pharmacy and where did "quack medicines" begin and end. He thought that patent and proprietary articles could be stocked by the most professional pharmacist for the accommodation of the public. As a matter of fact, owing to the large variety of specialties, it was next to impossible to work a pharmacy without dealing in patents and proprietaries. An instructive comparison was made between the profits enjoyed by the apothecaries of twenty-five years ago and those nowadays realised by the average pharmacist. Where the former netted an income of £600 on a gross yearly turnover of £1000, the chemist of to-day could barely live on the profits accruing from a similar turnover. The decrease in prescription profits arose through the increased use by the medical faculty of patent and proprietary drugs, and the "cutting" of prices by dispensers. Generally speaking, 1*s.* 8*d.* was the top charge for an eight-ounce mixture, but when such prescriptions as the following had to be compounded it was not hard to account for the falling away of the prescription profits.

℞	Liq. Fowler	℥i.
	Syr. Cinch. Alch. Schacht	℥i.
	Tr. Gelsen.	℥ii.
	Tr. Nux Vom.	℥iss.
	Inf. Aurant. ad	℥viii.
℞	Lysidine	℥ss.
	Aqua Aurant. Flor ad	℥viii.
℞	Cocain. Hydroch.	gr. iii.
	Salol	℥i.
	Maltopepsin	℥ii.
In cachets, xii.		
℞	Pot. Iodid	grs. 40
	Pot. Bicarb.	℥ii.
	Sodæ Sal.	℥ii.
	Syr. Sennæ	℥ii.
	Tr. Nux Vom.	℥i.
	Tr. Colchici	℥ii.
	Inf. Senegæ ad	℥viii.

The speaker, commenting on these prescriptions, said the first was a fair type of the present-day mixture. The second could not be made up under 2*s.* 3*d.* cost price. The third and fourth were in keeping with the second, and yet these were expected to be dispensed at 1*s.* 6*d.* or less. The cutting of prices was a far more serious evil, inasmuch as it was in the power of the trade to put an end to it if they would only pull together. A uniform system of prescription pricing was badly wanted, and the speaker submitted a specimen tariff which, in his opinion, met all requirements. It was as follows:—*Mixtures*: 1 oz., 8*d.*; 2 ozs., 10*d.*; 3 ozs., 1*s.* 2*d.*; 4 ozs., 1*s.* 4*d.*; 6 to 8 ozs., 1*s.* 6*d.*; 10 ozs., 1*s.* 10*d.*; 12 ozs., 2*s.*; 16 ozs., 2*s.* 6*d.* *Lotions*: 6 ozs., 1*s.* 4*d.*; 8 to 10 ozs., 1*s.* 6*d.*; 12 ozs., 1*s.* 8*d.*; 16 ozs., 1*s.* 10*d.* *Pills*: 2, 3*d.*; 4, 4*d.*; 6, 6*d.*; 12, 10*d.*; 24, 1*s.* 6*d.*; 36, 2*s.* *Ointment*: ½ oz., 8*d.*; 1 oz., 10*d.*; 2 ozs., 1*s.* 4*d.*; 4 ozs., 2*s.* *Powders*: 1, 2*d.*; 2, 4*d.*; 6, 9*d.*; 12, 1*s.* 6*d.*; 24, 2*s.* *Suppositories*: 3*d.* each or 2*s.* 6*d.* per dozen. The lecturer thought if an association of Dublin chemists were formed for the regulating of prices, the benefits to pharmacy could not be over-estimated. Profitable extras were referred to, and amongst them the manufacture of mineral water and the sale of photographic sundries found much favour. The duties of assistants to their employers and of employers to their assistants were laid down in no uncertain strain by Mr. Robinson, who said that, being assistant for many years before he became an employer, he was in a position to speak on both sides of the question. The position of the assistant had enormously improved within the last twenty years, both as regarded hours and salary. Formerly the indoor salary in Ireland was from £20 to £40 a year, and the outdoor from £52 to £80, and for managers from £100 to £120. Nowadays the range was much higher. An indoor assistant was paid a salary of from £30 to £60 per annum, and an outdoor assistant from £60 to £150, while in most houses the day's work finished at 6 p.m. This compared favourably with the days of his apprenticeship, when his daily round of work was from 8 a.m. to 10 p.m. and 11 p.m. on Saturday, and only a few hours off duty every Sunday. Special stress was laid on the careful reading of prescriptions, and amusing recollections of his experiences as an examiner to the Society were given, the former unsatisfactory conditions of the pharmacy portion of the Licence examination being contrasted with the existing complete facilities provided for candidates in the compounding work of the test. In a moderately busy pharmacy one man should copy the prescriptions, write the labels, check and finish off the mixtures. The dispenser should leave in a line until checked all the drugs used by him. Powders should be weighed, not measured, by hand. Pills ought in every case to be made in a good firm mass, small and divided evenly, and finished off with the rounder. Some useful hints for pill silvering, label trimming, and bottle capping were given. Typewritten labels were recommended. Plaster spreading and the making of suppositories were next touched upon, and the lecturer concluded by quoting the chemist's toast, "May his occupation never become a drug on the market as long as he sticks like his own plasters to business. May he never be bruised in the mortar of adversity by the pestle of misfortune, and may his rise in his profession be as accurately marked as his graduated measure. May his career be as unsullied as distilled water and as smooth and pleasant as pure Narbonne honey. May his success never be alloyed by a mixture of ill-luck or a tincture of regret. May his counter prove the crucible in which he transmutes human ailments into precious metal and precipitates the golden deposit into his own pocket. May he never be called on to swallow the bitter pill of disappointment or be macerated in the cruel spirit of enmity. Should fickle fortune refuse him her smiles may he ever find an antidote in the soothing spirit of a woman's love, be strengthened by the tonic of experience, and purified by the sudorific of patience. Thus his best days being evaporated, and the lamp of existence past trimming, when doctor death sends to his shop the dread prescription 'To be taken at bedtime,' may he be found carefully prepared, accurately dispensed, permanently entered in the day book, neatly put up in the white paper of purity, sealed with the melting tears of loving friends, stamped with the trade mark of honesty, and duly labelled for Heaven."—At the conclusion of the lecture there was much applause. Councillor Conyngham spoke in admiring terms of the lecture, and expressed his entire concurrence with the various sentiments of the lecturer. The portion referring to a revision of the existing charges for prescriptions and the formation of a local protective association of chemists met with unqualified approval, and it was hoped that the matter would not be allowed to drop by the employers generally. Some interesting retrospects of the drug and chemical trade were given by Mr. Conyngham, and Mr. Smith's remarks on the lecture were listened to attentively. Messrs. Turner, O'Sullivan, Bolger, Hunt, and the President having spoken, a cordial vote of thanks to the lecturer terminated the proceedings.

PLYMOUTH, DEVONPORT, STONEHOUSE AND DISTRICT CHEMISTS' ASSOCIATION.

In connection with the Junior Section of this Association on Wednesday, the 2nd inst., Dr. W. Cheyne Wilson delivered a most interesting and instructive lecture entitled

Some of our Microscopic Foes,

illustrated by a large number of lantern slides.—Mr. O. A. Reade presided over a large attendance, which included Messrs. G. Breeze, F. W. Hunt, A. P. Balkwill, J. D. Turney, H. C. Cantle, Waldon, etc.—Mr. O. A. Reade, in proposing a vote of thanks to

Dr. Wilson, said he was sure everyone present had enjoyed the clear and concise way in which Dr. Wilson had given the lecture, and he hoped shortly that the junior members of the Association would again have the pleasure of hearing him.—Mr. TURNEY seconded, and Messrs. BALKWILL and HUNT supported the vote, which was carried unanimously.—A vote of thanks to the Chairman concluded the meeting.

BRIGHTON JUNIOR ASSOCIATION OF PHARMACY.

On Wednesday, February 23, a meeting of this Association was held at their headquarters, Newburgh Hall, Cannon Place, at which papers were read by Messrs. S. Ching and A. S. Kent.—Mr. CHING took for his subject

The Structure of the Eye,

a subject which proved extremely interesting, going, as it did, into the smallest details of the structure and functions of that most important of all the senses. The matter was dealt with in a very masterly manner by Mr. Ching, and was highly apprcciated.

Mr. A. S. KENT then read a paper on

Carbon,

in which he said that carbon was probably the most important solid element to all kinds of living organisms, entering as it does into the composition of almost everything. The human body consists of from 13·5 per cent. to 20 per cent. of C.; wood contains 50 per cent., and good coal about 80 per cent. of it. The air contains immense quantities of it in combination with O in the form of CO_2, and though the quantity varies from 3 to 8 or 9 per cent. only, yet this has been estimated to weigh about three billions of tons. The presence of CO_2 in the atmosphere is of great importance, inasmuch as all the carbon of plants is derived from that source, and the quantity necessary must be enormous when a square metre of leaf will decompose, by the aid of chlorophyll and action of sunight, a litre of CO_2 in an hour.

EDINBURGH CHEMISTS' ASSISTANTS' AND APPRENTICES' ASSOCIATION.

At a meeting held on Friday, February 25, Mr. GEORGE SINCLAIR, President, in the chair, a most interesting lecture was delivered by Mr. GEORGE SENTER on

The Simpler Plants and Animals.

The lecturer dealt with the nature and properties of protoplasm and the essential differences between plants and animals, pointing out that at the borderland between the two kingdoms the differences were so slight that scientists were not agreed as to the classification of some individual forms. The lecture was illustrated by living specimens of amœba, diatoms, volvox, hydra, saccharomyces, and chara, shown under the microscope, and by lantern slides of typical fungi and bacteria. On the motion of the CHAIRMAN a hearty vote of thanks was awarded to Mr. Senter, and the meeting closed.

ABERDEEN AND NORTH OF SCOTLAND SOCIETY OF CHEMISTS AND DRUGGISTS.

The sixty-first annual meeting of this Society was held in the rooms, 21, Bridge Street, on Wednesday, 2nd inst., Mr. JOHN JOHNSTON, President, in the chair. The HON. SECRETARY presented

The Annual Report,

which pointed out that the past year had been most successful. Not only was there a large increase in the membership, but there was also a greater interest taken in the work of the Society, giving a larger average attendance at the meetings and also necessitating many special meetings. The Society's School of Pharmacy was reported to be doing good work. The attendance at the classes had been good and the conduct of the students most exemplary. The laboratory and materia medica museum were in good order, and the number of students attending for private study had been greatly in excess of any previous year.—Mr. JAMES PATERSON, Hon. Treasurer, also submitted his annual report, which showed a satisfactory increase to the funds, notwithstanding the increased expenditure on the rooms. The Society then discussed the new constitution and standing order drawn up by a committee, and after some minor alterations they were unanimously adopted. The title of the Society will now be

The Aberdeen Pharmaceutical Association.

The discussion of the Committee's report on the new scheme of education and re-modelling of the rooms was deferred to a special meeting, to be held on Wednesday, the 9th inst.—Mr. JOHNSTON and Mr. J. CRUICKSHANK intimated that they had written respectively to the Rt. Hon. Mr. Bryce, M.P. for the South division, and Captain Pirie, M P. for the North division, asking them to attend and vote for the new Pharmacy Acts Amendment Bill, and had received favourable replies from both gentlemen.—The election of office-bearers for the current year was then proceeded with. Mr. James Clark, Ph.C., was elected President; Mr. Charles Simpson, Vice-President; Mr. Jas. Paterson, Hon. Treasurer; Mr. J. Cruickshank, Hon. Secretary; and Mr. R. Urquhart, Librarian.—Mr. CLARK proposed a vote of thanks to his predecessor for the attention he had given to the work of the Society during the nine years he had been President.—The vote was heartily accorded.

BRITISH PHARMACEUTICAL CONFERENCE.

A meeting of the Executive Committee was held at 16, Bloomsbury Square, on Wednesday, March 2.—Present :—Dr. C. SYMES (President), in the chair, Messrs. Martindale and Martin (Vice-Presidents), Professor Greenish, Messrs. Bird, Collier, Farr, and White, Messrs. Naylor and Ransom (Hon. Gen. Secretaries), and Mr. Nightingale (Assistant Secretary).—The minutes of the previous meeting were read and confirmed. The Secretaries reported that letters had been received from Messrs. Laidlaw Ewing, Walter Hills, Guiler, Payne, Wells, and Wright, regretting their inability to be present.—Mr. NAYLOR reported that on behalf of the Committee he had written a letter of condolence to Mr. Beynon on the death of his father, the late Hon. Colonial Secretary of the Conference for Madras.—Letters were read from Mr. J. J. Prebble accepting the position of Hon. Colonial Secretary for Bengal, and from Mr. J. Stanley Smith accepting a similar position for Bombay.—The following members were appointed a sub-committee to revise the Blue List previous to its circulation :—Professor Greenish and Messrs. Bird, J. C. Umney, White, and Ransom.—A resolution was passed expressing the deep regret felt by members of the Executive at the loss sustained by the Conference by the death of Mr. M. Conroy, of Liverpool, and the Secretaries were requested to write to Mrs. Conroy expressing the deep sympathy felt for her and her family on their bereavement.—The PRESIDENT stated that he had received a letter from Mr. McKnight, the Hon. Local Secretary at Belfast, reporting satisfactory progress in the arrangements for the approaching meeting of the Conference.—A letter was read from Mr. C. J. Park on behalf of the Plymouth Chemists' Association, stating that they were prepared to offer a cordial invitation to the Conference to meet in Plymouth in 1899. The consideration of the subject was deferred until the next meeting of the Executive.—It was reported that letters had been received from various associations thanking the Conference for copies of the 'Year-Book.'—Eight gentlemen, having been duly nominated, were elected to membership.

PHARMACEUTICAL SOCIETY OF IRELAND.

At the evening meeting held at the Society's House, 67, Lower Mount Street, Dublin, on Monday, February 28, the PRESIDENT, Mr. R. J. Downes, in the chair, Professor CHARLES TICHBORNE delivered a lecture on

The Liquefaction of Gases and their Practical Application to Pharmacy.

The lecture, which was substituted by Professor Tichborne in place of one on the new British Pharmacopœia, was illustrated by numerous experiments showing the methods of liquefaction in use and the behaviour of the gases under their altered conditions. A description was given at the commencement of the lecture of what is now understood by modern physicists as a gas, and an explanation of the transition of liquid to gas, the remarks being illustrated by some experiments demonstrating Boyle's law. The idea that permanent gaseous bodies existed was shown to be incorrect, as, providing the temperature employed does not break up the structure of the molecules, every body is capable of existing in the solid, liquid, or gaseous state. The investigations of Faraday, at the request of Sir Humphry Davy, were referred to, and the simple apparatus Faraday used was described, extracts being read from his papers to illustrate the remarks. The lecturer then dealt with the liquefied gases of technical and medical interest, and observed that although oxygen, hydrogen, coal gas, and atmospheric air had all been liquefied, it had been accomplished at too dangerous a pressure for commercial purposes. A list of the most important gases capable of liquefication commercially was

also given, and examples of their use in breweries, bakeries, and other manufactories. The applications of gas to the preservation of food was also referred to.—A most interesting meeting was brought to a close by a vote of thanks to Professor Tichborne, proposed by Mr. Kelly and seconded by Mr. Ashe.

EDINBURGH PHARMACY ATHLETIC CLUB.

The seventh annual general meeting was held in the Pharmaceutical Society's House, 36, York Place, Edinburgh, on Thursday, February 24, 1898, at 9 p.m., Mr. William McBain, President, in the chair. Mr. J. P. Gibb, Hon. Secretary, submitted the annual report, showing a record of a good year's work. The membership now numbered 110.—Mr. A. S. Birnie, Hon. Treasurer, submitted the financial statement, which was satisfactory, and showed a credit balance of £8 4*s.* 1*d.*, notwithstanding a loss, for the first time, on the annual sports, due to very bad weather.—After a general discussion on the work of the Club, the following office-bearers were elected for next year:—Hon. President, J. Rutherford Hill; President, George Somerville; Vice-President, G. H. C. Rowland; Secretary, J. P. Gibb, 8, Cobden Crescent; Assistant Secretary, John Aikman; Treasurer, D. S. Napier; and as members of Committee, Messrs. Anderson, Birnie, Foote, Hendry, Kidd, McBain, and Smith. The meeting then closed.

EDINBURGH CHEMISTS', ASSISTANTS', AND APPRENTICES' ASSOCIATION.

The annual supper took place in the Imperial Hotel, Market Street, on Friday, March 4, 1898, when about fifty members and friends were present, including Mr. George Sinclair, President, who occupied the chair, Mr. W. L. Currie (Glasgow), Mr. John Bowman, Mr. George Lunan, Mr. J. A. Forret, Mr. R. L. Hendry, Mr. J. Macintosh Cameron, Mr. John Lothian (Glasgow), Mr. W. B. Cowie, Mr. J. R. Hill, etc. Messrs. J. D. Sinclair, Vice-President, and G. H. C. Rowland, Hon. Secretary, acted as croupiers. Apologies for absence were intimated from Messrs. J. L. Ewing, D. Maclaren, and J. P. Gibb. In proposing the toast of

"The Pharmaceutical Society,"

Mr. J. D. Sinclair referred to the fact that his predecessor, in proposing this toast at last year's gathering, had made a strong statement in favour of the proposal contained in the Pharmacy Bill at present before Parliament. It was a proposal which had their hearty and unanimous approval, and they all hoped that before their next annual gathering came round the Bill would have become law. That the Council had no idea of lowering the educational standard was proved by its action in regard to the Preliminary examination, a policy which had been successful in securing the approval of the Privy Council, and, would, along with the further policy of consolidation, be productive of great good he believed to the Society and to chemists generally.—Mr. W. L. Currie, Vice-Chairman of the Executive, in replying to the toast, said the Society had unquestionably done great good in the past, but he firmly believed it had still an even greater work to do in the future, and the passing of the present Bill would do much to pave the way for the effectual prosecution of much that still remained to be done.—Mr. J. R. Hill proposed "The Edinburgh District Chemists' Trade Association," which was acknowledged by Mr. R. I. McDougall.—Mr. W. L. Currie, in proposing "The Edinburgh Chemists', Assistants', and Apprentices' Association," congratulated them on being still in full vigour in their twentieth session, and hoped he might be present when, next year, with a record attendance, they celebrated their majority.—The Chairman acknowledged the toast.—Other toasts were, the "Pharmacy Athletic Club" and the "Chemists' Golf Club," proposed by Mr. J. M. Cameron, and acknowledged by Messrs. G. Somerville, President, and W. B. Cowie, Treasurer; "The Ladies," proposed by Mr. Rowland, and acknowledged by Mr. J A. Forret, and "The Chairman," proposed by Mr. J. Lothian.—During the evening the Chairman, in the name of the Association, presented three volumes of music—"Nineteenth Century," "Chopin's Nocturnes," and "Songs of Four Nations"—to the accompanist, Mr. James A. Crichton, as an acknowledgment of his efficient services during several years.—An excellent musical programme made the evening pass most pleasantly, and 1 a.m. came all too soon. An interesting item was a clever ventriloquial entertainment by Mr. H. G. Dutton, in which two good jokes were introduced. Mr. Dutton had a ventriloquist's speaking model, who said he was a chemist. He had a very red nose, and explained that this was due to rock oil in his methylated spirit. The following dialogue then took place between the model and Mr. Dutton:—

"A man came into my shop the other day for a pound of sulphur. I charged him a shilling for it."
"You did?"
"I should think I did. Do you know what he said?"
"What did he say?"
"He said he could get it from Inman's for twopence a ton. Do you know what I said?"
"What did you say?"
"I told him to go to the place where *sulphur could be got for nothing.*"

SHEFFIELD PHARMACEUTICAL AND CHEMICAL SOCIETY.

At a meeting of members of the above Association held on Wednesday evening, Mr. G. Squire, the President, in the chair, Mr. A. W. Antcliffe, dispenser to the Sheffield Union, read a paper on the subject of

Poor Law Dispensers.

The object of the reader of the paper was to induce pharmacists to use their influence in securing for the provincial Poor Law dispensers the status, the privileges, and the recognition which are enjoyed by these officials in the Metropolitan area. He stated that in 1871 the Local Government Board made an order establishing dispensaries in the Metropolitan unions, but this order had not been extended to the provinces, and the result was that, although many provincial boards of guardians had appointed dispensers, who were fully qualified, they were not recognised as officers; in fact, they were really known officially as only assistants. The dispensers appointed in accordance with the Local Government order were, however, permanent officials of that department, and, as is the case with the other Poor Law officials, can only be dismissed from their posts by the sanction of the department. The speaker contended that the provincial dispenser holds his office at the will of the guardians, and as regards the permanency of his position, the workhouse porter or the guardians' coachman is far more favourably situated. He thought it was the duty of all chemists to do all in their power to get this state of things remedied in justice to their calling, and he urged the members present to try and persuade the London board of the Pharmaceutical Society to use its influence in the same direction. Sir Walter Foster, M.P., when occupying the position of Under-Secretary to the Local Government Board under the late Government, in a letter to a Sheffield chemist, expressed the opinion that, although the Metropolitan order did not apply to the provinces, yet any provincial board of guardians could obtain such an order on applying to the department. Mr. Antcliffe did not regard this as satisfactory, arguing that such an important matter ought not to be left to the wisdom of individual boards of guardians, but that the Local Government Board should treat all Poor Law dispensers alike, providing they were properly qualified. He complained that for positions of this kind army compounders were allowed to compete, and gave some particulars of the curriculum and examinations which the compounders have to undergo in support of his contention that the qualifications of such men are much below those of the fully qualified chemist. For example, army compounders were not examined by expert pharmacists, but by army medical men who were not familiar with the requirements. In conclusion he gave some hints which he thought would assist in bringing about the remedies he desired to see. Provincial chemists should seek seats upon the local boards of guardians, and insist on the Government recognising all dispensers; the dispensing should be done only by persons legally qualified; dispensaries should be established in large unions which were at present without them. In this policy he believed they would have the support of the general public, who, if they were made acquainted with the facts, would, he was sure, insist that the suffering poor should have equally as good attention as the sailor, the idiot, or the convict, and that the guardians should spend their money for the best interests of the people committed to their charge. Provincial dispensers deserved equal rights and privileges with other officers appointed by the guardians of the poor, and he submitted that the watering down of the qualifications for the office by admitting army compounders who had no standing as dispensers of medicine was most unfair, and called for the strong protest from the Pharmaceutical Society, local societies, and all humane Poor Law guardians.

LEGAL INTELLIGENCE.

PROCEEDINGS UNDER THE APOTHECARIES' ACT.

Illegally Acting as an Apothecary.

At the Blackburn County Court on Monday, before His Honour Judge Coventry, the Apothecaries' Society of London sued John Tempest, Oswaldtwistle, near Accrington, to recover £20 for having acted as an apothecary without having obtained the certificate required by the Apothecaries Act, 1815.

Mr. Slinger (Accrington), who appeared for the plaintiff Society, stated that the defendant had practised in Oswaldtwistle two or three years with no qualification at all, or at least, none that was recognisable by law. He believed the defendant purported to practise under an American diploma, but that was no legal qualification in England, and he would be doing the defendant no great injustice by describing him as a "quack," for he resorted to the methods and artifices of those men by issuing pamphlets and handbills in which he described himself as a properly and legally qualified man. The offence for which the penalty was sought to be recovered was that the defendant had selected and compounded medicines for the use of patients afflicted with a medical disease different from a surgical case. Under the Act a chemist could only sell, and could not select and prescribe. The defendant had described himself as a pharmacist, had practised as a medical man, and had the word "Doctor" painted over his door.

George Beech, a miner, of 25, King Street, Oswaldtwistle, stated that on November 4 last he went to defendant's house. The latter examined him, and told him his heart was affected. He made up a bottle of medicine, for which he charged him 1*s* 6*d*., and made him a present of some powders. He told witness as he was going away that he would find a lot of benefit from his treatment. On the way home witness met Dr. Townley, who asked him how he was getting on. He told the doctor where he had been, and the latter gave him another bottle of medicine, and took away the bottle received from the defendant. Witness had seen the bills (produced) which bore the name of "Dr. Tempest, F.C.S.M."

His Honour: What do those letters mean?

Defendant: "Fellow of the College of Safe Medicine," London. It is a chartered college for botanic physicians, which licenses me to practise in this country.

Witness, continuing, said that when he visited the defendant there were two other patients.

Defendant said that as a duly qualified physician he had the right to attend people. He claimed that being a physician and surgeon, he could legally treat a disorder or cure an accident. There was no law in this country or any other to prevent him doing so.

His Honour said it was clear that defendant had acted as an apothecary.

The defendant urged that he had a licence under the Pharmacy Act to dispense medicines,* and besides that, he had a qualification from London which entitled him to prepare and dispense his own medicine, and act as a doctor of medicine. He handed to his Honour what he said was his qualification from a chartered college.

His Honour having examined the document, said it was nothing of the sort. There was nothing in it about a charter, and it was of no value in that case. If a physician dispensed medicine he must be registered under the Apothecaries Act.

Defendant: I have something here then, from Chicago.

His Honour: That does not entitle you to practise in England.

Defendant said he had still another defence—that of priority. Botanic medicine was practised before the Act of 1815 or any other Act. It was the original system of medicine, and while he practised it he claimed the right to act as a physician without any qualification whatever other than a training in a college. Apothecaries were formerly merely chemists and druggists, and he was legally, morally, and equitably clear of the Apothecaries Act. He did not profess to make medicine of the apothecaries' kind or in their way, and he was also entitled to be registered under the 1886 Act.

His Honour: Then go and get registered. Proceeding to deliver judgment, he said that defendant had practised as an apothecary, which he had no right to do unless he was registered, and had thus brought himself within the four corners of the law. He would have to pay the penalty of £20, as provided by the Act.

Leave to appeal was given.

* The name of John Tempest is not on the Register of Chemists and Druggists for 1898. [Ed. *P. J.*]

HIGH COURT OF JUSTICE.

The Sale of Recipes for Proprietary Preparations.

On Friday, March 4, a motion by Messrs. Elliman, of Slough, against Mr. Sam. Flather, of Chorlton-on-Medlock, came before Mr. Justice North in the Chancery Division of the High Court of Justice.—It appeared that the defendant advertised that he could supply the formulæ for a great number of patent medicines and other proprietary articles, and on his list appeared Elliman's embrocation. Plaintiffs therefore got two persons to write for the recipe, which was sent them in the form of a small book containing a large number of formulæ, and including one which was said to produce a "close duplicate" of Elliman's Universal and Royal embrocations.—The plaintiffs thereupon moved for an injunction to restrain him representing, contrary to the fact, that he was in possession of, and able to communicate, the secret recipes from which the embrocations were manufactured. Mr. Elliman, in his affidavit, swore that the formula sent by the defendant was not that which was employed in the manufacture, which was only known to himself and his manager.—Mr. Swinfen Eady, Q.C., and Mr. Ingpen appeared for the plaintiffs; the defendant did not appear.—Mr. Justice North at first expressed great doubt whether he had jurisdiction to grant an injunction. If the defendant really knew the secret, he did not see how he could be prevented from communicating it, and he did not know that the fact of defendant telling a lie, and saying he had the secret when he had not, gave him jurisdiction to grant an injunction.—Mr. Swinfen Eady, however, having pointed out what facilities for fraud were offered by the defendant, who in one of his publications actually described the size and shape of the bottles in which Elliman's embrocations were sold, and having stated that an injunction had already been granted against the same defendant in respect of the recipe for Yorkshire relish by Mr. Justice Romer, His Lordship made the order asked.—Application was made the same day to Mr. Justice Romer at the instance of Goodall, Backhouse and Co., of Leeds, for a writ of attachment against Flather for breach of an injunction restraining him from advertising that he was in possession of the recipe for manufacturing Yorkshire relish. The defendant humbly apologised to the Court, and His Lordship said he would give him another chance by acccpting the apology, but ordered him to pay the costs as between solicitor and client.

Sale of a Chemist's Business.

Mr. Justice Stirling was occupied for a long time on Tuesday, March 8, with the action of Faithfull *v.* Kemp, although it ultimately turned out that the only substantial question at issue was who should pay the costs. The defendant, who carried on a chemist's business at 10, Bedford Terrace, Kensington, advertised it for sale in the *Pharmaceutical Journal*, and the plaintiff became the purchaser in April, 1896, through Messrs. Berdoe, and immediately afterwards took possession. There was to be a covenant by the defendant not to carry on business within two miles of Bedford Terrace, but there was a verbal arrangement that this should not operate to prevent his carrying on a wholesale and manufacturing business. Disputes soon arose between the parties as to the assignment of the lease, the form of the covenant not to trade, and to plaintiff being sole agent for defendant's chirata preparations, and pending these being settled plaintiff declined to pay the last instalment of the purchase money. An almost interminable correspondence between the parties and their respective solicitors ensued, offers and counter offers for a settlement were made from time to time and withdrawn, and at last the action came on for trial, all substantial points having been agreed. Mr. Jenkins, Q.C., and Mr. Theobald for the plaintiff contended that the plaintiff had been in the right all through, that he had been obliged for his own protection to bring the action, and that he was entitled to his costs. Mr. Rolt on the other hand submitted that the fault was all on the part of the plaintiff in not paying the last instalment of the purchase money. Ultimately his Lordship, who during the argument had remarked that the correspondence reminded him of the story of the Irishman and his pig—*i.e.*, that he must not say where he was going, or the pig would immediately want to go the other way—said he had come to the conclusion that the plaintiff was much more substantially right than the defendant, and he should therefore allow him the costs of the action, but the defendant would be allowed the costs of his counterclaim.

LETTERS TO THE EDITOR.

The Metric System of Weights and Measures.

Sir,—Your advice to chemists to familiarise themselves with the newly legalised system is both wholesome and good. Like other wise men I intend procuring a complete set of weights and measures as soon as I can get them stamped. At the same time it is to me an infinite source of regret that the change has to be made at all. It is not my intention to enter into a discussion of the respective merits of the two systems. There is doubtless much to be said in favour of the newer and more scientific one, especially in certain kinds of work, such as analytical work, etc. But the older system has answered very well, especially for retail work and dispensing, and writing after an experience of thirty five years at the counter, I may say that I hope the change may be long deferred—I mean the compulsory change—and that the present system may last the remainder of my time in the business.

Liverpool, March 9, 1898. Walter A. Grace.

The Benevolent Fund.

Sir,—With all due deference to the Trustees and Committee of the Benevolent Fund, I beg to suggest that portraits of those philanthropists who devised property for the benefit of their unsuccessful brethren would be better than a perpetual reminder of those unfortunates whose hard lives only achieved a failure. Example is more powerful than words, and it may be hoped that the good deeds of the departed may induce wealthy members to "go and do likewise."

March 7, 1898. Old Subscriber (127/43).

The Ancient Use of Savin.

Sir,—Glancing through a collection of old ballads the following verse in 'Marie Hamilton' caught my eye :—

> The King has gane to the Abbey garden
> And pu'd the savin tree,
> To scale the babe frae Marie's heart,
> But the thing it wadna be.

Does not this show a long-standing belief in the efficacy of savin as an abortifacient?

Dover, March 4, 1898. J. F. Brown.

The New Pharmacy Bill.

Sir,—I consider the new Pharmacy Bill of a very inadequate and partial character, and think that until matters connected with the calling of a chemist and druggist, requiring the attention of Parliament, could have been dealt with in a thorough and comprehensive way, it would have been more advisable to postpone legislation than to hurry through an incomplete and ineffectual measure—I say ineffectual because the Bill, being permissive, it is, I think, extremely doubtful if it will succeed in increasing the membership of the Society to the extent hoped for by its promoters. Educationally it may be justly regarded by many of us as of a decidedly retrograde nature, seeking to bring those of a lower professional educational standard up to that of those who have gone to the trouble and expense of qualifying themselves for the grade of "pharmaceutical chemist." If this measure in its present shape becomes law, the effect may be to submerge the Major examination altogether. Certainly there will be far less inducement to secure the higher qualification and diploma, the educational status will be thus lowered, and the more advanced one die out unless some additional inducements and advantages greater than now exist be offered to men who pass the Major. The chance of the calling ever becoming in this country a strictly professional one is most remote, and is not within the range of probable possibilities. The business cannot be dissociated from trade and shop keeping, and I am afraid neither the public nor the medical profession fairly appreciate the title of "pharmaceutical chemist," think but little of it, and do not consider in their dealings with a chemist and druggist whether he is a pharmaceutical chemist or not. As a rule the title does not specially promote trade patronage to any appreciable degree; but even if a distinction had been, and was so acknowledged, to all intents and purposes the new Bill will confer on the ordinary traders any ordinary advantage and distinction the pharmaceutical chemist may have been possessed of in respect to his business, excepting as to serving on juries. In my opinion an Act of Parliament should, in the first place, be compulsory as to membership; give the title of "Pharmaceutist" to all the members with exemption from jury service, and create a new and additional title for the disposed "Pharmaceutical Chemist." For those who pass the Major I suggest "Master of Pharmacy"; I think such a title would be understood by the public, and be of some considerable use in a business and trading point of view, and so would not be without commercial value, and worth attaining. Moreover, I would reserve a certain number of seats on the Council for "Pharmaceutical Chemists and Masters of Pharmacy."

Great Witley, March 1, 1898. John Twinberrow, Ph.C.

The Alleged Decay in the Art of Prescribing.

Sir,—I have read with interest Mr. Edmund White's article in the *Pharmaceutical Journal* of March 5, on "The Alleged Decay in the Art of Prescribing." I agree with him that there is not sufficient scope given to the student of medicine to perfect himself in his knowledge of the medicines used in the "Art of Prescribing." One wonders at it more when the remedy is really the ultimate point of all his learning. The physician may be proficient in applying carefully all that the varied sciences has taught him to arrive at a correct diagnosis, but of what avail is that to the patient if the same exactness cannot be applied in prescribing the remedy? This is an age of progress, yet therapeutics has not kept pace with the other sciences. The same old tinctures, extracts, and infusions are being prescribed as were prescribed one hundred years ago, although for a long time it has been known that they are really compound medicines, uncertain in their composition, through the influences of climate, soil, and other circumstances connected with their growth. Since retiring from practice I have given a good deal of time to the study of organic medicine, and am not the least surprised that I have often been disappointed in the result of my prescribing the pharmacopœial preparations of medicinal plants; now I find I have been blindly using them. Childlike, we have been following the dictates and traditions of our forefathers, believing because we have been taught to believe that certain doses of certain drugs produce certain effects. You will see the fallacy of this when you consider that no two specimens of organic medicine can be found exactly alike; those that I have examined vary as much as 10 per cent. in the quantity of their active principles. Many eminent physicians have told me that for some time they have looked upon organic medicines as uncertain, and that they had almost given up prescribing them. Why should this uncertainty remain? If we must keep to the old preparations, let a standard in strength of the alkaloid be declared. I am inclined to go a great deal further, and boldly advocate the abolition of the whole of the official preparations of organic medicines, and use only the pure alkaloids, emphasising the word pure. A standard solution, alcoholic or otherwise, could be made. The advantages of prescribing the alkaloids are many. Adulteration would be easily detected, our knowledge of the *modus operandi* of the drug in the human body would become more certain, the great diversity of opinion with regard to the therapeutic effects of most plants would be minimised. Several of the alkaloids have been found to have properties entirely different to what we have always been taught to believe.

Stroud Green, N., March 8, 1898. K. J. Dougall, L.R.C.P., etc.

OBITUARY.

Sibary.—On February 27, George Sibary, Chemist and Druggist, Dresden, near Longton (Staffs.). Aged 87.

Curtis.—On March 4, at Sandgate Road, Folkestone, Annie Victoria, the dearly loved wife of F. G. Curtis, Pharmaceutical Chemist. Aged 40.

Bell.—On March 5, Frederick R. Bell, Chemist and Druggist, Swaffham, Norfolk, formerly of Middlesborough. Aged 63. Mr. Bell, who had been a member of the Pharmaceutical Society since 1869, took a great interest in the political, educational, and social matters of the town, and was greatly respected.

Davies.—On March 9, Peter Hughes Davies, aged 83, Pharmaceutical Chemist, March, Cambridgeshire. Mr. Davies had been in business over fifty years, and a member of the Pharmaceutical Society since 1853.

ANSWERS TO QUERIES.

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

NITRAGIN.—See answer to "P. H. J." last week. Read special notice above. [*Reply to* M. F.—6/33.]

BACTERIOLOGY.—Pearmain and Moor's 'Aids to Bacteriology' (Baillière, 3*s.* 6*d.*), is a useful elementary work on the subject. [*Reply to* RODINOL.—6/25, and M. F.—6/34.]

FERRIC CHLORIDE.—Two fluid drachms will contain 0·145 ounce of the anhydrous chloride. [*Reply to* RODINOL.—6/26.]

BOTANICAL.—The flower is that of *Freesia leichtlini major*, apparently from a seedling; the seed is that of *Cæsalpinia bonducella*, Flem. [*Reply to* R. G. M.—6/24.]

MICROSCOPE.—See reply to "Microbe" below. The same outfit, minus the 1/12 inch immersion lens, will serve your purpose, and the cost will be five pounds less. [*Reply to* MICROSCOPE.—5/11.]

QUININE WINE.—It is doubtful if you could dissolve sufficient quinine in port wine, as the tannin present would tend to precipitate it. But in any case the wisest course to pursue is to inquire of the local Excise authorities. [*Reply to* AMMONIACUM.—6/31.]

DIGESTIVE COCOA.—You are undertaking a hopeless task if you attempt to reconcile all statements in advertisements of such articles as you refer to with known facts. Pepsin, of course, requires an acid medium, but cocoa is not necessarily alkaline, though it frequently is so. [*Reply to* PEPSINA.—6/32.]

PRACTICAL PHARMACY.—Borrow the works of Cripps, Proctor, Caspari, Coblentz, and other writers on the subject, from the Pharmaceutical Society's Library, and then decide for yourself which will best suit your purpose. We are unable to decide for you. [*Reply to* PESTLE.—6/27.]

CALCIUM CARBIDE.—It is not explosive, but reacts with water, acetylene gas being evolved. This gas is explosive when mixed with air in certain proportions. Keep the carbide free from moisture in water-tight vessels—iron drums are best—and you will not experience any trouble with it. You must have a licence to store more than five pounds. See page 488 of last volume. Doubtless it can be powdered. [*Reply to* H.F.H.—6/23.]

SYRUP OF CAMPHOR.—The Bristol Royal Infirmary formula is as follows:—℞. Acid. benzoic., ℥iii., acid. acet. glac., ℥iii. ♏. 320; acet. scillæ, ℥xl.; acet. ipecac., ℥xl.; ol. anisi, ℥ij.; camphor., ℥ij.; tinct. opii, ℥x. ♏. 320; sacch. alb. (cryst.), lb. 28; sacch. ust., *q.s.*, to give the colour of tinct. camph. co.; aq. dest. ad. C. iv. Misce. Each fluid drachm contains one minim of tincture of opium. The dose is one teaspoonful occasionally. [*Reply to* J. B.—6/20.]

MICROSCOPE FOR BACTERIOLOGY.—Get Baker's Advanced Student's Microscope (244, High Holborn, W.C.) or Watson's Edinburgh Student's Microscope (313, High Holborn, W.C.), with double nosepiece, two eyepieces, rackwork centreing substage, sliding bar to stage, and graduations on stage to serve as finder. Add a Leitz No. 3 objective, Reichert No. 6, and Leitz or Reichert 1/12 in. oil immersion, together with an Abbe condenser, preferably achromatic, and iris diaphragm. Total cost of outfit, about £18. Schenk's 'Elements of Bacteriology' (Longmans, 10*s.* net.) is a good introduction to the subject, but Crookshank's 'Bacteriology' (Lewis, 21*s.* net.) is the most complete work of reference. [*Reply to* MICROBE.—5/14.]

PERFUME.—Send a small sample, and perhaps we can tell you. It is impossible otherwise. [*Reply to* DUNNO.—6/16.]

INDIAN SNAKE POISONS.—Sir Joseph Fayrer might possibly be willing to investigate them, but you might also communicate with Professor Stockman, of Glasgow University, Professor Cash, of Aberdeen University, and Drs. MacFadyen and Hewlett, of the British Institute of Preventive Medicine. [*Reply to* W. C.—6/28.]

MINOR EXAMINATION.—The requirements are that you must have passed the Preliminary examination or its equivalent, be of the full age of twenty-one years, and be able to produce a certified declaration showing that you have been practically engaged in the translation and dispensing of prescriptions for not less than three years. Write to the Registrar, 17, Bloomsbury Square, W.C., for the printed form on which the declaration must be made. [*Reply to* G. W. B.—6/30.]

BOOKS ON PHYSICS AND BOTANY FOR THE MINOR.—Newth's 'Chemistry' (Longmans, 6*s.* 6*d.*), or Briggs' 'General Elementary Science' (W. B. Clive, 3*s.* 6*d.*), contain all that is required (much more in fact) on every point except the law of gravitation, the balance, and the air-pump. Everett's 'Physics' (Blackie, 3*s.* 6*d.*) will supply the deficiency. Before commencing to study Green's 'Botany' you should read Scott's 'Introduction to Structural Botany' (A. and C. Black, 3*s.* 6*d.*). [*Reply to* A. H. P.—5/32.]

GRAPH INK.—The following has been found very satisfactory for a violet ink:—Aniline violet, 1; methylated spirit, 1; water, 5. For black, use any of the blacks which are soluble in dilute alcohol, or such as the following:—Purple aniline S.B., 1; methylated spirit, 1; glycerin, 1; glucose, 1; hot water, 7. Dissolve the dye in the water, then add the glycerin, glucose, and water. Probably the dyes you have used were not sufficiently soluble for the purpose. [*Reply to* A. D.—6/17.]

WHITE LEATHER.—The white leather used for shoes, etc, cannot be produced by a simple process of bleaching, but the material has to go through a long and very carefully conducted process, or rather series of processes, to produce the white tint. Roughly speaking this is brought about by a kind of fermentation and subsequent exposure of the skins to air, moisture, and sunshine. Probably peroxide of hydrogen would increase the whiteness of discoloured shoes. Moisten the leather with the peroxide, then expose to bright sunlight. [*Reply to* ALBUS.—6/19.]

TO BLEACH SPONGES.—The method given in the 'National Formulary' is a very good one. It consists of soaking the sponge for fifteen minutes in a solution of potassium permanganate, 120 grains to the pint. Then wash with water, squeeze, and place in a solution of sodium thiosulphate, 480 grains to the pint. Then add for every pint of the last liquid 1 fluid ounce of hydrochloric acid diluted with 4 fluid ounces of water. Macerate for fifteen minutes, squeezing frequently, and replacing it in the bath. Then wash free from acid and dry. [*Reply to* SPONGE.—6/14.]

SYNTHETIC ESTERS AND PERFUMES.—No, there is no work devoted solely to the points you name; many of the bodies used are well-known chemical compounds, concerning which you will find full particulars in any work on organic chemistry. On essential oils, Power's 'Descriptive Catalogue of Essential Oils and Organic Preparations,' published by Fritzsche Bros., New York, contains much useful information. The annual reports of Messrs. Schimmel and Co., of Leipsic, also contain information which will be useful to you. Sawer's 'Odorographia' is a work which is both interesting and useful. [*Reply to* ARBEITER.—7/2.]

CORRECTION.

BENEVOLENT FUND.—On page 241 of last week's Journal, the name of Mr. Charles Maw was inadvertently printed as Mr. George Maw, in recording his recent donation of one hundred guineas to the Benevolent Fund.

COMMUNICATIONS, LETTERS, etc., have been received from

Messrs. Barrett, Bayley, Belohoubek, Bienvenu, Blythe, Brown, Coull, Cowley, Cracknell, Crockart, Cruickshank, Dougall, Dutton, Fell, Folkard, Griffiths, Harper, Harris, Heron, Hill, King, Lothian, Lucas, Macartney, Mackenzie, McKnight, Matthews, Miles, Milne, Mumbray, Phillips, Priestley, Saul, Smith, Van, Walker, Yewdall, Zimmermann.

ALKALOIDAL CONSTITUENTS OF CASCARILLA BARK.

BY W. A. H. NAYLOR, F.I.C.

This paper is intended to be a reply in the main to question No. 12 of the 'Blue List' issued by the British Pharmaceutical Conference. The question is:—"A re-examination of cascarilla bark is desirable, and particularly with reference to the observation that it contains an alkaloid closely allied to choline." This particular reference to choline is to be found in a paper by Dr. Boehm, an abstract of which appears in the 'Year-Book of Pharmacy,' 1886, page 168.

Fourteen pounds of bark reduced to No. 40 powder were exhausted by percolation with chloroform water containing 3 per cent. of oxalic acid. The percolate was made faintly alkaline by ammonia evaporated at a low temperature to one-fifth of its volume, allowed to become cold, and filtered from the crystallised magma which had separated out. The filtrate was precipitated by an excess of lead acetate and the precipitate collected on a calico filter and well washed. After removal of the excess of lead by the addition of sulphuric acid the clear liquor from the lead sulphate was rendered faintly alkaline by ammonia and agitated with three successive portions of ether to withdraw the cascarillin that should be present. The same liquid was next shaken in a like manner with chloroform. The chloroformic residue will be referred to presently. The next stage in the series of operations consisted in acidulating the liquid with sulphuric acid (a large excess of acid must be avoided) and adding to it Thresh's reagent in quantity sufficient to effect complete precipitation. The precipitate after being washed on a filter until quite free from free iodine, ammonium or potassium salts, was decomposed by freshly precipitated silver carbonate in the presence of water and filtered. The filtrate was faintly acidulated with hydrochloric acid and evaporated over a water bath and again filtered. This final filtrate was precipitated by platinic chloride, and the precipitate was collected and thoroughly drained. The double compound of base and platinum salt was repeatedly crystallised from water and finally washed with absolute alcohol.

The purified platinum compound crystallised from hot water in dark yellow hexagonal plates, and from weak alcohol in octahedral form. A portion of the product was dissolved in hot water, and decomposed by sulphuretted hydrogen and filtered. The filtrate was evaporated to dryness, and the residue purified by re-solution in a sufficiency of warm water and evaporation until a white minutely crystalline chloride of the base was obtained. This chloride, when perfectly dry, was practically insoluble in alcohol, and when heated it melted with intumescence, and gave off trimethylamine.

Portions of platinum compound were then ignited, with the following results. It should be stated that they represent the product of three different extractions of the bark. Prior to ignition they were dried at 105° C.

(1) 0·215 of platinum compound left on ignition 0·065 of platinum.
(2) 0·335 ,, ,, ,, ,, 0·100 ,,
(3) 0·120 ,, ,, ,, ,, 0·0365 ,,

(1)	(2)	(3)	Theory for Betaïne.	Theory for Choline.
30·23	29·85	30·41	30·28	31·65

Mean 30·16 per cent. of platinum.

That the chloride of this base yields on ignition trimethylamine indicates that it is allied to choline. That its chloride is practically insoluble in alcohol and melts with intumescence on heating, and that its platinum salt yields a mean of 30·16 per cent. of platinum, prove beyond a doubt that the base in question is not choline, but betaïne.

Chloroformic Residue.

It was treated with warm hydrochloric acid, 3 per cent., the filtered solution was made alkaline with ammonia and then shaken with chloroform. After evaporation of the chloroform the residue was taken up with the weak acid, and, after the addition of ammonia, was again shaken with chloroform. The product, which was not quite free from colour, was alkaline and soluble in alcohol, ether, and chloroform. It contained nitrogen. A solution of a portion of it in weak acid was precipitated by ammonia, also by iodine and potassium iodide, Mayer's reagent, Thresh's reagent, cadmium and potassium iodide, and phosphomolybdate of sodium. To the solution of another portion in weak acid the addition of platinic chloride gave a buff-coloured precipitate, which was collected and washed free from platinum chloride. When air-dried it was soluble in alcohol and crystallised from hot water in prismatic plates. This alkaloidal substance was also obtained from the impure cascarillin yielded by Alessandri's process. The existence of a base in cascarilla bark other than one allied to choline has been a debatable point, but may now be accepted as a fact. It is believed that this is the first time that the alkaloid cascarilline has been isolated and its platinum compound prepared.

My thanks are due to Mr. John J. Bryant for his assistance in carrying out the operations described in this paper.

PRACTICAL PHARMACOGRAPHY.

CARDAMOMI SEMINA.

Cardamoms, Engl.; Cardamomes, Fr.; Cardamomen, Germ.

Macroscopic Characters.—Although the seeds are alone official they are usually kept in the pericarp until required for use. The fruits vary much in size, shape, figure, colour, and degree of aroma; the smaller, plumper variety known as Malabar cardamoms (Fig. 1*b*) are the most esteemed. Good samples contain about three-fourths of their weight of fully formed seeds. The fruit is inferior, ovoid, oblong, or almost elliptical, trigonous, with longitudinally striated convex sides, and is crowned with the rim-like remains of the calyx. It is three-celled with axile placentation, the seeds forming two rows in each cell. The pericarp is nearly tasteless and almost inodorous. The seeds are dark brown, irregularly angular, about three millimetres in diameter, transversely wrinkled and covered with a thin membranous aril. They have a depressed

Fig. 1.—Cardamoms—*a*, *b*, *c*, *d*, Commercial varieties of cardamom fruits; *e*, transverse section of fruit; *f*, seeds, natural size.

hilum and a deeply channelled raphe. Bleached cardamoms lose their striations and are easily recognised by the white and smooth appearance of the pericarp. They are probably subjected to steam, and then exposed to the vapour of sulphurous acid.

Microscopic Characters.—The arillus consists of thin-walled linear flexuous cells. The outer coat of the seed (3*a*) consists of a layer of epidermal cells, strongly thickened on the inner and outer walls, usually empty, and presenting in transverse section a

rounded or nearly square outline (2*g*), but on a surface view (4*a*) they are seen to be linear, obtuse, and arranged very irregularly, some patches being nearly at right angles to others. Below this epidermal layer are one or two rows of thin-walled oblong

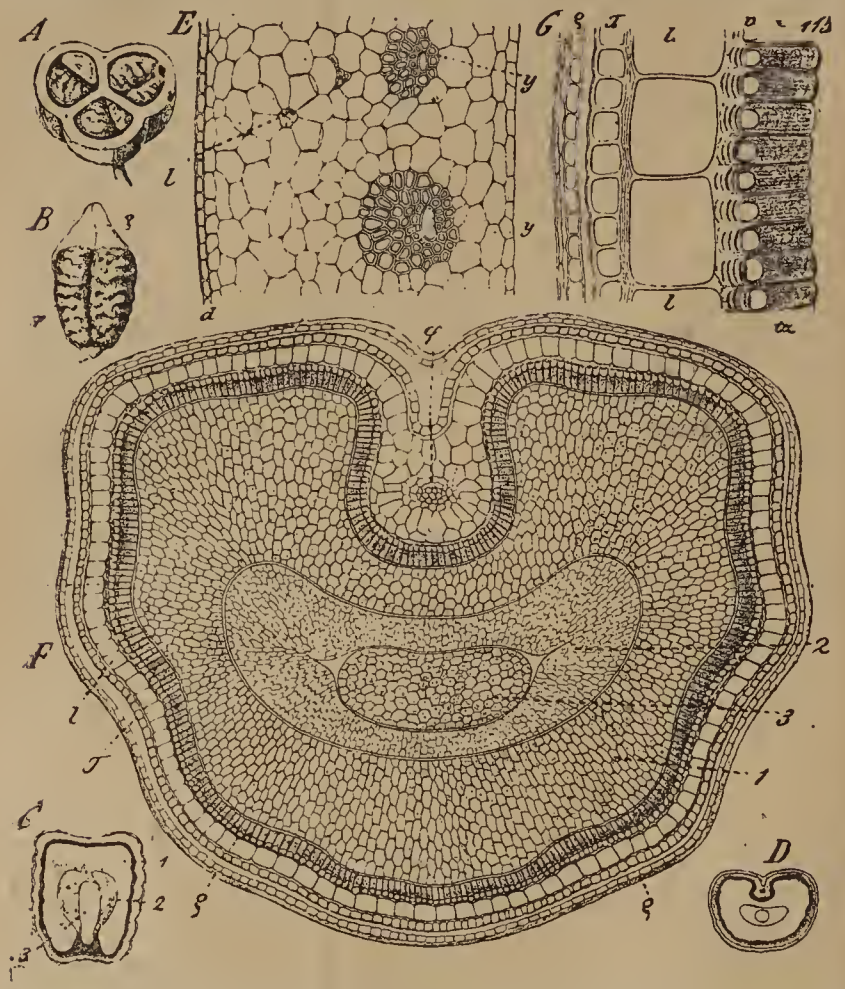


FIG. 2.—CARDAMOMS.—*A*, Transverse section of fruit with seeds *in situ*; *B*, seed magnified, showing base of arillus; *C*, longitudinal, and *D*, transverse section of seed. *E*, Transverse section of pericarp; *F*, transverse section of seed; *G*, transverse section of integuments of seed. After Berg.

pigment cells (3*b*), elongated like the epidermal cells but at right angles to them (4*b*). In transverse section these cells appear to be narrow and oblong. Then follows a row of much larger, nearly square, closely-compacted thin-walled cells (3*c*), some of which contain, in a vacuole-like structure, volatile oil and the remains of a resinogenous layer. Below the large cells are two rows of cells (3*d*), with nodular thickening of the walls. The inner integument of the seed (3*e*, 4*e*) consists of a single layer of sclerotised cells, oblong in transverse section of the seed, but polyhedral on the surface view, where the lumen appears as a rounded dot. The perisperm cells are characterised by a minutely, but densely dotted appearance, (4*f*) which is shown by iodine to be due to minute starch grains, and almost uniformly contain crystals of calcium oxalate (4*g*).

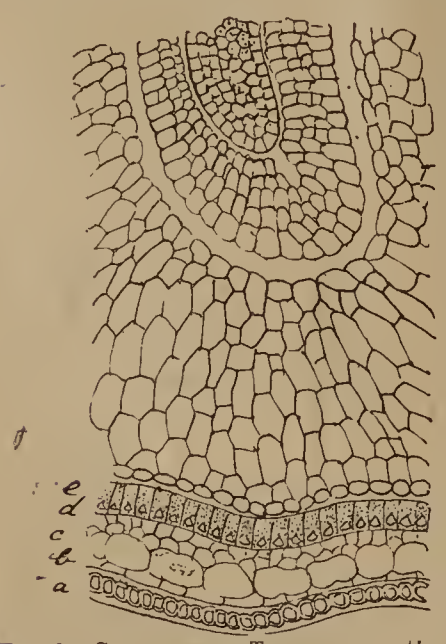


FIG. 3.—CARDAMOMS.—Transverse section of seed; *a*, Epidermal layer; *b*, pigment layer; *c*, large cells with oil cells intermixed; *d*, cells with nodular walls; *e*, sclerotic cells of inner integument; *f*, perisperm cells. After Tschirch.

In the powdered seeds the characteristic and most easily recognised features are the starch-bearing cells of the perisperm and the dark-coloured polyhedral cells of the inner integument, and the thick-walled linear cells with oblique ends of the epidermal layer. If the powder contains the pericarp as well, the latter may be detected by the thick-walled polygonal cells of the epidermal parenchyma, spiral vessels, and bast cells with oblique pits.

NON-OFFICIAL CARDAMOMS.—There are three varieties of cardamoms that occasionally come into commerce which possess a very similar aroma, viz., Ceylon cardamoms (*Elettaria cardamomum*, Maton, var. *major*, Smith), Siam cardamoms (*Amomum cardamon*, Linn.), and Korarima cardamoms (*Amomum korarima*, Pereira). The Ceylon cardamoms may be detected in powder by the relatively smaller size, 10-20 μ, of the epidermal cells of the seeds, and by their thicker walls, the same cells of the Malabar cardamoms being 20-30 μ in diameter. In the Korarima cardamoms the thick-walled epidermal cells are radially elongated, rectangular, and the tangentially elongated pigment cells immediately beneath are short and small. The cells of the inner integument are 25 μ high and 17 μ broad, and are very thin-walled in the upper part (5*a*). In the Siam cardamoms the structure of the seed coat is very different from that of the official cardamom, the thick-walled epidermal cells being much larger, 60 μ high by 25 μ broad. The pigment layer beneath consists of small roundish or oval cells filled with dark red pigment, and are only 25 μ in diameter. The stone cells of the inner integument are rather broader in proportion than those of the Malabar cardamom, but only 25 μ high, and the lumen occupies nearly half of the cells (6*a*). Full details of these and of other cardamoms more rarely imported are given in *Schad, Untersuchungen ueber den Malabar Cardamomen, Bern*, 1897.

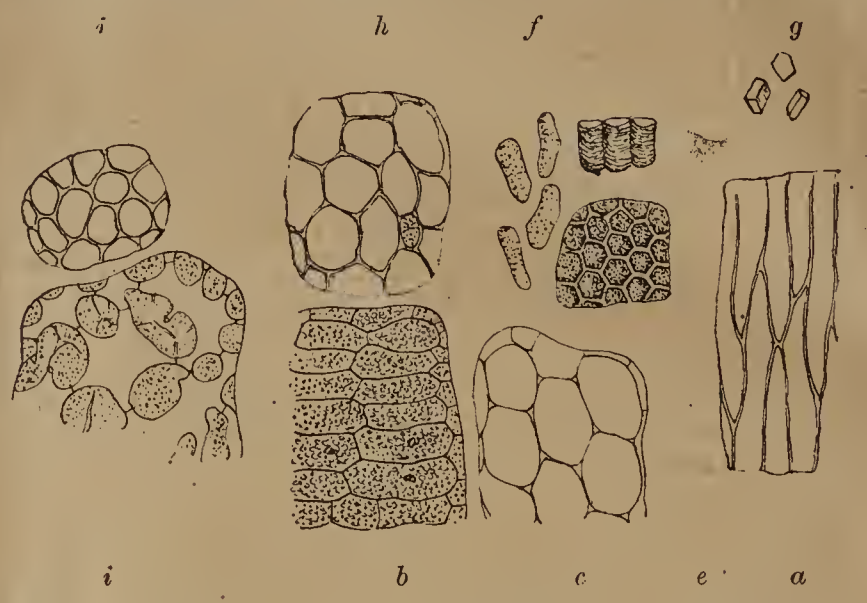


FIG. 4.—CARDAMOMS.—*a*, Cells of epidermis of seed, surface view; *b*, pigment cells; *c* and *k*, cells of the mesocarp; *e*, sclerotic cells of inner integument; *f* and *j*, cells of perisperm; *g*, crystals from perisperm cells; *i*, cells of pericarp. After Collin.

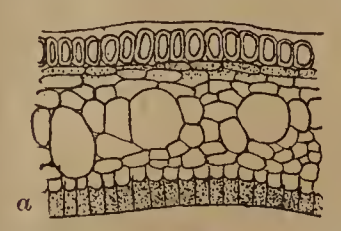


FIG. 5.—CARDAMOMS.—Transverse section of integuments of seed of Korarima cardamom. After Schad.

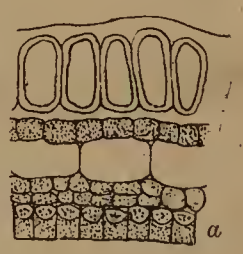


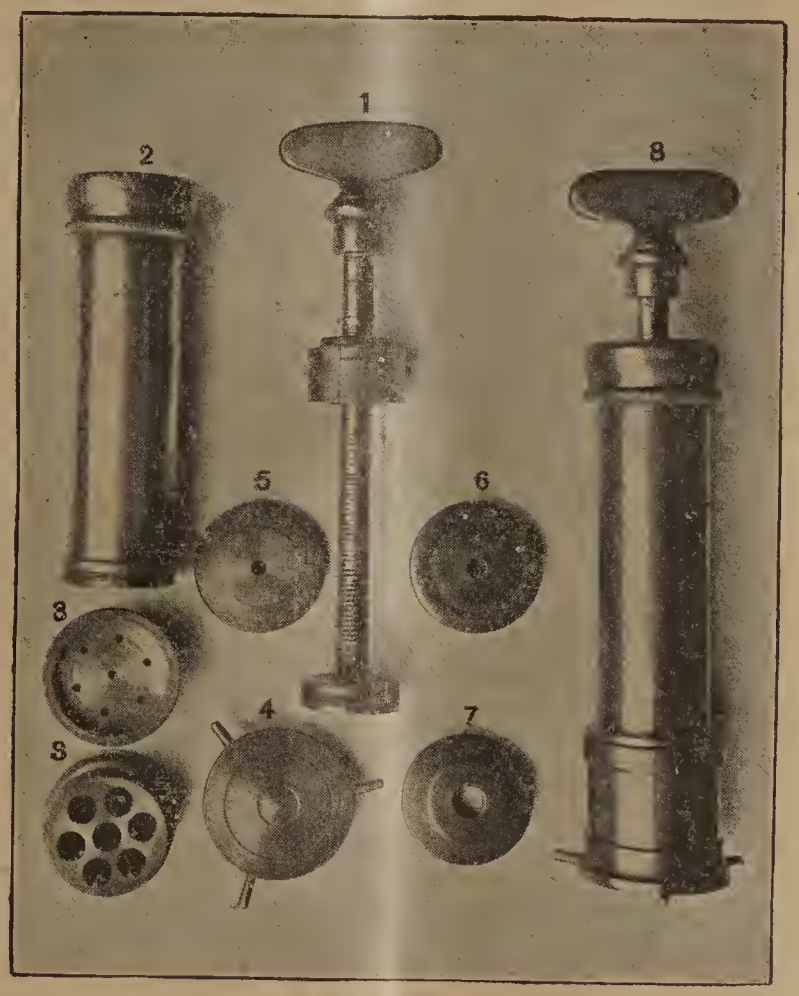
FIG. 6.—CARDAMOMS.—Transverse section of Siam cardamom. After Schad.

CHEMICAL ANALYSIS OF CACAO BUTTER.—Cacao butter is adulterated with coco-nut oil and the surrogate fat which is prepared from it, also with fine preparations of tallow, and with fatty oils, principally sesame oil. The iodine number throws the most light upon the question of adulteration. The number varies from 33·4 to 37·5. The addition of coco-nut oil or its preparations (iodine number 4 to 8), or of preparations of tallow and sesame oil (iodine numbers 40 to 45 and 108 to 110), respectively lower or raise this figure. The saponification numbers of cacao butter and of coco-nut oil are 195 and 250 respectively. It has not long been known that the acid number may rise as high as 40 to 50, though when this is the case the iodine number is found to rise with it. The melting point of pure cacao butter varies from 32·0 to 33·6.—*Analyst*, xxii., 130, after *Zeit. für off. Chemie*, iii., 34.

A SIMPLE MOULD FOR SUPPOSITORIES.

BY H. P. HEARDER.

As much interest appears to be taken at the present time in the preparation of suppositories in the cold by compression, I venture to submit a description of a mould devised by myself, by means of which I have for some time past been able to turn out suppositories, pessaries, and bougies much more rapidly than is possible in any other way known to me. Moreover, it is possible by this means to secure greater uniformity in the composition of the mass employed, whilst each suppository, pessary, and bougie can be made to contain an exact amount of the active medicament. The necessity of a detailed description of the apparatus is obviated by the accompanying illustration. Referring to that, it will be seen that the principle adopted is substantially that of an ordinary syringe, save that the piston rod is screwed in and out instead of simply sliding. The method of procedure is, briefly, as follows:—



First take the required weight of theobroma oil, or other basis ordered by the physician, powder in a mortar, then add the medicament and work together as though working a pill mass, with about thirty minims of castor oil or other suitable oil to each ounce of theobroma oil. When the mass is thoroughly homogeneous, break it up with a knife into fairly small pieces and it is then ready for the mould (Fig. 8). Next withdraw the piston (Fig. 1), fill the cylinder (Fig. 2) with the substance prepared as above, press the mixture down firmly with the piston-rod, then put in a little more, so as to fill to within about an inch or an inch and a half from the top, replace the piston and secure it by means of the bayonet-catch attached to the cap through which the piston screws. The cylinder will hold sufficient material to make about four dozen 15-grain suppositories, but as few as six can be made at a time if desired. The actual mould (Fig. 3) and the cap (Fig. 4) must not be removed before the substance is placed in the cylinder. Having closed the cylinder, commence to screw the piston down by means of the handle, and by thus compressing the substance force it through the small holes shown in Fig. 3 into the moulds (Fig. 3 lower drawing), then continue to screw until a firm resistance is felt, unscrew the cap (Fig. 4), and if the moulds are not sufficiently full, replace the cap, and screw a little more until they are quite full. The cap (Fig. 4) is then again removed, and, if necessary, in order to have the bases of the suppositories even, the superfluous material is cut or scraped off level with the mould; now give an extra turn, and the suppositories will be thrust out clear of the mould. Take each by its base, give it a short twist, and it can easily be detached from the fine thread that connects it to the mass within the mould.

For pessaries or bougies remove the mould and cap (Figs. 3 and 4), and replace by one of the other caps (Figs. 5, 6, 7). The cacao-butter or other basis is treated as for suppositories, but the mass should be screwed out a short distance and the end rounded by the fingers, then screwed further, and cut to the desired length. This can easily be ascertained by weighing the first pessary or bougie, or by forcing the whole length out on the counter, measuring, and then cutting to the correct length.

The machine should be washed thoroughly, cleaned and dried after using, especially after the manipulation of tannic acid, copper sulphate, iodoform, and the like.

PALLADIUM HYDROGEN.

BY JOHN SHIELDS, D SC., PH.D.

At a meeting of the Royal Society of Edinburgh on March 7, 1898, the author communicated the results of a research to determine the conditions under which hydrogen is occluded by metallic palladium. In the paper, there were three theories put forward generally to explain the phenomenon of occlusion.

1. The hydrogen is liquefied and contained in the capillary pores of the metal. This theory was disproved by the fact that no matter what the condition of the metallic palladium might be as regards the aggregation of its constituent particles, the quantity of hydrogen occluded was always the same.

2. The hydrogen is dissolved by the palladium, and the phenomenon is one of solid solution. This theory did not agree with the conditions of the occlusion as regards the effects of temperature and pressure, which would produce wide variation if it was merely a case of solid solution.

3. The hydrogen is chemically combined with the palladium in the form of a definite hydride. The author gave details of an elaborate series of electro-chemical experiments, all of which pointed to the conclusion that the hydrogen and the palladium are chemically combined as a definite hydride. The research did not quite clearly prove the actual formula for the palladium hydride, but there was good reason to believe that it was Pd_3H_2, and not Pd_2H, as had been previously stated by Troost and Hautefeuille.

GRANULINE is a new cleansing and washing preparation—consisting principally, according to Gochlid, of sodium carbonate, soda soap, and traces of sodium chloride and sodium sulphate—which has been introduced into German commerce. Granuline is a whitish yellow brittle substance somewhat fatty to the touch, and having a slight bergamot colour. It is readily soluble in cold and hot water, forming a fluid which has a strong alkaline reaction. 100 parts of granuline contain 87·5 per cent. of soap, and 12·5 per cent. of sodium carbonate. It appears to resemble certain English and American "soap extracts."—*Pharm. Post*, xxx., 588.

THE DETERMINATION OF ASH AS AN ANALYTICAL METHOD.*

BY D. B. DOTT, PH.C.

By the determination of ash we understand the incineration of a substance which is mainly organic, and the weighing of the residual inorganic matter. I remember two men, who were well informed in theoretical chemistry and in general analysis, both finding an extraordinarily high percentage of ash in sulphate of quinine. They had not understood that the carbon must be entirely burnt away. This is occasionally a matter of some difficulty, and the burning may be aided by the introduction of a small stream of oxygen into the crucible. The oxygen may be conveniently prepared by the action of peroxide of hydrogen on granular binoxide of manganese. In some cases, as when an ash is rich in potassium carbonate, the salts fuse before the carbon is burnt off, and the latter becomes occluded in the former, so that the oxygen cannot readily reach the carbon. In such a case it is better to dissolve the soluble ash and ignite the insoluble and carbon together, then evaporate the solution to dryness and ignite. It need hardly be said that the ash does not in general represent the composition of the salts, as they exist in the original substance. Organic salts, for the most part are converted into carbonates, alkaline nitrates into hydrates, hydric phosphates into pyro-phosphates, sulphates are partially reduced to sulphides, and so on. As a rule, the substance is incinerated in a platinum crucible, because that is the most convenient plan. Platinum is not easily oxidised or attacked, and stands the heat of the blow-pipe, but it is not without its weak points. Salts of readily reducible metals, as silver, lead, and even copper, cannot be safely ignited in platinum, not at least if there is anything to reduce them. Potash and soda, and therefore, their nitrates, quickly attack platinum. The proportion of nitre recommended in some books to be used with the carbonate as a flux, seriously acts on the crucible, and gives a considerable amount of platinum in the analysis. The ignition of a little hypophosphite will speedily make a hole in a platinum dish. A porcelain crucible is free from these defects, but possesses the great practical inconveniences of being difficult to heat through, on account of inferior conductivity, and of being very liable to crack in the course of ignition. Ammonium nitrate is sometimes added to aid the combustion, which it does fairly well. It may be dropped in a platinum crucible with safety, but is liable to crack a porcelain crucible, unless added very cautiously. It may be noted that ammonium nitrate is not admissible when great accuracy is desired, as it alters the composition and weight of the ash.

The subject of ash determination may be divided into two sections: First, that in which the mineral matter is present as a natural and proper part of the substance, and where it is present in a certain proportion, though that proportion may have a maximum and minimum, as in plant analysis generally; secondly, that in which the inorganic matter is present wholly as impurity, as in an alkaloid or glucoside.

In the first of these classes the determination of the amount of ash is often of great importance, and may be conclusive evidence of the species or variety from which a powder has been derived. The usefulness of the method is limited by the fact that in many cases the mineral matter varies greatly with the conditions of cultivation, and to some extent with the age of the plant. Yet, after all deductions, much may be learnt, not only from the amount of ash, but also from its composition. The British Pharmacopœia not infrequently states the yield of ash which is not to be exceeded, and there is much useful information in "Pharmacographia." But a great deal of good work in this department remains to be done. In the examination of powdered drugs it is often of service to know the amount of ash which is left by the genuine article, and where stems are apt to be mixed with roots, or stalks with leaves, it is well to known the proportion of ash in the different parts.

Let us consider a few particular examples. Opium is not a drug in regard to which the inorganic constituents readily attract attention, because its active principle can be easily assayed, and that is all the information we usually require. The ash is stated to vary from 4 to 8 per cent. in the dry opium. I have found 7·51 in a sample of Turkey, and 5·85 in a sample of Persian. The interesting fact about the ash of opium is the exceptionally large proportion of sulphate which it contains, probably more than that of any other plantstuff. Lobelia is not a drug as to which I have observed any authoritative statement. In a sample of powder which gave distinct indication of lobeline, 11·85 per cent. of ash was found. Lobelia especially powdered gave 12 58 per cent. Rhubarb root is a substance in which the amount of inorganic matter varies widely. Boni gives the percentage of ash from East Indian rhubarb as 20 to 25, from English as 8 to 11. In a sample which was said to be East Indian I found 9·25 per cent. of ash. In English 6·95 and 8·8 per cent. were found, while a sample grown in Scotland gave 7·35 per cent.

Saffron is very liable to adulteration, and in its case the ash is an important criterion of purity. The B.P. gives the ash as about 6 per cent. I have found in evidently genuine saffron 5·12, 5 46 per cent.; in undoubtedly adulterated 17·0, 22·59, 31·80 per cent. In one plausible but partially adulterated sample 6 68 was the percentage of ash. Only once have I found a sophisticated specimen giving under the right percentage, viz., 3·8. Of course, the microscopic examination and colour tests are important, and perhaps sufficient in themselves to determine the purity or otherwise of a sample; but a determination of the ash is often conclusive evidence of adulteration, anything over 7 per cent. being unknown in the pure drug. An addition to the usual tests may be made by comparing the colour of an infusion with the colour of a solution of potassium bichromate. A good saffron has about twenty-five times the colouring power of potassium bichromate. A tinctorial power of twice that strength does not indicate a pure saffron.

The B.P. gives the percentage of ash in honey as not more than 0 2 per cent. Allen gives it as from 0·1 to 0·25 per cent. I have found in a sample which was genuine 0 24 per cent., while in a sample of adulterated honey so little as 0·01 per cent was found. This ash, though small in amount, gave a very marked sulphate reaction, indicating probably that the honey was mixed with a very pure glucose. An exceptionally small proportion of inorganic matter may suggest adulteration as well as an excessive amount.

Indigo is a material which always contains inorganic matter to the extent of, say, 5 or 6 per cent., arising from the process of manufacture. One sample indicated 49·36 per cent. of ash, largely iron and calcium. Another gave 32·07 per cent. These amounts are unpardonable.

Silk is often heavily weighted with inorganic salts, so much as 30 per cent. of ash being sometimes found. I have incinerated some of the silk sutures used by surgeons, and found 1·31 per cent. of ash, which is within the limit of purity, and quite satisfactory.

The Pharmacopœia does not state a maximum ash for starch. I have found from 0 1 to 0·4 per cent. Neither does the B.P. give any limit to inorganic matter in sugar. In a sample of well-crystallised sucrose, not absolutely free from colour, there was

* Read before the Pharmaceutical Society at an Evening Meeting in Edinburgh, on Wednesday, March 16.

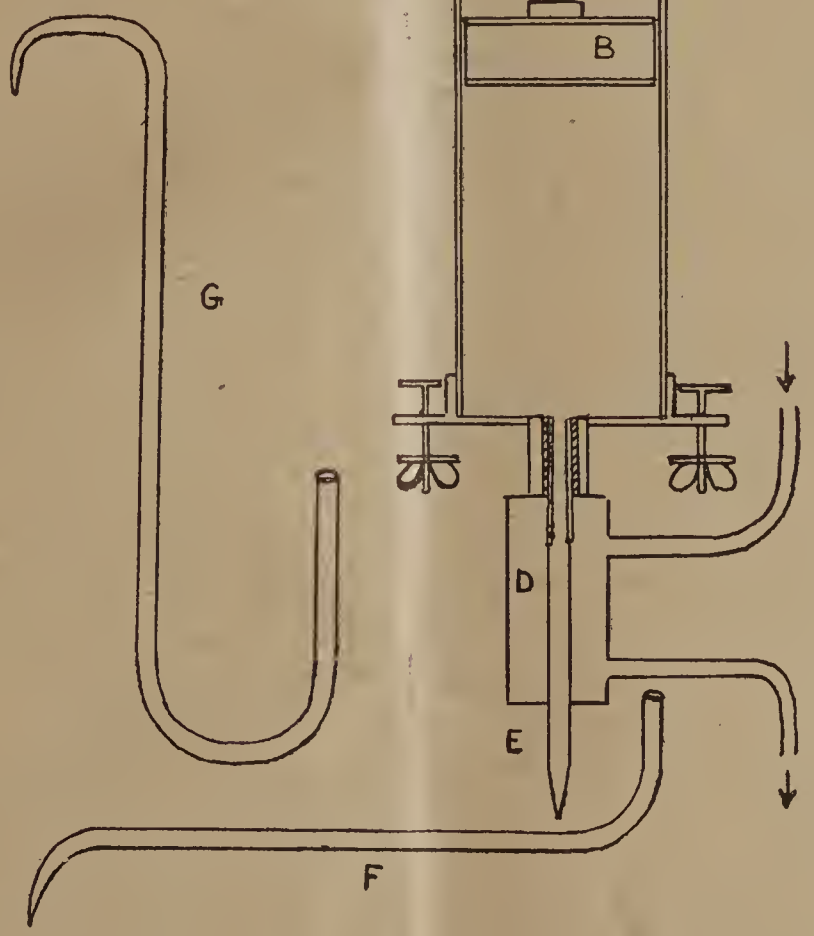
found 0·024 per cent. ash. A good sample of sugar of milk left 0·04 per cent. on incinerating. Oxalic acid, which gave 0·4 per cent. ash, indicated, as might be expected, a distinct amount of sulphate. As a rule the amount of ash in organic acids should not exceed 0·1 per cent.

As regards alkaloidal salts and crystalline active principles, the percentage of inorganic matters is generally very small, as a result of the purification to which they are necessarily subjected. But exceptions are occasionally found, and the determination of ash is an essential part of their examination.

A SYRINGE FOR FILLING CAPSULES.

BY J. A. FORRET.

Gelatin capsules are now largely used for administering such drugs as are nauseous or unstable, insoluble in water or otherwise unmanageable, or on account of their portability. Liquids of such consistence as flow freely through a nozzle of suitable bore may be conveniently run into capsules by means of a syphon fitted with a screw or spring-clip; but viscid liquids or material of the consistence of a soft extract require more or less pressure. The syringe shown in section was devised for manipulating the latter.



An efficient appliance for this purpose should provide for complete control over its contents; the operator should be able, with moderate pressure and a minimum of movement, to start, stop, or reverse the flow instantly, and to discharge the contents rapidly through a nozzle sufficiently small to pass within the capsule.

A is a brass cylinder of any suitable size. The piston, B, with a feathered screw rod passing through the cap of the cylinder, is lowered or raised by turning the wheel, C, which carries a key fitting loosely into the slot in the piston rod. The syringe is screwed to a projecting piece of wood, securely fixed to the dispensing counter at a convenient height, by two bolts and nuts. A straight nozzle, E, may be used when each capsule is held under it by the fingers. When the capsules are arranged in a tray a projecting nozzle, F, is necessary, to permit of the tray being moved so as to bring each capsule under the nozzle. A curved nozzle, G, is sometimes useful, when the operator wishes to have both hands about the same level.

An important feature in the wheel, C, is that from the beginning of the operation till the syringe is empty, the hand of the operator remains at the same level.

In the case of mixtures in which the heating of the whole mass it undesirable, but the filling of which is facilitated by gently warming just at the moment when it leaves the nozzle, the water jacket, D, has been found a convenient arrangement. This jacket is fitted to the nozzle, and, by the two tubes shown, a current of warm water is passed through it. The upper tube is conveniently connected with a syphon dipping into a vessel of warm water; the exit is by the lower tube, and the flow is regulated by a screw-clip. By increasing or reducing the flow the temperature is readily raised or lowered. The nozzles may be of glass or any other suitable material, having points adapted to the different sizes of capsules, and they may be readily fitted to the syringe by means of a rubber stopper.

* Read before the Pharmaceutical Society at an Evening Meeting in Edinburgh, on Wednesday, March 16.

GLUCOSE DETERMINATION AT THE DISPENSING COUNTER.*

BY R. C. COWLEY AND J. P. CATFORD.

Quantitative analysis is rarely practised in chemists' shops, and still more rarely, probably, in doctors' surgeries. The want of special apparatus, room, and time to devote to it are generally regarded as insuperable obstacles. It is proposed in this paper to give an example of what may be accomplished with only the ordinary utensils of the dispensing counter. The subject chosen being the determination in a few minutes of the percentage of glucose in urine or other material.

The apparatus required will be a ℥ij. cylindrical minim measure, to serve as a burette; a small porcelain capsule, such as is often used in making suppositories; a piece of stout wire as support for the capsule, to be bent at one end into a ring and the other end to be twisted around the gas-standard above the sealing-jet. One chemist, to whom this was suggested, finds it convenient to keep a small shallow kettle of water suspended over the sealing-jet, thus having a little hot water always ready.

Fehling's solution is commonly kept ready made; but if not, or if from age, unreliable—it may be made with the dispensing scales and weights—assuming they have passed the official inspection. The alkaline tartrate solution need not be very exact as to strength. The cupric solution is usually directed to be made 34·64 grammes in 500 C.c. Exactly the same strength may be obtained by dissolving ℥i. cupri sulphas B.P. in ℥ii. of water, or if desired to be quite exact, as follows:—Weigh into a ℥ii. tared vial

* Read at a meeting of the Liverpool Chemists' Association, on March 10.

(the long shape used for draughts) 2 ounces avoirdupois less 7 grains (*i.e.*, 866 grains) of distilled water, mark the point it reaches to, pour out a little, introduce the ℥i. cupri sulph. (B.P. quality), dissolve and make up to the mark again with water. Each fl. ℥j, or rather 63 minims, will contain 1 grain of metallic copper. Granulated zinc, about 10 grains, with as many drops of pure sulphuric acid, will precipitate 5 grains of copper from fl. ℥$35\frac{1}{4}$ (*i.e.*, ♏ 315) of the above solution. It may be done in a test tube, which should be inclined at an angle of about 45°, the spurting from effervescence will fall against the inside of the tube. Towards the end, immerse the lower part of the tube in the water bath; and when effervescence ceases decant the clear liquid, refill the tube several times with hot water until free from zinc; then rinse out the copper into the little capsule, drain off the water, moisten with S.V.R., dry on water bath and weigh. Two check experiments, somewhat roughly performed, gave the following results:—

315 minims yielded, with 10 grains of granulated zinc, 5 grains and 1/22nd of a grain, *i.e.*, 1·74 per cent.

25 C.c. from pipette yielded, with 20 grains of zinc, 0·447 gramme (1/5th grain too much), *i.e.*, 1·79 per cent. Difference due to impurity in commercial granulated zinc.

This may serve to test any old and doubtful sample of No. 1 Fehling, but a solution made as before described will not require testing. The strength is generally expressed by stating that of the mixed solutions.

10 C.c. are reduced by 0·05 gramme of glucose, or, in other words, 200 C.c. are reduced by 1·00 gramme of glucose, so that 200 C.c. are reduced by 100 C.c. of a 1 per cent. glucose solution; therefore it follows that 200 minims are reduced by 100 minims of the same glucose solution, or by 50 minims of a 2 per cent. solution, by 25 minims of 4 per cent. solution, 20 minims of 5 per cent. solution, 125 minims of 0·8 per cent. solution, 200 minims of 0·5 per cent. solution. The number of minims used, divided into 100, gives the percentage.

Any strength between 0·5 and 5 per cent. is thus easily determined, but beyond those limits a slight modification is advisable. If it be found that less than 20 minims of the glucose solution are required, *e.g.*, ♏10 = 10 per cent., it is better to dilute the glucose solution to 1/10th (fl. ℥j. + fl. ℥ix. of water). Then the percentage is found by dividing 1/10th the number of minims used into 100. Then 100 minims of the dilute, containing ♏10 of urine, = 10 per cent., 125 minims containing ♏ 12·5, = 8 per cent., 160 minims containing ♏ 16, = 6·25 per cent., 200 minims containing ♏ 20, = 5 per cent.

If the glucose solution is so weak that much more than 200 minims is required, the Fehling solution should be diluted to 1/10th and then if 200 minims, containing 20 normal Fehling, are reduced by 100, this contains only 0·1 per cent. of glucose, if by 50 it contains 0·2 per cent., if by 25 it contains 0·4 per cent., and if by 20 it contains 0·5 per cent.; 100 divided by the number of minims required gives the percentage in tenths.

The actual process is conducted as follows:—100 minims of each of the Fehling's solutions (cupric and tartrate) are measured into the capsule, the measure rinsed once or twice into the same. Set it on the ring—support over the gas-jet to gently simmer. Fill the measure with the liquid to be estimated and add it gradually to the Fehling solution until the blue colour disappears. The final point is best indicated by a solution of a small crystal of KFCy in acetic acid. Drops of this, to be spotted on an ointment slab or pill tile by a bit of glass rod, will show the approaching finality of the reduction from cupric to cuprous oxide far more sharply than the disappearance of the faint blue colour. The whole operation takes less time than it has taken to describe it, especially after a few trials, which may be practised on honey or milk sugar, or even cane sugar, after converting it into glucose by heating with 1 per cent. hydrochloric acid. The purest cane sugar is the granulated, containing 99·9 per cent. The brand known as Tate's crystals, or Macfie's chemists' grade, is over 99 per cent., so it may be used to standardise the Fehling. Beetroot sugar contains often only 92 per cent. sucrose.

4·75 of cane sugar	=	5 of glucose.	
0·95 ,, ,,	=	1 ,, ,,	

By the above simple process it would be possible to estimate and report on a sample of diabetic urine in the time that the medical man is writing a prescription, and the chemist would gain in reputation for smartness.

QUICK DOUBLE-STAINING WITH HÆMATOXYLIN AND SAFRANINE.*

BY F. A. UPSHER SMITH.

This method gives excellent results where it is required to contrast the commoner kinds of vegetable tissues, especially wood, bast and cambium. The hæmatoxylin is also useful for showing the presence of mucilage and for nuclei.

The general method is not original, but there are some details of manipulation not generally found in text-books, and only acquired by actual practice, that may prove useful to some workers.

1. Let the sections be as thin as possible; this is best effected by flooding the freshly-stropped razor with liquid like that in which the material is softened, in most cases dilute spirit. When the material has been softened in a moist atmosphere it is generally preferable to cut with a dry razor. Holding the razor in a perfectly horizontal position, draw it firmly and steadily through the material held between the thumb and forefinger of the left hand, and take care that nearly the entire cutting surface of the razor comes in contact with the material in cutting each section. Never cut more than six or eight sections without re-stropping the razor. Attention to this detail is of the utmost importance.

2. Place the sections on a clean glass slide and wash with spirit of the same strength as the hæmatoxylin stain. Cover with hæmatoxylin stain and leave for a definite time, which must vary according to the thickness of the sections and the structure of the tissues. From one to five minutes will generally be found sufficient. The slides of lycopodium on the table before you have been stained for different periods between one minute and twenty hours. It will be noticed that five minutes is ample time for the material in question. It is well to remember that where, as in this case, the lignified tissue is very dense and becomes deeply stained with safranine it is necessary so to regulate the hæmatoxylin that it gives equally definite results.

3. Wash again with spirit of the same strength as the hæmatoxylin solution. This washing with spirit of a properly adjusted strength must be carefully performed to ensure success. Spirit solutions of a different strength tend to deposit dense particles of colouring matter in the sections. Now cover with safranine solution, and allow to stand from one to thirty minutes, according to the material employed. The sections of lycopodium stain well in two minutes.

4. Dehydrate the sections. This is effected by washing with 50 per cent. spirit, then with absolute alcohol, and finally transferring them to clove oil. If only one section is required, choose the best and manipulate it so that when soaking in clove oil it takes up a position about one-third the length of the slide from one end.

5. Mount permanently by thoroughly drying the central part of

* Read before the School of Pharmacy Students' Association.

the slide, placing upon it a drop or two of Canada balsam and quickly transferring the section to the balsam by means of a mounted needle. Blotting paper should be at hand in order to quickly absorb the trail of clove oil and prevent it diffusing into the balsam. Place the coverslip in position by lowering it with the left hand until the left side of it dips in the balsam; on lowering the slip rapidly by means of a mounted needle held in the right hand, all bubbles of air may be excluded. If bubbles remain and interfere with the usefulness of the section there is no objection to dissolving away the balsam with clove oil and absolute alcohol and remounting, so long as the washing is not carried too far.

6. Cause the balsam to set by exposing the slide to a temperature of about 55° C. for about six to forty-eight hours. The longer period of time should be preferred whenever possible. Xylol is the best solvent for Canada balsam, which must first be dried by artificial heat in order to drive off the natural oil contained in it. Chloroform evaporates less quickly than xylol.

Round cover-slips have a more elegant appearance than squares. Cover-slips are more firmly fixed, and a more finished preparation results on gently smearing round the edge of the cover-slip with a fine brush, to distribute the superfluous mountant evenly.

Coloured ringing solutions are refinements that few busy histologists trouble about, and rightly so; but it is important that a preparation should be well and permanently mounted. For this purpose balsam is in most cases far superior to glycerin preparations.

The wash-spirit is added from a wash-bottle, and drained down the slide into a galipot. Chalk bottles are preferable for the absolute alcohol and clove oil, as they greatly facilitate work.

The chief points in this method have thus been briefly dwelt upon; it will be found by practice that staining sections on a slide is quicker, cleaner, and safer than using a watch-glass. It is obvious that a good section may easily be lost when immersed in a watch-glass containing a comparatively deep layer of a dark stain, and this danger increases with the thinness of the section.

Safranine solution is made by saturating absolute alcohol with safranine, and mixing with an equal volume of water. There are many varieties of safranine, and it is important to get a good one. Grübler's O brand is as good as any for general purposes, but special tissues may require special brands.

There are many formulæ for the hæmatoxylin stain. Lee's 'Microtomist's Vade Mecum' speaks highly of Mayer's hæmalum. That stain is made by dissolving a salt of hæmatein and ammonia in spirit, and adding it to a large volume of alum sulphate in solution. The alum is supposed to be precipitated by some substance present in the cellulose walls, and carries down with it a certain quantity of colouring matter. Lee's valuable book, referred to above, gives the fullest details concerning these and all other known staining reagents.

Many of the manipulative details, especially that of staining on the slide, were introduced to my notice by my friends Messrs. Lloyd Williams and Horrell, of the Royal College of Science, and I have pleasure in acknowledging the valuable suggestions which they have given me from time to time.

Fixing Leather to Metal.—Digest crushed galls, 9, in water, 8, for six hours, and strain through linen. Soak glue, 1, in water, 1, for twenty-four hours, then melt. Coat the leather surface with the warm gall-nut extract and the warm metal surface, previously roughened, with the glue, then fix together and allow to dry in the air.—*Scient. Amer.*, lxxvii., 326.

MEETINGS OF SCIENTIFIC SOCIETIES

CHEMICAL SOCIETY.

At a meeting held on Thursday, March 3, Professor Dewar, F.R.S., President, in the chair, the following papers were read by John Wade, B.Sc., and L. C. Panting, M.B., B.Ch. :—

Note on the Preparation of Dry Hydrogen Cyanide and Carbon Monoxide.

By the action of sulphuric acid on potassium cyanide, if the acid be concentrated, carbon monoxide as well as hydrogen cyanide is produced, and the authors find that by a proper regulation the reaction may be made to produce either of these substances quantitatively; a fact of some importance in consideration of the relative cheapness of potassium cyanide. If the sulphuric acid be mixed with its own volume of water and allowed to drop slowly upon lumps of potassium cyanide contained in a suitable flask, anhydrous hydrogen cyanide distils over. By using a stronger solution of sulphuric acid, carbon monoxide is formed, and by keeping the temperature low the gas is obtained free from sulphurous and carbonic anhydrides.—Papers by Professor J. Norman Collie, Ph.D., F.R.S., Mr. Thomas Tickle, and Miss L. Hall were summarised together. They dealt with

The Production of Some Nitro and Amido Oxylutidines.

The object of this work was to bring into relation the properties of simple pyridine derivatives with those of the more complex derivatives such as the alkaloids. As the latter are characterised by particular colour reactions, the conditions affecting the production of these ought to be studied. In a paper recently read before the Society by Professor Collie and Dr. Lapworth, a description was given of the properties of β amido, α, γ, dioxy-pyridine, a substance yielding by oxidation with different reagents a series of very characteristic colours. In the present papers this work was followed up in dealing with substances having the same substituting groups in other positions. The first paper dealt with an amido derivative of pseudo-lutido-styril, the β amido, α hydroxy $\alpha'\gamma$ dimethyl-pyridine, and the second paper with β amido $\alpha\alpha'$ lutidone. These substances are obtained by reduction of the nitro compounds with tin and hydrogen chloride. The positions of the substituting groups in the former compound seem to favour a maximum production of colour reactions combined with a minimum reducing power; it gives with sulphuric and nitric acids a bright purple colour, and with ferric chloride a red colour followed by a green, while on the other hand, their arrangement in the latter compound gives a maximum reducing power and but little tendency to the production of colours. As many alkaloids probably contain hydroxyl groups in the pyridine nucleus these relations are of some importance. When the platinum salt of the second substance is warmed with water, decomposition sets in with the formation of a much less soluble platinichloride, which on analysis, proved to be that of an unsaturated compound, propine diamine. This behaviour is interesting, being an unusual instance of the hydrolytic splitting of the pyridine ring. The question was asked by Dr. Wynne how the authors were assured that the amido group occurred in the β position, and not in that of β', in reply to which it was stated that this was dealt with in the paper. The nitro and amido compounds obtained had been identified with those produced through the nitration of a carboxylic acid of pseudo lutido-styril, in which the β' position was blocked by a carboxyl group, which was subsequently eliminated. —Professor Dunstan recalled another unusual behaviour of an alkaloidal platinichloride, by which hydrogen chloride was separated, and a platinichlor substitution product remained.—The President also remarked upon the conditions under which quinoline could be oxidised so as to produce at will either an aniline compound or a carboxylic acid of pyridine, according as the breaking down took place in the benzenoid or pyridinoid nucleus. In a paper by Mr. F. E. Matthews, Ph.D.,

On Benzene Hexabromide,

the author briefly described the results of his experiments. He had not succeeded in obtaining the β form of benzene hexabromide by a certain method recently described by another worker. He also recorded his failure to obtain the hexabromide or hexachloride of brombenzene. On hydrolysing benzene hexabromide with alcoholic soda more bromine was split off than corresponded with

three molecules of hydrogen bromide, and the residue consisted of di- and tri- brom benzene.—Professor Tilden remarked that it would be interesting to observe the conditions of light and temperature affecting these experiments.

The next communication was a note by Professor J. Norman Collie, Ph.D., F.R.S., and Colin C. Frye, on

The Action of Bromine on Benzene.

It was stated by Ador and Rilliet that when the product of the action of bromine on benzene—probably a dibromide—was heated with zinc ethyl, compounds of the formula $C_6H_6(C_2H_5)_2$ were formed, from which, upon oxidation with chromic acid, meta- and para-phthalic acids were isolated, but no ortho-phthalic acid. This result was so remarkable that the experiments had seemed worth repeating, and since it had been shown by Dr. Armstrong that phthalic acid is destroyed by chromic acid, permanganate had been used instead. In a first experiment, carried out in the absence of light, ortho- and para-phthalic acids were found, but none of the meta compound; but in a second experiment, in which the mixed bromine and benzene were exposed to daylight while being maintained at a low temperature, small quantities of the meta acid were obtained. These results must have considerable influence upon theorics respecting the formula of benzene, but no conclusions were drawn by the authors, the facts only being so remarkable were worth recording.—Dr. Armstrong said he considered the matter one of great importance, but no conclusions ought yet to be drawn; phthalic acid could be produced by oxidising benzene itself, and it was desirable that this work should be carried out on very large quantities of material.—Mr. C. E. Rice, B.A., then read a

Note on Manganic Salts.

When the higher oxides of manganese are dissolved in hydrogen chloride it had been supposed by Fischer that the tetrachloride $MnCl_4$ was formed. Pickering criticised this assumption, and asserted that manganic chloride, $MnCl_2$, might with equal probability account for the behaviour observed. Attempts to prepare the latter had, however, failed. By dissolving manganous chloride in chlorine hydrate contained in a closed tube, a solution is obtained exactly resembling that of the supposed $MnCl_4$. An attempt was made to isolate double salts of $MnCl_4$ with potassium chloride and ammonium chloride, and when a strong solution of the manganese salt was saturated with ammonium chloride and hydrogen chloride at a low temperature, crystals of a double compound were obtained, which proved, however, on analysis to have a composition represented by the formula $2NH_4ClMnCl_3H_2O$. A potassium salt of the same nature was also obtained. These are stable in dry air, but when heated to 100° give off chlorine; they are also decomposed by water, a hydrated oxide of manganese being precipitated.—Dr. Armstrong and Professor Tilden favourably criticised the paper, and the President said it would be important to study the optical and magnetic propcrties of these compounds.

Finally, Mr. W. C. Reynolds read a communication on

Some Chemical Properties of Concentrated Solutions of Certain Salts. Part I., Potassium Carbonate.

When copper sulphate is added to a concentrated solution of potassium carbonate, a solution is obtained from which crystals of a double carbonate of copper and potassium are deposited. The ame is obtained in a purer state by means of copper acetate and potassium carbonate, and can be washed free from potassium acetate with alcohol mixed with glycerin. Strontium and barium do not give corresponding compounds, but the author has prepared a series of compounds with other metals having the following general composition:—$M''K_2(CO_3)_2$, with the metals copper, ferrous iron, manganese, cobalt, and nickel. The bismuth salt has the formula $Bi_2OK_4(CO_3)_4H_2O$. The magnesium salt and the silver salt, which latter has the formula $AgKCO_3$, have been previously prepared and described. A lead salt also exists, but if made from a solution containing excess of lead the proportion of lead carbonate approaches that of two molecules to one of potassium carbonate. All these double salts are decomposed by water and cannot, therefore, be re-crystallised; the ferrous compound, moreover, is readily oxidised.—Professor Tilden pointed out that in concentrated solutions potassium carbonate appeared to exist as ions of K and KCO_3, instead of as K_2 and CO_3. It was to be noticed that the valencies of all the heavy metals corresponded with the number of (KCO_3) groups united to them.—Mr. Ling was surprised that such compounds had not been studied before; the copper solution mentioned has long been well known among sugar chemists.—Mr. A. G. Bloxam said if carbonic acid were regarded as a hydroxy acid its behaviour in this respect would be brought into relation with that which was well known of other hydroxy acids.

ROYAL INSTITUTION.

On Friday, March 4, a lecture was delivered by Professsor T. E. Thorpe on

Recent Results of Physico-Chemical Inquiry.

Until thirty-five or forty years ago the domain of chemical physics was a dark continent; like Africa, it had been penetrated by but a few, and its riches were unknown; and, like Africa, it has many regions still unexplored, with paths that are few and difficult to traverse. He had on one occasion, over a friendly cup of tea, ventured to remark to a lady, "Why, when a cup of tea is stirred, does it not go on moving for ever?" "Certainly it cannot," was the reply, "unless you go on stirring it for ever." The scientific reply, however, was that tca is not a perfect fluid, and the question arises what is a perfect fluid? That may be defined as a fluid, all the parts of which are under the same pressure. Liquids may be divided into two classes, thick and thin. The thin are those that, when stirred, continue to move longest. With a pair of pipettes he proceeded to show the different speeds with which two liquids flowed from them. One filled with a mobile fluid paraffin emptied itself in about fiftcen seconds, while the other, filled with glycerin, took half an hour. In the Government laboratories, where they are concerned with the determination of alcohol in various liquids, they must first free these liquids from carbonic acid, an object that can be accomplished by merely pouring from one vessel to another, but this leads to an inaccuracy through the escape of alcohol. To free the liquid from the dissolved gas without exposure, therefore, a paddle, driven by an electric motor is caused to revolve in it while contained in a closed vessel. This was experimentally illustrated to the audience with two liquids, water and glycerin, which were seen to behave very differently, thc water being churned up into a foam, while the glycerin, which has a viscosity about two thousand times that of water, was but slightly affected. By such apparatus the Revenue is saved £100 a year, which, although a small amount in the Revenue, is a commensurable quantity compared with what is dealt out by the Government to promote scientific education. He was able to show other substances, moreover, that were even more viscous than glycerin; a vessel containing meta-phosphoryl chloride could be inverted without any of the liquid flowing out, and an indentation on its surface would take weeks to disappear. Some complex silicon compounds also, for which he was indebted to Professor Emerson Reynolds, showed similar properties. In fact it became difficult to lay down a hard and fast line between liquids and solids. The metal lead that is commonly regarded as a solid has some of the property spoken of. On some old cathedrals the flowing of the lead on the roofs is evident, and by means of a hydraulic press he was able to demonstrate the property in a more striking manner. The press acted on a cylinder containing lead, which, on the application of strong pressure, was caused to flow out through a small hole, forming a long wire. Freshly-cut lead surfaces, too, adhere readily when pressed together. Even steel shows viscosity in a small degree. By the kindness of Professor Roberts-Austen he was able to exhibit a section of a steel railway metal, the surface of which had been etched with dilute acid. The etched surface exhibited the lines of flow in the steel, due to pressure. Glass also must be included among viscous substances. Professor Kohlrausch had found that when a magnet was suspended by a glass fibre the latter suffered a permanent twist by the action of the earth's magnetism. Among liquids might be mentioned a substance named isoprene, discovered by Professor Tilden, and obtainable from turpentine, which possesses a viscosity only one-fifth that of water. But of all liquids those formed by condensed gases are most mobile. Among these but few determinations have been made. The viscosity value of liquid carbonic acid has, however, been carefully examined, and found to be fifteen times less than that of water at the same temperature. It decreases gradually with rise of temperature until at 38° the liquid is converted into gas, but even the gas shows it slightly, viscosity in fact being a property of all matter. The viscosity of a liquid varies considerably with temperature and slightly with

pressure. An experiment showing the different viscosities of hot and cold glycerin was performed and diagrams illustrating its rate of change by curves were shown. The units employed in its measurement are taken from the common units of length, mass, and time, the co-efficient of viscosity being the force required to maintain a velocity of one centimetre per second in a surface of area one square centimetre moving tangentially over a pond of the liquid one centimetre deep. It must be remembered, however, in comparing viscosities, that different liquids are not under the same thermal conditions at a given temperature. At 20°, for example, water and alcohol are at very different ranges of temperature from their respective freezing and boiling points. But among liquids whose thermal conditions are more comparable, such as water and formic acid, which latter freezes at 8° and boils at 100°, the changes of viscosity with temperature vary with different rates. At zero the viscosity of water is six and a half times greater than at 100°, while that of formic acid is only four and a half times greater. The co-efficient sinks more rapidly in the case of water than in the case of paraffin, and still more rapidly in the case of glycerin. Viscosity appears to be in no way connected with the expansion due to heat, for while at 4° water attains a maximum density, the rate of change of its viscosity passes through this temperature without alteration. But there are anomalies in the behaviour of water in other respects than its co-efficient of expansion; one is the effect of pressure on its viscosity, and another the fact that it is more compressible at low than at high temperatures. The reason is to be looked for in the fact that water is an associated substance. Below 4° ice particles exist, dissolved in the water and producing the same effect as dissolved saline substances. There are thus two factors affecting its viscosity, the simple effect of change of temperature and the effect of association of the molecules.—Professor Thorpe would draw the notice of physiographers to a fact that had apparently escaped attention. Saline water is more viscous than pure, and the viscosity increases largely with the fall of temperature; and the Gulf Stream, which sweeps round the shores of Brazil and Mexico with a considerable velocity, owes the loss of this velocity very largely to the cooling it experiences in these northern latitudes.

LINNEAN SOCIETY OF LONDON.

At a meeting held on March 3, Dr. St. George Mivart, F.R.S., Vice-President, in the chair, Mr. Thomas Christy exhibited specimens of

The Mora Nut

of British Guiana (*Dimorphandra Mora*, Schomb.), of which some had been lately introduced into London by colonial brokers as the kola nut (*Cola acuminata*). It appeared, however, on analysis that the former contains no caffeine, a product for which the latter is of definite commercial value. It remained to be ascertained whether the mora nut has any economic value.—Prof. W. A. Herdman, F.R.S., then read a paper by Mr. F. J. Cole, entitled "Observations on the Structure and Morphology of the Cranial Nerves and Lateral Sense-Organs of Fishes, with especial reference to the genus *Gadus*." It contains the first description of

The Lateral-Line Organs of Gadus,

and pit-organs were shown to be present. The author concludes that the lateral-line system of fishes was not originally metameric and that it has nothing to do with the branchial sense-organs. He regards it and the auditory organ as parts of a system, and their nerves (viz., the superficial ophthalmic, buccal, external mandibular, lateralis, and lateral-line nerves) together with the auditory as of a series *sui generis*, and shows that the so-called lateral-line nerve of *Petromyzon* really belongs to the lateralis accessorius system (ramus lateralis trigemini, auct.), the morphology of which he fully describes. The paper deals exhaustively both with the aforementioned and the subsidiary branches of the subject, which is treated in detail and historically, with an accompanying exhaustive bibliography.

Mr. G. Claridge Druce next read a paper on

The Occurrence of Carex Helvola, Blytt,

in Britain, in which he gave an account of his discovery of this plant on Ben Lawers, Perthshire, in August, 1897. He found it growing in some abundance at an elevation of about 3200 feet. Professor Blytt and Doctor Christ, to whom specimens had been submitted, both agreed in naming it *C. helvola*, which by many botanists is considered to be a hybrid. Professor Blytt says that it grows with *C. canescens* and *approximata* (*lagopina*), but he has never found ripe fruit. Doctor Christ says: "Il me semble d'être une ancienne hybride fixe et plus ou moins stable." Mr. Druce could readily believe that *C. helvola* was a hybrid of which *C. canescens* was one parent, but he had more difficulty in stating definitely the name of the other. From the close resemblance borne by *C. helvola* to *C. Zahnii* (an acknowledged hybrid of *C. canescens*, in one of its forms, with *C. approximata*), this combination might well be the origin of the Ben Lawers plant, but against that was the fact that the presence of *C. approximata* in the Breadalbanes had never been proved. *C. echinata*, on the contrary, was plentiful there, but Mr. Druce could see no positive evidence of the occurrence of that species in the foliage or inflorescence. He would have expected the offspring of two plants with nerved perigynia to have exhibited that character even in young specimens; as is shown in *C. pseudo-helvola*, an acknowledged hybrid of *C. canescens* and *norvegica*. The foliage too was slightly glaucous, a character not possessed by *C. echinata*. Although the Ben Lawers plant was less luxuriant than Blytt's Norwegian specimens, Mr. Druce was unable to separate it specifically from that plant.—The last communication was a report by the Rev. O. P. Cambridge, F.R.S., upon

The Spiders Collected by Mr. Fisher,

of the Jackson-Harmsworth Polar Expedition, was read by Mr. A. D. Michael, F.L.S. They consisted of three species, all belonging to the genus *Erigone*, one of which had been previously described, though not figured by Thorell, and another was new, but closely allied; the author proposes to call the latter *E. Fisheri*. Mr. Michael remarked that *Erigone* was a genus of small spiders chiefly found in the northern and mountainous parts of Europe. In the views of some writers it included the two later genera, *Neriene* and *Walckenaera*, in the view of others the former only. Out of about 150 known species nearly 100 had been found by Mr. Cambridge in Dorsetshire, so that it appeared that the Arctic *Arachnida* were not so different from English and Central European types as might perhaps have been anticipated.

PHARMACEUTICAL SOCIETY.

At the meeting of the Library, Museum, School, and House Committee, on Wednesday, March 9, the Curator presented the following report of donations:—

To the Museum in London.

Messrs. Horner and Sons, London:—Specimen of fine Patchouli Oil and of the Leaves from which it was distilled.

Mr. H. Haensel, Pirna-on-the-Elbe:—Specimens of Terpeneless Oils of Lemongrass, *Pinus picea*, and Turmeric.

Messrs. Schimmel and Co., Leipsic:—Specimen of the Synthetic Oils of Jasmine, Neroli and Ylang Ylang, Citronellol, Citronellal, Geraniol, Geranyl Acetate and Formate, Linalyl Acetate and Formate, Methyl Chavicol, Santalol, Methyl-Heptenone, Geranyl, Methyl Ether, Benzyl Benzoate, and Ethyl Benzoate.

Messrs. Hodgkinsons, Prestons, and King:—Specimen of Crude Amber Oil and of the Rectified Oil.

Messrs. Lewis and Peat, London:—Two specimens of Indiarubber from New Guinea.

Mr. J. H. Hart, F.L.S., Curator Botanic Gardens, Trinidad:—Seeds of *Omphalea megacarpa*.

Messrs. Hearon, Squire and Francis:—Specimens of the Fruits of *Sapindus mukorossi*.

The African Lakes Co., Glasgow:—Specimen of *Strophanthus kombé*.

Mr. F. A. Upsher Smith, London:—Two Microscopic Slides.

To the Museum in Edinburgh.

Messrs. T. and H. Smith and Co., 21, Duke Street, Edinburgh:—Gallic Acid, Jalapin, Jalap Resin, Scammony Resin, Scammonin, Caffeine, Papaverine, Codeine, Narceine, Xanthaline, Xanthaline Muriate, Tannic Acid, Morphine, Tartrate of Morphine, Salicin, Aloin, Piperin, and *Tela vesicatoria*.

To the Herbarium.

Mr. H. Marston Morgan, Kingston Hill, Surrey:—Fifty specimens of Medicinal Plants from Singapore.

NOTICES OF BOOKS.

'Doctors and Patients: Hints to Both,' by Dr. Robert Gersuny, of Vienna, is a distinctly readable little book. The English translation of it, published by John Wright and Co., of Bristol (2*s.* net), is by A. S. Levetus, and Dr. D. J. Leech, of Manchester, contributes a preface. The object the author has had in view—a highly commendable one—has been to discuss the commonest relations between doctor and patient, "not with the intention of presenting them in full detail, nor with the pretension of drawing up any stereotyped method of conduct, but looking at the matter from the purely subjective point of view." The book is, of course, primarily intended for medical men, but the writer has endeavoured, and with much success, to make it readable for the general public. Amongst the matters advantageously dwelt upon are the relative position of patient and doctor, the frequency and length of doctors' visits, misconstruction and abuse of the doctor's statements, harmful influence of the persons about the patient, household remedies, "patent" medicines, quack doctors, consultations, fees, etc. Much practical common sense is displayed throughout, and the book can therefore be warmly commended.

Street's 'Newspaper Directory' for 1898 (London: British, Foreign, and Colonial Advertising Offices, 30, Cornhill, E.C. 3*s.* 6*d*) affords further testimony, if such were needed, of the enormous growth of newspaper enterprise in Great Britain and Ireland. But, more than that, it is a striking example of the manner in which the convenience of advertisers is catered for by the agencies, amongst which Street and Co. occupy a leading position. The arrangement adopted in the work is one which experience has proved to be at least as good as any. Beginning with an alphabetical list of newspapers, magazines, etc., next come separate alphabetical lists of London periodicals, local and suburban newspapers, provincial newspapers, class and trade papers, etc. The bulk of the work, however, is occupied with more detailed lists of the various publications, in which all imaginable particulars are given respecting them, and anyone who wishes to find trustworthy information in the direction indicated will in most cases find all he requires in this 'Newspaper Directory.'

Willing's 'British and Irish Press Guide' for 1898 (London: 162, Piccadiliy, W. 1*s.*), is a more modest work of similar nature. But it evidently supplies a want, for this is the twenty-fifth annual issue of the book, and is certainly produced in a more handy form than works of greater pretensions. It embodies the usual alphabetical and detailed lists of London and provincial newspapers, class organs, colonial, American, and continental papers. Information is also given respecting all titular changes and amalgamations, reporting and telegraphing facilities, news agencies, etc., whilst there is an interesting list of existing newspapers and periodicals which date from the seventeenth and eighteenth centuries, arranged chronologically.

'The Calendar of the Pharmaceutical Society of Ireland' for 1898 (Dublin: 67, Lower Mount Street. 1*s.* 6*d.*) includes the usual information regarding matters pharmaceutical across St. George's Channel. The statistics of the Society show that up to the end of December last there were 550 persons registered as pharmaceutical chemists under the Pharmacy Act (Ireland), 1875, 181 members, 299 chemists and druggists, 424 registered druggists, 60 associate druggists, and 17 assistants to pharmaceutical chemists. Of these, only the members and associate druggists appear to be connected with the Society, making the total strength of that body 241, out of a grand total of 1531.

'The Medical Annual and Practitioners' Index' (Bristol John Wright and Co. 7*s.* 6*d.* net) has reached its sixteenth year of publication, and is as thorough a summary of medical progress during the past twelve months as ever. The chief sections at the beginning of the book are a therapeutic review of the past year; a dictionary of new remedies; an article on electro-therapeutics by Dr. A. D. Rockwell, of New York; another on hypnotism and suggestion by Dr. C. Lloyd Tuckey. Then follows the dictionary of new treatment, which constitutes the bulk of the book, and is the chief reason for its existence. This extends to nearly five hundred pages, and is illustrated by photogravures and process blocks. Our readers will be specially interested in the atlas of bacteria, pathogenic in the human subject, by S. G. Shattock, F.R.C.S., which is commenced in this year's annual, and is to be completed in the next issue. The object of this atlas is to present graphically the appearance of original preparations of those bacteria. All the drawings have been made from cultures in an active stage of growth, in order that abnormal, degenerate forms might be eliminated. The precise mode of preparation, the age of the culture, and its original source are given in connection with the several figures. The drawings are magnified to about 1000 diameters and all are beautifully coloured, nothing better of the kind having yet been published. They include representations of *Saccharomyces albicans*, typhoid bacilli, colon bacilli, *Staphylococcus pyogenes aureus*, plague bacilli, gonococci, anthrax bacilli, and tubercle bacilli in sputum. Legal decisions of the year and particulars of new books, apparatus, etc., complete the book as a work of reference.

The 'Pharmacopée Homœopathique Française' (Paris: J. B. Ballière et Fils, 6 fr.) is published under the patronage of the Société Française d'Homœopathie, and edited by H. Ecalle, L. Delpech, and A. Peuvrier, pharmaciens, of Paris, with the collaboration of Doctors Jousset and Léon-Simon. It extends to 400 pages, and the monographs are divided into three groups. The first deals with vehicles, fundamental preparations, mother tinctures, and triturations, attenuations and precautions to be observed in preparing the same, globules, homœopathic dispensing, and the preservation of the medicaments employed. Part two is devoted to vegetable substances used in medicine, part three to animal medicaments, and the last section to mineral substances and chemical products. The information given in the monographs is very exhaustive, and the indexes appended to the work seem full and complete. Taken as a whole, the book should constitute a mine of wealth to all who dissent from allopathic principles, and even supporters of those principles may find much to instruct them in the well-arranged pages.

'The Tallerman Treatment,' by Arthur Shadwell, M.B., M.R.C.P. (London: Ballière, Tindall and Cox. 3*s.* 6*d.* net.), is a record of results obtained by treating cases of rheumatism, gout, rheumatic arthritis, stiff and painful joints, sprains, sciatica, and other affections with superheated dry air. It is illustrated with 63 plates, showing the appearance of patients before and after treatment.

'Geschichte der Pharmazie,' by Dr. J. Berendes (Leipzig: Ernst Günther. M. 2 each part), is to be completed in ten parts. It is apparently intended to be a history of pharmacy and all connected with it from the earliest times, and the first scene is laid in Egypt. The early records of the Semitic peoples are next laid under contribution, the Phœnicians, Babylonians, Arabs, and Israelites being discussed as pioneers of medicine and the pharmaceutic art. Thus much is included in part 1 of this interesting work.

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SIR RICHARD QUAIN.

Sir Richard Quain, whose death occurred on Sunday last, had been an honorary member of the Pharmaceutical Society since 1868, that is to say, during the whole of the time the Pharmacy Act of 1868 has been in operation, and he was always a warm friend of pharmacists, deeply interested in any movement that tended to their permanent benefit. He was strongly imbued with the importance of what pharmacists have done for the medical profession, as witness his remarks on the occasion of Mr. Walter Hills' address to the students of the School of Pharmacy (*P. J.* [3], xxv., 283). Ready-made physic was one of the things to which he then took objection; he compared it to ready-made clothes which fit badly and are not generally of good quality. It was doubtless because of the intensity of his feeling on this subject that he took so marked an interest in the British Pharmacopœia, a work which he desired should truly become, for the medical and pharmaceutical professions, the "uniform standard and guide" it was originally designed to be. On that account universal regret will be felt that he was not able to see the publication of the Pharmacopœia of 1898, though as a matter of fact he had been able to see the work carried to its practical completion, as if not now actually in the press, it very shortly will be. No one was more ready than he was to acknowledge the obligations under which the Council and Pharmacopœia Committee of the Pharmaceutical Society had placed the General Medical Council, by the valuable assistance rendered in revising the Pharmacopœia, and at the time the Addendum of 1890 was published he went so far as to say that the labours of his colleagues and himself, in connection with that work, would have been in vain if it had not been for the assistance of the Pharmaceutical Society. On the other hand, pharmacists owe him no slight debt of gratitude for his persistent and earnest endeavours to secure for them due representation on the revising body.

Regarding Sir Richard Quain's career, it is impossible, in the limited space available here, to give more than the briefest sketch. He was born at Mallow, near Cork, in 1816, and after leaving school was articled to a medical practitioner at Limerick. Later, however, his medical training received a temporary check which might easily have been a permanent stop, as a relative was anxious that he should succeed him in his business as a tanner. Fortunately for medicine the project fell through, after steps had been actually taken to carry that desire into effect. Young Quain then became a student of University College, London, and in 1842 he became M.D., Lond., being the only candidate of his year who received honours in medicine. Nine years later he was elected a Fellow of the Royal College of Physicians of London, and at that time he already had the reputation of being the most capable young physician of the day. Selected by the Queen in Council, in 1860, to be a member of the Senate of London University, he subsequently took a very prominent part in all the ordinary business of the University. Then, in 1865, he was appointed a member of the Royal Commission for the Investigation of the Cattle Plague, and it is acknowledged that he contributed far more than any other member of that Commission to the complete attainment of the objects for which it had been constituted. It is reported that Lord Sherbrooke, who was himself a member of the body, said this was the only Royal Commission which had ever done any good. But, be that as it may, there is no doubt that Dr. Quain's services were highly appreciated by those in authority, as well as by the profession of which he was so distinguished an ornament. He became one of the most influential Fellows of the College of Physicians, and came very near being elected President of that body, the fact that he was not elected being probably due to the fact that he was already President of the General Medical Council.

Sir Richard's connection with the General Medical Council dates from 1863, when he was appointed by the Queen in Council, for the usual term of five years, to be one of the six Crown members of the Council, and he has since been re-appointed six times. He was one of the trustees of the Council and acted as treasurer until his election as President in 1891, the year in which he was created a baronet. He was also Chairman of the Pharmacopœia Committee of the General Medical Council, and in that capacity took an important part in the preparation of the first two issues of the book and of the successive addenda, as well as in the preparation of the Pharmacopœia shortly to be published. It is noteworthy that the failing health of the last year has only twice been suffered to interfere with his attendance at a meeting of that Committee, and it has never prevented his close attention to the business to be transacted. As President of the Council his complete acquaintance with every detail of the past proceedings of the body was of the greatest value to his colleagues, and his services to the country in the promotion of medical education cannot be over-estimated. As an author he has not been very prolific, but he originated and edited a very important work in his 'Dictionary of Medicine,' written by various authors. He is said to have read and considered the proofs of every line of that work, with its 2500 pages of double column printing. Elected a Fellow of the Royal Society in 1871, the noted physician contributed at least one notable paper to the proceedings of that body, and he also conducted valuable researches into the causes and effects of fatty degeneration of the animal tissues. In everything he did he brought the same degree of thoroughness to bear, and it is mere matter of fact to say that there never was a busier man. The result of his persistent activity was to make him one of the most remarkable men in London professional and social life for a period of nearly half a century. His loss will be widely felt, and the extreme importance of the services he has rendered to society will only gradually be realised.

ANNOTATIONS.

Scopolamine Hydrobromide as met with in commerce has not always the same rotatory power, and while Dr. Hesse is of opinion that the approach to inactivity observed in some instances is due to the presence of another base of the same composition, to which he has given the name of atroscine, Professor Schmidt holds that it is due to the action of strong bases used in the process of extraction. In the current number of the *Archiv der Pharmacie* three papers in support of that view are published, and experimental evidence is brought forward to show that atroscine is the same thing as inactive scopolamine. It is there shown that the crystalline form of the hydrobromide of low rotatory power is the same as that of the salt having high rotatory power. Both yield a gold salt, melting at 210° to 212° C., and the scopoline produced by the action of baryta water was in both instances the same—optically inactive, melting at 109° to 110° C., and boiling at 241° to 243° C. In like manner the medicinal action of the salt is said to be practically the same, whether it has a high or low rotatory power. The composition of the salt is represented by the formula $C_{17}H_{21}NO_4HBr + 3H_2O$, and when dried over sulphuric acid the normal salt melts at 193° to 194° C., while that now obtainable in commerce—consisting of a mixture of the normal and inactive salts—melts at 180° to 181° C. The German Pharmacopœia gives the melting point as "about 190° C.," and Dr. Hesse gives it as 181° C.

The Rectification of the Register of Chemists and Druggists again necessitates the publication of a lengthy list of individuals (see p. 300*d*) who have not taken the trouble to notify the Registrar of their changes of address. It is only four months since a similar list was published in the Journal, whilst the new Register has been published but a very few weeks. Already, however, there appear to be some four hundred wrong addresses in the book, almost the whole of which are attributable to pure carelessness on the part of the individuals whose names appear in the list. If they, or some of their friends or acquaintances, do not notify their present addresses to the Registrar, at 17, Bloomsbury Square, London, W.C., by December 30 at latest, their names will be removed from the Register in due course.

The Aberdeen Pharmaceutical Association is taking steps which show that it is very much in earnest on the subject of pharmaceutical education, and so long as the Association does not subsidise classes so as to encourage the innate tendency to pauperisation that is too apt to prevail amongst students, everyone interested in the progress of pharmacy will be glad to note the evidence of activity afforded by the Report of the Education Committee of the Association, referred to at page 297 and summarised below. The report states that the Committee sent a circular letter to all the Local Secretaries of the Pharmaceutical Society north of, but not including, Dundee — fifteen in number— explaining that it was desired to establish a permanent school of pharmacy in Aberdeen, where students could have a regular course of study in all the subjects embraced by both the Minor and Major examinations. The Committee having been appointed to gather all the information they could, requested the recipients of the letter to answer certain queries to the best of their ability. Those questions were:—(1) What might be the number of unqualified assistants and apprentices in your district? (2) Have you any idea where they usually go for study? (3) Are there any classes in your district suited for pharmaceutical students? (4) Do you think it likely that students in your district would prefer Aberdeen to other and more expensive centres if a good school was established?

Thirteen of the Local Secretaries replied, and their general opinion was that if a properly equipped School of Pharmacy were established in Aberdeen, under a capable teacher, the young men from their districts would prefer to go to Aberdeen rather than to other centres, in the South. The number of apprentices and unqualified assistants in the various districts was found to amount to about 300, which, added to the number in Aberdeen, gave a total of over 400 available students. The Committee then resolved to write to a few pharmacy teachers, asking the probable cost of efficiently fitting up a laboratory capable of accommodating twenty students. In reply to this a very valuable and exhaustive report was received from Mr. G. F. Merson, Newcastle-on-Tyne, and, after consideration of that by the Committee, it was unanimously decided that, provided the Association could secure the services of a capable and energetic teacher, an arrangement might be come to whereby the rooms at present occupied by the Association could be remodelled and properly equipped at an outlay of a sum not exceeding fifty pounds, over and above what is now in hand for such a purpose. The Committee resolved unanimously, therefore, to recommend to the Association that the rooms should be remodelled, suitably equipped, and a properly qualified teacher appointed.

That the Chemists' Ball was this year a great success is no news, but it will be gratifying to many of our readers to learn that the financial position has also proved to be exceedingly satisfactory. The Hon. Secretary, Mr. William Warren, intimates that he has reported to his Committee the existence of a balance to the good of more than thirty-one pounds, and in accordance with the usual practice, the Committee has recommended that the sum of twenty-five guineas be paid to the credit of the Benevolent Fund of the Pharmaceutical Society.

Adulteration and Misrepresentation served the London Chamber of Commerce as a topic for discussion after a dinner held at the Trocadero Restaurant on Tuesday last. Sir Charles Cameron, M.P., was the Chairman, and in opening the debate, he sagely remarked that in any legislation dealing with the subject of adulteration an endeavour must be made by the would-be reformers to carry with them the goodwill and sympathy of the whole commercial community. He had uniformly found that every organised body of traders had done its best to put down adulteration, that practice being regarded on all sides as an unfair form of competition. The Bill introduced by the Government last Session was said to be unsatisfactory, and Sir Charles expressed the hope that the measure which was to be brought in this year would proceed more closely on the lines recommended by the Select Committee which had reported on the subject. The next speaker was Mr. Kearley, M.P., who spoke of the importance of establishing a Board of Reference, as suggested by the Select Committee. He described adulterators of the present day as scientists; and, on the principle of setting a thief to catch a thief, he thought it was necessary to organise a thoroughly scientific body, consisting of analysts of great repute and of traders having a practical acquaintance with the products under examination. Mr. Innes Rogers, in turn, urged that the law, as now administered, is unfair, because it does not attack the real adulterator, but simply tradesmen who, in nine cases out of ten, are entirely ignorant of what they are doing. It may be asked, however, whether tradesmen ought not always to know what they are doing. The next speaker was Mr. Bannister, of the Government Laboratories, who said that in any new legislation the Government should be given power to compel local authorities to take a suffi-

cient number of samples to carry out the provisions of the Act properly. Much more was said by various other speakers, all of whom were doubtless in that placid state of mind which is wont to accompany the digestion of a substantial and well-cooked meal. But will the Government regard this as serious business? It is a significant fact that nothing was said about the matter at the Annual Meeting of the Association of Chambers of Commerce of the United Kingdom, held on Wednesday last.

The 'Berichte der Deutschen Pharmaceutischen Gesellschaft' (Berlin: Gebrüder Borntäger) is a monthly publication, in which the proceedings of the German Pharmaceutical Society are reported, and its appearance is one of the signs of useful activity by which that young Society has been characterised for several years. The first number of the eighth volume has just come to hand. It contains a short report of the last meeting of the Society in January and a list of papers recently published in various journals on subjects relating to pharmaceutical botany and chemistry. The papers read at the last meeting of the Society are published in this number of the *Berichte*; they are on recent improvements of polarising apparatus by W. Wicke, on new drugs by P. Siedler, and a short note on the use of ammoniacal chloroform in the extraction of alkaloids from material containing sugar. There are also reviews of works on chemistry, pharmacognosy, etc. The journal is in every respect a creditable production, and the matter it contains is generally of great interest.

"For Private Circulation Only," is the heading to a circular that has been sent to a correspondent, who doubtingly asks if the articles referred to therein are genuine. The reverend (*sic*) gentleman who has discovered, not for the first time, how to effect a "certain" cure of many habits and weaknesses that are more frequently hinted at than named, is apparently a new acquaintance of our correspondent, but the latter may rest assured that the extracts of "Corrassa Apimis," "Selarmo Umbelifera," and "Carsadoc Herbalis," as well as powdered "Alkermes Latifolia," exist solely in the imagination of their reverend discoverer. If then, as suggested in our correspondent's letter, the price of the "Corrassa Compound," prepared from the above mystic drugs, seems "an extra large one," he must attribute that to the necessity of properly recompensing the efforts of genius. And, despite the apparently respectable—nay, almost sacred—source of the circulars, it seems rash, on the whole, heedlessly to put away from one's mind the thought that the outpourings of genius read "like so much quackery." For, after all, have we not heard on other occasions of self-styled reverend gentlemen who were in reality nothing but impudent scamps, thriving on the credulity of people who assume that what is printed must necessarily be true? Let our correspondent take courage, then and exercise his common sense in this matter as in all others.

The Value of the Metre as the only standard of measurement of length, the name of which is not ambiguous, is ably summed up by Professor E. W. Morley, who says he once read a statement which had been translated from German into French, then from French into English, and in which a certain length was given in feet, inches, and thousandths of an inch. The question immediately arose, What foot and inch were meant—the English, French, or one of the many German standards? But, observes the puzzled Professor, "the only solution of the whole matter was that the truth could not be learned from the announcement unless I could find whether the Austrian author had used the Austrian standard, or that of Heidelberg where he wrote, or that of Leipsic where publication was made, what course the French translator took, and what the English." In fact, the metre is the only standard of length, the name of which invariably possesses the same meaning, and the same is true of the kilogramme as a weight and of the litre as a fluid measure. But how many different pound weights are there and how many different pint measures?

Sir Henry Bessemer's Death, on the 15th inst., ends the remarkable career of one of the epoch-making men of the century. His great success in life was due to the somewhat uncommon union in the same personality of a fruitful and persevering inventor and a shrewd man of business. He is said to have spent some ten thousand pounds in patent fees alone and, as the *Times* puts it, his inventive faculties covered a very wide area, ranging from gold paint to sugar machinery, and from the designing of steam-boats to the making of huge telescopes. The so-called gold paint was the origin of his fortune, as by keeping secret his methods for the production of the bronze powder employed in the manufacture of the paint considerable profits were realised. But Bessemer's great claim as an inventor is in connection with his metallurgical work, for it is no exaggeration to say that, by the improvements he effected in the manufacture of steel, he brought about a world-wide revolution. Prior to his day the decarbonisation of iron was invariably secured by the operation of puddling, the semi-fluid metal being worked about in heavy masses at the end of long rods so as to expose it to air and ensure oxidation of the carbon.

Bessemer's Idea, however, was that the operation might be simplified if the air could be forced through the molten iron. He experimented in that direction at St. Pancras, and in the *Pharmaceutical Journal* for December, 1856, p. 328, will be found an illustration of the original Bessemer converter, as used by the inventor. The new process was not received favourably by scientific workers, and though Bessemer read a paper on the subject at a meeting of the British Association at Cheltenham, it was not thought worthy of being even summarised in the official report of the proceedings of the Association. Though a few of the large iron-smelters purchased licences to work the process, it was generally regarded as a visionary project, and would probably have been entirely forgotten but for the fact that Bessemer, with characteristic energy, established works at Sheffield, where he was soon able to undersell the other steel-makers by some £20 per ton. After that success was assured, and Bessemer was able to devote his attention to the development of the multitudinous other ideas that presented themselves to his fertile brain. He was elected a Fellow of the Royal Society in 1879, received the honour of knighthood the same year, and died—wealthy and full of honours—in his eighty sixth year.

The Unqualified Dispenser is the subject of a note in the *Therapist*, the editor of which paper says he fails to see that the General Medical Council is justified in countenancing the unqualified dispenser any more than the unqualified assistant. The registered chemist, it is pointed out, has to undergo a severe training and to pass a rigorous examination; it seems, therefore, inconsistent on the part of the Council to specify that any person, without the slightest qualification, shall be allowed to act as a dispenser. Care and accuracy in the dispensing of medicines are urged to be as essential as an accurate diagnosis of a case, seeing that an error in dosage, etc., might be productive of much more serious results to the patient than a slight error of diagnosis on the part of the physician. Yet the General Medical Council apparently lends its countenance to the employment of unqualified men to perform the responsible work of dispensing.

Linde's Air-Liquefying Machine has been on view this week at the rooms of the Society of Arts, where it was to be seen at work. The action of this machine is based on the fact that air, not being a "perfect gas," is reduced in temperature when suddenly allowed to expand through a narrow orifice from a high to a low pressure. The slight cooling effect thus obtained is rendered cumulative by the cooled air being used to abstract heat from the air that has not yet passed the orifice. Each successive portion of air is therefore cooler when it reaches the orifice than was its predecessor, and thus in time so low a temperature is reached, provided due precautions are taken to insure thermal isolation, that a change of state occurs and air appears in the form of liquid. The particular machine which has been on view circulates each hour about 15 cubic metres of air, which is expanded from a pressure of 200 atmospheres to one of 16, and produces about 0·9 litre of liquid air an hour with a continuous expenditure of three-horse power. Although the oxygen and nitrogen of the atmosphere liquefy simultaneously, the latter evaporates more quickly, and that fact can be utilised to obtain a liquid which is very rich in oxygen.

Liquid Air as an Explosive is one of the latest ideas in applied science, the liquid containing 40 or 50 per cent. of oxygen being mixed with powdered charcoal and then caused to explode by using a detonator. Experiments have been carried out with this material in a coal mine at Penzberg, near Munich, and they are claimed to have given very satisfactory results. The explosive is cheap, its cost being practically that of liquefying air; but owing to evaporation, it is only capable of exploding for a few minutes after being mixed. It is stated, also, that it would be neither economical nor convenient except in cases where a large amount of blasting is to be done at or about one place and during a long period of time. Professor Ewing has suggested that a large slate quarry or stone quarry, or an engineering work, such as the cutting of an Alpine tunnel, would afford a likely field for the use of the new explosive.

Insusceptibility of Insects to Poisons (see *ante*, p. 186) is discussed by a correspondent of *Nature*, who remarks that the observation that one insect's food is another insect's poison, is applicable to a single insect at different stages of development. The scarlet fungus, *Agaricus muscarius*, derived its name from use in an old-fashioned decoction for fly-papers; nevertheless, it is eaten freely by maggots. Other poisonous fungi, such as *A. æruginosus*, *A. phalloides*, *Russula emetica*, etc., are evidently innoxious to maggots and slugs. With regard to the effect upon more highly-organised animals, it may be noted that *Boletus luridus* is eaten by mice and rabbits, and that squirrels are very partial to several species of *Tricholoma* and *Boletus*. There is some doubt as to whether squirrels are not occasionally poisoned by eating fungi, but this observer has not noticed any suspicious mortality in the case of the rabbits or mice.

Millionaires in Pharmacy are scarce, and when they exist their accumulated funds are usually the result of the exploitation of profitable side-lines. Such was certainly the case with Mr. Charles W. Lea, pharmaceutical chemist, whose will has just been proved at Worcester. But, in this instance, the practice of pharmacy may fairly be considered to have led directly to the accumulation of the vast fortune, for, as is well known, it was whilst engaged in business as a retail pharmacist—in partnership with Mr. Perrins, another millionaire—that Mr. Lea commenced the manufacture of Worcester sauce, that wonderful fluid which has enabled him to turn condiments into gold. The personalty amounts to £1,070,391, the realty to £29,432, and the probate duty exceeded £88,000.

Pharmaceutical Transactions.

NEWCASTLE-ON-TYNE AND DISTRICT CHEMISTS' ASSOCIATION.

The usual monthly meeting of this Association was held in the Hotel Métropole, on Wednesday, March 9. Mr. T. Maltby Clague, President, occupied the chair, and there was a good attendance.—The usual routine business having been disposed of, and half-a-dozen new members elected, the Chairman called upon Mr. Geo. F. Merson, F.C.S., to open a discussion on

Apprentices—Their Duties and Ours.

Mr. Merson said he had brought the subject before the meeting with a view to opening up for discussion the question of apprenticeship, and because he thought there is room for improvement in that direction. Therein lay, in his opinion, the whole crux of the large percentage of failures in the Minor examination. He considered that the present system of apprenticeship to the art of pharmacy, if not a complete failure, is only a very qualified success. The examination results show that there is a radical flaw somewhere. Is it the examination? Is it the candidate? or is it the teacher with whom the fault lies? asked Mr. Merson. He considered it was not the examination, but after careful consideration he had come to the conclusion that, with a few exceptions, the large percentage of failures at the Minor examination is chiefly due to inefficient training during apprenticeship. He believed that if the pass list was analysed it would be found that a good number of the passes would be at "first attempt," which would go to show a large section of unsuitable material is attempting to qualify at each succeeding examination. In his own experience, the men who failed came from shops where during a three or four years' apprenticeship they had not made a pill, had not seen a suppository mould, or made a tincture (or if they had it had been from Somebody and Co.'s liquor, not *à la* B.P.), and had not the faintest idea of the construction and use of an infusion pot or a percolator. He had found that men trained in shops where they get a fair amount of practical work invariably make better and more successful students.—At the conclusion of the paper Mr. Merson was cordially thanked for his paper, and an interesting and animated discussion took place, joined in by Messrs. Gilderdale, G. Duncan, Kerr, Jones, Buckley, Graham, F. R. Dudderidge, Kerse, the President, and others.—At the close the meeting went into committee to consider details connected with the proposed testimonial to Mr. Barnard S. Proctor, F.I.C. The Secretary and Mr. Kerse, Treasurer, both reported a gratifying response to their circular. Final arrangements were deferred till later on in the month.

CHEMISTS' ASSISTANTS' ASSOCIATION.

This Association met on Thursday, March 10, at 73, Newman Street, W., when Mr. T. Morley Taylor, President, occupied the chair.—Mr. H. Cracknell, 17, Craven Road, W., was elected a patron, and Mr. F. A. Hocking a member of the Association.—The President then called upon Mr. J. Fothergill to read a paper

On Mercury.

Mr. Fothergill divided his subject into four divisions, in which he treated of mercury historically, chemically, medicinally, and as it is applied to pharmacy. The first mention of the metal mercury was to be found in the works of Theophrastus, about B.C. 300, where liquid silver is spoken of as being obtainable by rubbing cinnabar and vinegar together in a copper vessel with a copper pestle. Mercury was also known to the older chemists, who were much interested in the examination of its properties, inasmuch as they believed it to be one of the component parts of all metals, and it was not until the time of Lavoisier that it was classed as an elementary substance. The metal occurring naturally was described by Pliny as argentum vivum, and that obtained from cinnabar, hydrargyrum. Pliny supposed that hydrargyrum was a spurious imitation of quicksilver, and a fraudulent substitute for it. At the present time two methods are carried on for the purpose of extracting the metal from its ores, of which the chief is known as cinnabar (HgS). 1. The sulphides are roasted, whereby the sulphur is oxidised to SO_2 and the metal liberated. 2. By distillation in closed retorts with lime, when calcium sulphide and sulphate are formed and mercury set free, the former method seeming to be

pre-eminently employed. A rough test for the purity of mercury is to allow a globule of the metal to run over a slightly inclined surface, when a streak or tail left behind is a sure sign of its impurity, the tail being due to the preponderance of foreign metals dissolved in it. The poisonous effects of mercury were known to Dioscorides and Pliny, and it appears that even in those days it was employed as a medicine. From that period up to the fifteenth century, however, it was but sparingly used in medicine, and then for external purposes only. At the beginning of the sixteenth century the few physicians who had dared to employ mercurial ointment were vigorously assailed, but the employment of mercurial preparations was afterwards introduced by Paracelsus, and by degrees became common. Mr. Fothergill then read a number of abstracts from an old book dated 1733, in the Library of the Pharmaceutical Society. This book, written by a moderately eminent doctor of that period, claimed to give an account of the several diseases incident to mankind as well as their cures, with a special treatise on the use and abuse of mercury. At that time it seemed to be recognised as a sovereign remedy for all kinds of ills—in fact, a general panacea. The abstracts were both curious and amusing, as showing the extent to which mercury was employed. The author, whilst denouncing the crude methods employed in administering mercury, on the other hand upheld the view that syphilitic complaints could only be eradicated by means of putting the patient through a system of profuse salivation. The medical opinion of the present day with regard to mercury and its salts was then summed up. Turning to the aspect of mercury as applied to pharmacy, Mr. Fothergill said it would at once be seen that it receives a greater amount of attention than almost any other metal not only in the multiplicity of its preparations but also in the general demand for it in some form or other by the public. Taking the metal itself as used in pharmacy there are two preparations, blue pill and grey powder, which have practically the same physiological effect, but in which different methods are used in killing the metal. With regard to these two preparations he quoted some remarks made by Mr. Barnard Proctor, who was of opinion that blue pill is more reliable, milder, and more uniform than the grey powder of commerce, and, moreover, that hyd. c. cret. invariably contains mercurous oxides, and sometimes even the poisonous mercuric oxide. Professor Remington had found as much as 14 per cent. of mercuric oxide in one sample. Such discrepancies, Mr. Fothergill thought, accounted for the somewhat violent action this preparation sometimes exerts on the human economy. With regard to the two oxides, inasmuch as the yellow oxide is in a finer state of division, it was to be infinitely preferred. Mr. Proctor had denounced in no uncertain terms the use of red oxide, being of opinion that the retention of the red oxide is a consequence of habit and prejudice rather than of reason and experience. Within Mr. Fothergill's own experience he had not yet met with a commercial sample of hyd. ox. rub. which stood the test of heating in the tube. All samples examined having given off more or less nitrous fumes, which phenomenon the B.P. expressly forbids. Apart from the use of $HgCl_2$ in medicine, it had been in considerable demand as a disinfectant, a solution of 1 in 1000 preventing the germination of seeds and destroying the life of plants, leeches, and fish, it having a greater germicidal power than that of any other substance. Among recent applications the most striking is its use as a dressing for wounds, mortality being diminished to a great extent in surgical and accidental wounds, its leading advantages being that the dressings need not be frequently changed, pain and fever reduced to a minimum, and a rapid union of the several parts secured. A mercury chloride solution had also been successfully used as a preventive of potato disease. The seed potatoes steeped for about five minutes in a 0·015 solution, prepared and coloured with copper sulphate, are thrown into heaps for planting, immunity from the disease being the result. Returning to its application to pharmacy, Mr. Fothergill said an aqueous solution of $HgCl_2$ is liable to decomposition, Hg_2Cl_2 being precipitated, water decomposed, HCl formed, and oxygen gas evolved. For this reason the B.P. recommends an excess of NH_4Cl, with a portion of which the $HgCl_2$ forms a double salt and prevents decomposition, the presence of alkaline substances in the water employed or in the glass being the chief cause of the instability of solutions of $HgCl_2$. Organic matter also assists in decomposing such solutions, but the decomposition might be prevented by adding dilute HCl or an alkaline chloride. NH_4Cl prevents decomposition by ammonia or albuminoid matter present in the water, but not that caused by the alkalies or alkaline carbonates, NaCl checking the injurious action of the latter; a mixture of the chlorides is therefore considered the most efficient. The medicinal action of Hg_2Cl_2 does not differ very much from that of uncombined mercury. When the cure of syphilis was believed to depend upon the process of profuse salivation, calomel was greatly employed. Besides being incompatible with alkalies and alkaline earths, calomel is also decomposed by the alkaline carbonates, soaps, and sulphydrates. According to experiment, calomel is decomposed by bitter almonds and by prussic acid, corrosive sublimate being formed, as well as mercuric cyanides and NH_4Cl; in the latter $HgCl_2$ and $HgCN_2$ only; hence the danger incurred if prescribed with almonds and prussic acid in prescriptions. Recently he had occasion to dispense a prescription in which the following ingredients were ordered:—

Hyd. Subchlor..... gr. iss.
Pot Bicarb..... gr. v.
Ft. cachet. Mitte vi. One to be taken every fourth night.

Having weighed the ingredients and placed them in a mortar, he began triturating them together, and was surprised to find that the powders quickly changed colour, rapidly darkening to a dark grey. He had since rubbed Hg_2Cl_2 and $KHCO_3$ together in known weights and found that the chemical action was governed in the degree in which the $KHCO_3$ was moist. If there was much moisture present then reduction at once took place, whilst on the other hand, if dry, the chemical activity was much less pronounced. K_2CO_3 might have been present as an impurity and if so would have reduced the calomel at once, the reaction terminating in the formation of corrosive sublimate. As the preparation could not be sent out as ordered without subjecting the patient to considerable risk, it was decided to give as a substitute $NaHCO_3$. The action of this salt owing to its comparative dryness does not exert so sudden an action as that of $KHCO_3$, but even with this, at a period of six weeks corrosive sublimate had been found present. Mr. Fothergill then read an abstract from the *American Journal of Pharmacy* on the action of carbonate on calomel, and concluded his remarks by enumerating a few of the less known salts of mercury used in pharmacy.—The President thanked Mr. Fothergill for his interesting paper, and remarked that although they all thought they knew something about mercury, it was one of the subjects they were apt to let pass out of mind.—A short discussion followed, in which Messrs. Pearson, Langford Moore, Gamble, and Strother took part.

MANCHESTER PHARMACEUTICAL ASSOCIATION.

A meeting of the above Association was held on Wednesday evening. Mr. G. S. Woolley, President, occupied the chair, and there was a fair attendance.—Before the paper of the evening was read by Mr. Grier, the Chairman said he had great pleasure in presenting the prizes to the successful competitors in the recent examinations. He was glad to say that the examiner (Mr. Wm. Kirkby) reported that the four gentlemen who had been successful had handed in very good papers in the senior division. The two prize papers were described by Mr. Kirkby as nearly equal, and he hoped the second would be in the first place next time. Mr. Woolley, in a few graceful phrases, presented the prizes as follow:—Senior division: 1, Mr. E. J. Chatburn; 2, Mr. W. L. Greenwood. Junior division: 1, Mr. Barnes; 2, Mr. H. Y. Yates. —Mr. James Grier then read the following paper on

The Melting Point of Soft Paraffins.

He had found that the ordinary capillary tube method of determining melting points was not of much use for substance of this nature, as the transition from the natural semi-solid to the liquefied condition is very ill-defined and most difficult to detect. Several other methods were therefore tried, including (1) the ordinary capillary tube method; (2) the capillary U tube method; (3) the conical capillary tube (Kopp's method); the float method (Cross and Bevan); (5) Redwood's method; and (6) the thermometer bulb method. Water is used as the heating medium in the first two methods, mercury in the others.

1. The Ordinary Capillary Tube Method is described in the B.P. under Cera Flav., for which it is well suited, the change being easily detected. It consists in drawing up into the tube a little of the melted substance, then fixing it to the bulb of a thermometer, and immersing the whole in a beaker of water. To ensure uniform heating this is placed in a second beaker of water, a circular stirrer being also used. This method is applicable for substances like cera flav., where the transition from solid to fluid

is easily seen, but as shown by Clague in the case of ol. theobroma, the bore of the tube affects the melting point, which is lower the smaller the internal diameter. It is also advisable to allow it to stand to become quite solid before taking the melting point.

2. IN THE SECOND METHOD the capillary tube is U-shaped. A little of the melted base is drawn into one arm to within 3/4ths of an inch from the bend, and allowed to cool. It is now fixed to the bulb of a thermometer, and placed in the beaker of water, so that both ends shall project above the surface of the liquid. The temperature at which the melted base falls in the tube is taken as the melting point. The advantage of this method is that it can be seen readily in any light with all substances, but it gives results which are obviously too high, the viscous nature of the substance, especially marked in adeps lanæ, preventing the fall of the melted base for several degrees beyond its real melting point, while in one experiment with ol. theobrom. it fell before it had actually melted.

3. KOPP'S METHOD (*vide* 'Year-Book of Pharmacy,' 1873) was also tried. A conical capillary tube filled as before is placed just below the surface of mercury, and the temperature noted when the melted substance rises and floats on the surface of the Hg. It did not seem suitable for substances which go through an intermediate softening stage, the fat being forced up by the pressure of the mercury at this stage and before it has really melted.

4. THE FLOAT METHOD of Cross and Bevan (*vide* 'Year-Book of Pharmacy,' 1882) has the same disadvantage. A little platform of platinum or ferrotype metal is fixed to the bulb of a thermometer. A little glass float with a platinum wire, fused into its apex and bent at right angles in the form of a loop, is inserted in the melted base, which fills a depression in the platform and held there till the fat solidifies. The whole is then plunged beneath the surface of mercury, which is then gently heated and the temperature at which the float rises noted. This method, although easy of observation in any light, does not seem suitable for soft paraffins, as the float rises when these begin to soften and before they have properly melted.

5. IN REDWOOD'S METHOD small pieces of the solid fat are placed on the surface of mercury, which is then gently warmed, and the first appearance of a ring of melted fat noted. It is well suited for hard substances like ol. theobrom., which do not pass through an intermediate softening stage, but is not suitable for soft paraffins, which are mixtures of semi-fluid substances.

6. THE BULB METHOD has been specially devised and found very suitable for such semi-solid substances as soft paraffin. The bulb of a thermometer is thinly coated with the base and is fixed so as to dip just below the surface of mercury contained in a beaker, standing on a piece of wire gauze, and heated slowly and gradually by means of a small flame from a rose burner. As soon as the base liquefies it appears on the surface, forming a ring round the stem of the thermometer, and the temperature is noted. A second determination is made, and when the temperature approaches within two degrees of the melting point found in the first experiment the flame is removed, when the temperature usually rises at least one degree more. Concordant results were obtained by this method. The points to be noted are (1) the bulb should have a thin coating, else the base will be forced up a little below its melting point, although it is easily seen to be still unliquefied, and (2) the heating must be very gradual. The thin coating of the bulb has no appreciable influence on the thermometer reading, and even if it had, a second check thermometer could be used.

The following are the results arrived at :—

	Bulb Method.		Capillary U Tube Method.
	Melting Point.	Solidifying Point.	Tempt. at which it Falls in the Tube.
Salvo Petrolia, Red	35·5° C.		40·5° C.
,, Golden	36·5	34° C.	45
,, Yellow	36·5		45
,, Lemon	37 5		45
,, White	37		40·75
Minerolin, White	39	37·5	45
,, B	40	39	51
,, A	45	45	53·5
Ung. Petrolei	34	33.5	40·75
Ozokerine	39·5	37.5	47 5
Vaseline	34		44 5
,, White	31·5	29·5	37·5
Fossiline	45·7	42	54 5
Cosmine	37·25		43·6

Soft paraffins being mixtures of bases of varying composition, are allowed considerable latitude in their melting points, and all the specimens examined, although they show considerable variation among themselves, may be said to conform to the official requirements that "paraffinum molle should melt from 35° C. to 40° 5 C. or even somewhat higher." In the U.S.P. the melting point of petrolatum is given as 40° C. to 45° C. The melting point of paraffinum durum, B.P., is given as 43° 3 C. to 62°·8 C., and it will be noticed that the melting points of the soft paraffins, as taken by the U tube method, would nearly all come within this range.

In order to compare the results arrived at by the bulb method with those got by other methods, the following substances were examined :—*Ol. Theobrom.*—The thermometer bulb was somewhat thickly coated with the base, melted at the lowest possible temperature, and then allowed to stand for half an hour. The fat rose to the surface at 32° C., but with a second trial and a thinner coating, at 33° C. Another trial also gave 33° C. after standing seventeen hours. Redwood's method also gave 33° C. A small portion of the melted bases, drawn up into a piece of millimetre tubing and left half an hour to cool, began to liquefy at 31° C., but the bulk remained solid and melted at 33° C. When introduced into a U-shaped capillary tube of very fine bore and the melting point taken immediately it had set, it behaved rather peculiarly, falling to the bend in the tube at 23° C. while still apparently solid, and melting at 24° C. In a second experiment, using capillary tubing of somewhat wider bore and standing over night, it melted at 29° C. and began to fall in the tube at 34° C.

Substance Used.	Bulb Method.	Capillary Tube, 1 Mm. diam.	Capillary U Tube.
Ol. Theobrom. (1)	33° C.	33° C.	Moved 23° C. Melted 24° C.
ditto (2)			Melted 29° C. Moved 34° C.
Cera Alb.	62° C.	Melted 63° C. Solidified 61°·5 C.	Melted 62°·5 C. Moved 63° C.
Cera Flav.	60°·5 C.	Melted 63° C. Solidified 61° C.	Melted 61°·5 C. Moved 62°·5 C.
Adeps Lanæ (Anhydrous)	39° C.	39° 5 C.	Melted 39° C. Moved 48° C.
Adeps Præparat.	Melted 41° to 42° C Solidified 36° to 38° C.		Began to liquefy 38° C. Quite clear 45° C. Moved 77° C. Solidified 27° C.

For soft, buttery substances, like lard, wool fat, soft paraffin, which pass through an intermediate semi-fluid condition before actually liquefying, the bulb method of taking melting points seems to possess special advantages. For firm substances like waxes and cacao butter, which pass at once to the liquefied state without previous softening, Redwood's or the capillary tube method may be employed, but with the latter it is suggested that capillary tubing of a definite internal diameter, say 1 Mm., be officially recommended, and that the substances be allowed to stand for at least half an hour before taking the melting point. The bent capillary tube offers the advantage of being free from contact with the water, but the fall of the melted base does not as a rule correspond to the real melting point. The other two methods tried seem to be indicated in the case of firm fats or waxes where an indifferent light is being used, but are not suitable for substances of the nature of soft paraffin.—Mr. GRIER, who thanked Mr. T. O. Barlow for assisting him with the foregoing experimental work, also communicated a short paper on

The Detection of Water in Ether.

For the detection of water in ether I used carbon bisulph. and benzol. I found carbon bisulph. the more delicate reagent, giving a turbidity with samples of ether, which with benzol remained clear. The following are the results obtained, using ether which had been freed from water and alcohol, and to which 1 per cent. by weight of water had been added :—

Pure Anhydrous Ether + 1 per cent. by Weight of Added Water.
2 C.c. + 0 2 to 0·3 C.c. CS_2 gave turbidity.
2 C.c. + 0·5 C.c. C_6H_6 ,, ,,

Anhydrous Ether + 0·5 per cent. by Weight of Added Water.
2 C.c. + 0 9 C.c. CS_2 gave turbidity.
2 C.c. + 10 C.c. C_6H_6 remained clear.

Anhydrous Ether + 0.25 per cent. by Weight of Added Water.
2 C.c. + 1·9 C.c. CS_2 gave turbidity.
2 C.c. + 10 C.c. C_6H_6 remained clear.

Anhydrous Ether + 0·125 per cent. (or 1/8th per cent.) of Added Water.

2 C.c. + 3·7 to 4 C.c. CS_2 gave turbidity.
2 C.c. + 10 C.c. C_6H_6 remained clear.

Anhydrous Ether + 0·0625 per cent. (or 1/16th per cent.) of Added Water.

2 C.c. gave very faint turbidity with 5 to 5·5 C.c. CS_2, which was not intensified even with 10 C.c. CS_2, and went quite clear and bright on standing.

2 C.c. remained clear with 10 C c. C_6H_6.

From this it follows that carbon bisulph. scarcely detects 1/16th per cent. by weight of water in ether, while benzol does not detect ½ per cent. of water in ether. Experiments were also made adding gradually-increasing quantities of alcohol, and it was found that this addition of alcohol exercised a marked influence on the experiments. It was found (using 2 C.c. in each case) that the presence of about 18 per cent. by weight of alcohol made it impossible to detect the presence of 1 per cent. by weight of water in ether by means of CS_2, while with benzol the presence of about 8 per cent. by weight of alcohol was sufficient. The results are here given:—

Pure Ether + 1 per cent. of Added Water.

2 C.c. required 0·3 C.c. CS_2 to give turbidity.

2 C.c. + 0·1 C.c. absolute alcohol required 1·5 to 1·7 C.c. CS_2 to give turbidity.

2 C.c. + 0·2 C.c. absolute alcohol required 3·6 to 3·7 C.c. CS_2 to give turbidity.

2 C.c. + 0 3 C.c. absolute alcohol required 5·2 to 5·4 C.c. CS_2 to give turbidity.

2 C.c. + 0·4 C.c. absolute alcohol required 8·2 to 9 C.c. CS_2 to give turbidity.

2 C.c. + 0·5 C.c. absolute alc hol required 11·9 C.c. CS_2 to give turbidity.

2 C.c. + 0 6 C.c. absolute alcohol began to show temporary turbidity with 11·8 C.c. CS_2, but no permanent turbity even with 20 C.c. CS_2.

Pure Ether + 1 per cent. of Added Water.

2 C.c. + 0·1 C.c. absolute alcohol required 4 6 to 4·8 or 5 C.c. of C_6H_6 to give turbidity.

2 C.c. + 0 2 C.c. absolute alcohol did not give turbidity even with 15 C.c. benzol.

The Chairman expressed the obligations of the meeting for these interesting papers. He said that Mr. Grier's method seemed a useful and simple process, and asked if it could be used for beeswax. —Mr. Grier said it could be used, and it gave results similar to those got by the capillary tube.—Mr. Kirkby, Mr. Duncan, Mr. J. H. Hoseason, and other gentlemen took part in the discussion.—Mr. Duncan remarked that the Food and Drugs Committee which sat two or three sessions ago recommended strongly that there should be a Reference Committee to say how the standards should be taken and what methods were to be adopted in all these cases. In the matter of the Pharmacopœia, they would have a new one issued shortly, and it would be a long time before they got another, in the meantime improved methods appeared, but the old standards remained the same. He hoped Mr. Grier would continue his experiments and tell them how they could detect alcohol in ether and the estimation of the quantity. If Mr. Grier would do that he would ascertain something which would be of considerable value.—The Chairman moved a hearty vote of thanks to Mr. Grier for his valuable papers, and Mr. Kirkby, in seconding, referred to the valuable figures furnished by Mr. Grier in enabling them to draw proper conclusions.—Messrs. Dawson (Wigan), Barlow (Bowdon), and Young (Manchester), who had been proposed at the previous meeting, were elected members of the Society.—The Hon. Secretary (Mr. A. Blackburn) regretted that there was not a larger attendance, and expressed a hope that they would have a larger number of people present at the meetings next season.

GLASGOW AND WEST OF SCOTLAND PHARMACEUTICAL ASSOCIATION.

At the usual meeting of this Association held on February 22, Mr. W. L. Currie presiding, short papers by members formed the chief business, Mr. Thomas Dunlop contributing the first paper on

Extract. Ipecac. Acet.

Mr. Dunlop said that considering the voluminous literature relating to this subject it might need an apology for introducing it, but the widely expressed dissatisfaction with the B.P. direction to evaporate to dryness, and some doubt of its desirability in his own mind, had led him to experiment with the subject. He had not found the attempt to evaporate to dryness a failure, but the extract was not easily removed from the evaporating dish, and was brittle and hygroscopic. He had been led to adding glycerin, ℥j, when evaporation had been brought to between 1 and 2 ounces, and carrying it on till the extract was of the consistence of jelly, and the result gave every satisfaction. A sample of sherry wine and a sample of vin. ipecac. prepared from it with this extract was handed round to show the pure vinous odour which could only be got when free acetic acid was entirely driven off. Remarks were offered by Messrs. Brodie, McKellar, Robb, Laing, and the Chairman, who proposed a vote of thanks, Mr. Dunlop replied. Afterwards, Mr. Priestly read an interesting paper on

Life on the Summit of Ben Nevis,

giving a very instructive account of the nature of the observations and conditions of living in that the most elevated habitation in Scotland. The descriptive power of Mr. Priestly in giving an idea of the force of gales and the difficulties to be overcome in contending with snow and ice was well displayed; and a hearty vote of thanks, proposed by Mr. Robb, seconded by Mr. McKellar, was readily accorded.—The President then referred to

The Pharmacy Acts Amendment Bill,

and suggested taking steps to support it.—After some discussion, Mr. Anderson Russell moved that Members of Parliament within the area covered by the Association be written to, asking them to give their support in Parliament, Mr. Laing seconded, and the motion was unanimously agreed to, the President being agreeable to prepare, with the Secretary, the necessary letter.—The President said he was glad the meeting had carried the motion, as they were already committed to some such course of action, and he hoped every member and associate in business would write to his respective Member at once.

At the meeting held on Tuesday, March 8, Mr. W. S. Currie in the chair, Mr. Arthur McKellar read a paper on

Drug Journals and Their Advertisers,

in the course of which he stated that a trade journal, if managed on strict commercial lines, finds its best interests to be those of its readers, and endeavours always to supply information that shall be of greatest value to its patrons; in short, to make itself absolutely necessary to the business life of the pharmacist. All items of trade interest must be recorded in its pages, and its readers supplied with any information of general interest that they may require. Scarcely any trade could present a more varied list of commodities dealt in than their own, and it was no small matter to run a journal of interest and information to every section of the drug business, in one and the same issue to discuss the latest about erythrol nitrate and the latest formulæ for the manufacture of sticky fly-gum. All this requires, on the part of the editor, a grasp of trade and trade topics, and a versatility that can only come by long experience. He should never cease to admire the ease with which the contents of, say, "Anxious Subscriber's" "Tonic Liver Syrup" are detected, down to the actual (approximate) amount of those ingredients present; it is only an instance of the aforesaid editor's versatility, and no doubt satisfies "Anxious Subscriber." The regular perusal of such a journal becomes a necessary portion of a druggist's education and of his business library, and its regular use for reference becomes an inducement for advertisers to introduce their merchandise; consequently, the larger the circulation, the correspondingly greater the amount of advertisements. Also, the more advertisements, the more their authors will strive to make them interesting and attractive so that they will not become lost to sight in the mass. Mr. McKellar then proceeded to criticise certain advertisements as seen through a retailer's spectacles.—The paper was discussed by Messrs. Dunlop, Russell, Watson, and the Chairman.—Subsequently, referring to

The Pharmacy Acts Amendment Bill,

the Chairman intimated that the letter sent by the Secretary and himself had brought replies from fourteen Members of Parliament, and only one Member denounced the Bill in strong terms and threatened to oppose it.

LIVERPOOL CHEMISTS' ASSOCIATION.

At the usual monthly meeting of this Association, held on Thursday, March 10, Mr. J. Bain, President, in the chair, a fine specimen of loofah, the "pepo" of *Luffa ægyptica* (N.O. Cucurbitaceæ), grown by Mr. Gutteridge, the Director of the Liverpool Botanic Gardens, was shown by Mr. Wardleworth, and excited considerable interest.—Mr. Prosper H. Marsden asked if there was any demand for the true mandrake root, *Mandragora officinalis* (N.O. Solanaceæ) in England. A friend of his could get it in large quantities in India if it would be a profitable article to export to England. As the alkaloid to which it owes its activity—mandragorine—is said to be identical with atropine would it be likely to be of use for extracting this alkaloid?—Messrs. Wardleworth and Cowley, in reply, expressed their opinion in the negative, mainly on the ground that even if mandragorine has the same chemical formula assigned to it as atropine, it did not follow that its physiological action would be similar, and until this point had been thoroughly investigated by a skilled medical pharmacologist the substitution of mandragorine for atropine would be inadmissible.—A specimen of Smyrna opium very freely adulterated or weighted with swan shot was passed round by Mr. J. Hornblower as the worst sample of that particular form of clumsy sophistication he had yet come in contact with.—Mr. Cowley then contributed a note on

Glucose Determination at the Dispensing Counter,

which he had prepared with the collaboration of Mr. J. P. Catford (see p. 283).—In the subsequent discussion Mr. J. Smith expressed his preference for Fehling's solution in such determinations, as his experience of Gerrard's potassium cyanide modification was by no means satisfactory, the end reaction being anything but sharp and easy to observe. The rate of addition of the glucose solution made a certain small amount of difference in the readings. Mr. P. H. Marsden had from time to time observed this too, and he asked Mr. Cowley if he had observed it, and what was the explanation?—Mr. R. C. Cowley, in answer to these and other questions, reiterated that his object in reading the note was to show how a rapid and sufficiently accurate glucose determination could be made at the counter in a short space of time, and with the ordinary appliances available. Mr. Smith had taken exception to a remark of his that a burette was of rare occurrence at the dispensing counter; still, he adhered to the statement and would further add that his remarks were for the benefit of the ordinary dispenser, and not for those who could be considered scientific chemists. Gerrard's cyanide process was very accurate, providing that fresh solutions were used, but he could see no great advantage in it over those presented by Fehling. The point to be noticed in adding the glucose solution was that it should be run in in a steady stream with constant stirring, and not added all at once, for that vitiated the results, as Mr. Marsden had remarked. A short historical sketch entitled

Necrology—The Disposal of the Dead,

was then read by Mr. H. B. Morgan, in the course of which he reviewed the various modes of sepulture in vogue at the earlier periods of the world's history, in addition to cremation, embalming, and the exposure of dead bodies to birds of prey, and to the attacks of marine animals, reptiles and fishes when thrown into the sea or rivers. The process of embalming was explained at some length by the lecturer, who mentioned the methods used at present on the Continent for the purpose, and alluded to the fact that it was the pharmacist and his assistants who were entrusted with this gruesome but lucrative operation. The dangers of cemeteries being allowed in the heart of thickly-populated districts were pointed out, and the various arguments in favour of the more rational, decent, and hygienic process of cremation were put before his audience. At the close a cordial vote of thanks was accorded the lecturer for his interesting remarks.

Some Uncommon Specimens.

Mr. Theo. H. Wardleworth exhibited some pikea or piquia oil, a concrete-yellow fat with a fresh and agreeable odour resembling that of pineapples, used by the Brazilians instead of butter. It is yielded by the nuts of a tree of the Souari nut family, probably *Caryoca brasiliense*, N.O. Rhizobolaceæ. Pichurim beans, or sassafras beans, the produce of *Nectandra pichuri*, N.O. Lauracæ, were also shown. They were of the "minor" variety, and were said to be used largely for flavouring chocolate. Another substance not often seen in English pharmacy, but official in the U.S.P. dispensatory for making a demulcent mucilage with, is sassafras pith, a specimen of which Mr. Wardleworth also passed round.

The Death of Mr. A. H. Mitchell,

a member of the Association, was mentioned by Mr. Wardleworth, who proposed that a letter of condolence should be sent officially by the Association to the late member's widow in recognition of the good work done by her husband in furthering the advancement of pharmacy in Liverpool. This was agreed to unanimously, and a very successful meeting came to an end.

NOTTINGHAM AND NOTTS. CHEMISTS' ASSOCIATION.

On Thursday evening, March 10, the twenty-ninth annual dinner of this Association took place at the Albert Hotel, Derby Road. Mr. Richard Fitzhugh, the President, occupied the chair, and was supported by Mr. G. T. W. Newsholme (Vice-President of the Pharmaceutical Society) and a large number of local chemists and friends.—Mr. Gill, in proposing the toast of

The Pharmaceutical Society,

said the Society commanded universal respect, and he thought every unbiassed observer of the work of the Society would acknowledge that it had done its duty to the State. Amongst other things it had steadily increased the stringency of the test examination which had to be passed by everyone who desired to enter upon a pharmaceutical career, and it had also taken care to maintain the Pharmacy Act in its integrity. Although some of them had felt that in certain cases justice might have been tempered with mercy, while in others not quite so much mercy might have been shown, yet if they knew all the circumstances they would acknowledge that the Society had done its work in a fair spirit, and done it well. If all chemists were united in one organic whole he was sure their position would be higher than it is at present. As far as the policy of the Society was concerned, he was convinced that the Society was a little too much afraid of the bogey of free trade. He should be pleased to see the Society take up a more forward policy and exhibit a little more backbone—for example, in the direction of protection. There were a great many things which ought to be in the hands of pharmacists alone, and the public safety demanded that it should be so.—Mr. Newsholme, in responding, said Mr. Gill had dealt with some of the things the Pharmaceutical Society could do and some that it could not do. Unfortunately, it had not all the chemists of the country at its back, and that was the sole cause why the Pharmaceutical Society did not carry such weight as it ought throughout the country. People were apt to ask how it was that all the chemists did not belong to the Society. He knew some chemists thought they had a grievance because the Society had not done certain things. In the first place, he had to reply that the Society had to administer the Pharmacy Act, which in itself was not one of particular popularity, because it trod upon the corns of those people who did not agree with the Pharmacy Act. Then, again, the Society was an examining body, and as such it could never be particularly popular if it "plucked" candidates. One frequently found that men did not succeed in passing the qualifying examination the first time, and one could easily imagine that a man who had not succeeded the first time was apt to think that he had been badly treated, and that, perhaps, prevented such men from becoming members when they did pass. That was unfortunate but not reasonable. He ventured to think that in the course of a few years the position of pharmacists would be distinctly improved. It might be that there would be fewer real pharmacists in the country, but he thought they would have a recognised position, which they had not had in the past. Their business could not be otherwise than general, because, as things were at present, the supplying of drugs and dispensing was not sufficient to support every man who had passed the qualifying examination. There were many things which required to be done. They knew that the medical man of the present day was not sufficiently educated to practise the art of pharmacy. If he devoted his time fully to the study of human ailments it was impossible for him also to devote time to the study of pharmacy. The average medical man, therefore, found it impossible to undertake dispensing as well as medicine. With regard to the prospects of the Society, he believed they were getting nearer to the time when it would have the majority of registered chemists at its back. He had seen evidence of that during the past fortnight or three weeks in connection with the Pharmacy Acts Amendment Bill,

which is now before the House of Commons. In connection with that Bill there had been a great deal of evidence in support of the Pharmaceutical Society—in fact, it had been almost astounding. The chemists of the country had risen to the occasion—small as the Bill is—and written to their local members to support it, many of the Nottingham chemists being among the number. He hoped, therefore, before very long to see a much more united body of chemists than is the case at present.—Mr. Radford, in proposing

The Nottingham and Notts Chemists' Association,

said the Association afforded facilities to students in prosecuting their studies, and also in promoting gatherings for social intercourse and good fellowship amongst themselves. The Association owed a very great deal to its officers. Their President and Treasurer had rendered magnificent service, and the Secretary had been a tower of strength during the whole of the time he had been in office.—Mr. Fitzhugh, in reply, said he had been President of the Association for many years, and should continue to take the same interest in it he had always manifested, especially in the youngsters. He hoped the time would never come when their students would be put to the expense of going to London to prepare for the Minor examination. He trusted that as long as he continued President —with the assistance always so generously afforded him—the Association would never look back.—Mr. Welford, Treasurer, said the funds of the Association were in a very flourishing condition, and Mr. Eberlin, Hon. Secretary, who also acknowledged the toast, said he was very happy to tell them that the Association was in a very flourishing condition. Its membership now stood at fifty-one. It had forty-one associates, and its classes had been attended this session by numbers in excess of any previous season. In chemistry there were thirty-nine students, and the attendance in the materia medica classes had been seventeen. The students were attending the classes regularly, and showing great interest in their work. Testimony was borne on every hand as to the way in which the Association promoted improved education, and so long as they did not fail in their duty in seeing that education was kept well to the front, and facilities were given to students to attend classes, legitimate pharmacy had nothing to fear. Pharmacists stood on a level far and away above that of the drug stores, and he thought when the public learnt—as they were learning—the difference between chemists proper and the drug stores, they would begin to appreciate more and more an association such as that.—Other toasts followed, and the speeches were interspersed with a very enjoyable musical programme.

SCHOOL OF PHARMACY STUDENTS' ASSOCIATION.

At a meeting held in the Society's House, on March 4, Mr. H. Payne in the chair, a paper was read by Mr. T. E. Wallis entitled

What is a Microscope?

Beginning with the principle of a simple lens, Mr. Wallis went on to explain the compound microscope of two lenses, showing its defects of "spherical" and "chromatic" aberrations, and the way these are overcome in the modern microscope by the combination of several lenses of different curvatures and densities. The various forms of the instrument in the market were described, the best foot, stage, tube, coarse and fine adjustments, mirror, substage, etc., being pointed out. Then the methods of illumination with "bull's-eye," "stand," and "substage" were demonstrated, and the use of diaphragms and stops. Lastly, many valuable hints as to arrangements for work were given. The large amount of information contained in the paper was of a most useful character, and was greatly appreciated by the many practical microscopists present. Messrs. Perrèdès, Smith, Wilson, Nelson and Durbin having spoken, and Mr. Wallis replied, the meeting terminated.

CAMBRIDGE PHARMACEUTICAL ASSOCIATION.

On Friday, March 11, at the University Herbarium Lecture Room, Professor J. Reynolds Green, F.R.S., Sc.D., was to have delivered a lecture on "Some of the Mechanisms of Plants" but was prevented by a severe cold. Mr. Ald. Deck, F.C.S., presided over a large attendance of members and friends, among those present were Messrs. C. S. Addison, G. McAvoy, A. Sidney Campkin, J. P. Bernhard, S. Campkin, and H. F. Cook. Mr. E. Saville Peck, B.A., kindly offered to give an account of a trip to the

Norwegian Fiords,

illustrating it by means of lantern slides from photos, mostly taken on the journey. Embarking from Newcastle-on-Tyne, after a most delightful passage for thirty-six hours, the first glimpse of Norway was caught in the Bukke Fiord, thence on through the Hardanger Fiord to Adde, whence an excursion to Espelandsfor Waterfall was made. A short stay at Bergen proved most interesting, visits being made to the Hanseatic Museum and fish market. The Sogni Fiord was next entered, and on arrival at Gudvangen a trip was taken up the world-famed Naevodal, with its majestic peak, the Jordalsnut, to Stalheim; here, after several heavy showers of rain, the sun burst forth, and formed innumerable rainbows of surpassing beauty. Balholm was unfortunately passed, and the Nord Fiord entered. From Visnaes an excursion up the Loen valley, although somewhat hazardous in the small Norwegian rowing boats on the lake in such squally weather, proved most enjoyable. From Visnaes the steamer was left for a couple of days, when a walk over the mountain pass of Glasdal was indulged in. After tramping eight hours the Dynpvandshut was reached, consisting of one small hotel stationed at the edge of a lake and surrounded by glaciers and snow mountains. The next day the descent to Marak was made, and the steamer rejoined. The Geivanger Fiord was traversed and Naess reached the following morning. Here the Rondalshorn was seen with its imposing peak amongst others of nearly equal grandeur. The return journey was then commenced, and after again just touching at Bergen the final farewells to Gamle Norge were made.—At the conclusion the Chairman proposed a vote of thanks, which was seconded by Mr. A. Sidney Campkin, who spoke as to the great disappointment they felt at the sudden indisposition of the gentleman who was to have given the lecture, Professor J. Reynolds Green, and of the courteous-like conduct of Mr. Peck, who, at a few hours' notice only, came forward and filled the void, thus saving the credit of the Association. They felt especially indebted to him for the very entertaining and instructive lecture he had given, also to Mr. A. Shrubbs, who exhibited, the lantern views, their mutual relationship being that of the organist to the one who manipulated the stops and otherwise assisted. This vote was carried with acclamation.—Mr. Peck briefly acknowledged the vote, and expressed regret that at so short a notice he had been unable to obtain all the views he had intended to exhibit had his lecture been given at the date originally fixed—a fortnight hence.

ABERDEEN PHARMACEUTICAL ASSOCIATION.

The annual meeting of this Association, adjourned from March 2, was held on March 9, when the President, Mr. James Clark, pharmaceutical chemist, was in the chair. The object of the meeting was to discuss the Committee's report on education.—Mr. Giles, Convenor of the Education Committee, in moving that the report be adopted, fully explained all the steps taken by the Committee and the plan they proposed to adopt to thoroughly equip the rooms and likewise be able to guarantee a minimum salary to a capable leader.—Mr. A. L. Bruce seconded the motion.—A considerable discussion followed, which was freely taken part in by the members present, but so well had the Committee done its work that almost every point brought forward had been anticipated. Ultimately the report was unanimously adopted, and the following gentlemen were appointed to make the necessary arrangements for altering the rooms and appointing a teacher, viz., Messrs. Clark, Giles, Paterson, and J. Cruickshank.

BRIGHTON JUNIOR ASSOCIATION OF PHARMACY.

A meeting of this Association was held on Wednesday, March 9, when a lecture was delivered by Dr. F. J. Paley on

Food and its Digestion.

He said that food and air are the material factors of life, the object of the former being to replace the waste of the body, which is like a furnace, whilst the fuel is the food we eat. The subject was elaborated at considerable length, the lecturer showing how all products of digestion are carried into the circulation, every portion of the body being visited by the blood, every fibre and every muscle having blood brought to it, which contains material for growth, and by reason of the presence of oxygen (owing to respiration through the lungs), vital force or energy and heat are developed by oxidation.

PHARMACEUTICAL SOCIETY.

The fifth meeting for the session of the North British Branch of the Pharmaceutical Society of Great Britain was held at the Society's House, 36, York Place, Edinburgh, on Wednesday evening. In the absence of Mr. J. L. Ewing, the Chairman, who had been suddenly called to London, Mr. Peter Boa presided. There was a fair attendance. The Chairman also intimated that in consequence of Mr. J. R. Hill having also been called away on business, the two papers in his name, "Invisible and Sympathetic Inks" (with demonstrations) and "Methylated Spirit in Photography," would be postponed till the April meeting. Mr. Nesbit (Portobello) also sent an apology.—Mr. Tait read the minutes of the February meeting, which were approved, and a paper by Mr. D. B. Dott, on

The Determination of Ash as an Analytical Method,

was then read. The paper is printed in full at p. 282.—The Chairman intimated that Mr. Dott had caught the current influenza and was quite unable to be out of doors.—In connection with the paper, by means of a Kipp's apparatus containing peroxide of hydrogen, and granular binoxide of manganese, oxygen was generated and directed on the crucible so as to show its action in facilitating complete incineration. There was also shown an infusion of saffron (5 grains to 1 pint) and a solution of bichromate of potassium containing twenty-five times the quantity of bichromate (125 grains to 1 pint).—Discussion having been invited, Mr. George Coull said this was not a subject which lent itself very readily to discussion. They would require the public analyst to contradict it, but Mr. Dott's statements were usually very reliable, and they would accept what he said.—Mr. Coats said he would like to know whether Mr. Dott as a rule preferred a platinum dish to a porcelain dish. His experience was that a porcelain dish always gave a higher reading. It would be interesting to get Mr. Dott's experience on that matter. —A vote of thanks having been awarded to Mr. Dott for his paper, Mr. J. A. Forret then described

A Syringe for Filling Capsules,

which he had invented. This apparatus is described at page 283. —Mr. Coull said it was one of those little triumphs of mechanical ingenuity for which Mr. Forret had acquired a name. There was only one question he wished to ask him: What was the piston composed of or lined with in order to make it air-tight.—Mr. Lunan said they were indebted to Mr. Forret for bringing this ingenious apparatus before them. He knew he had spent a good deal of time on the subject, and he had done his work well. When one had time to examine it he thought it would be found to work very well for the purpose. He asked if Mr. Forret used it for liquids, or only for thicker masses, and how did he manage to get the water round the jacket D? He supposed it was merely by an inlet and an outlet pipe to run through. They were heartily indebted to him for showing them what had cost him a lot of time and labour.—Mr. Mackenzie asked how the wheel was maintained at the same level. He did not understand how that could be done. Did he get a shaft or piston to play upon it by means of a screw or in what way did he manage to maintain his hand at the same level? Did the wheel not slide up and down according to the action of screwing?—Mr. C. F. Henry said he wished to supplement what had been said by Mr. Lunan as to their indebtedness to Mr. Forret for reading that paper to them and for other notes. Not only were they indebted to him, but all the chemists in Edinburgh were indebted to him for such notes. Many a one would have said nothing about it, but kept it to themselves and made it a valuable asset to their business. Mr. Forret had not only in this but in many other papers, some of which had been read there, while others had been published, given to them many valuable hints; and they were indebted to him for this result of his experience.—Mr. Coats asked Mr. Forret what he meant by the feathered screw? Was that the size of the thread, or what?—Mr. James Nesbit said he was very interested in the paper because he had just had a machine delivered for filling capsules. He asked if the screw arrangement was for stopping the delivery of the liquid.—Mr. Lunan said, with regard to the jacket, that Mr. Forret had the jacket on the nozzle arrangement, which went into the capsule, but he asked was it not necessary in filling some capsules to have the whole slowly evaporated to a pretty thick consistency? If the jacket were only on the nozzle, it would not have any effect, or it might be very apt to get liquefied in the cylinder.—Mr. Thomson said he was sorry he had not heard Mr. Forret's paper, but he had explained the syringe to him on the previous night, and he had it fully under control with one hand.—Mr. Forret, in reply, stated that the piston lining was the same as that used for air pumps. It required renewal occasionally from wearing, but they had simply to undo it, and take off a leather ring, and put a fresh piece on. He was obliged to Mr. Lunan for what he had said. In answer to his question, he said he had not used the syringe for liquids, but he did not see why such a syringe should not be used for liquids such as castor oil, as it was absolutely tight. Those he had were used for a special purpose and were kept for the special purpose. By the jacket current in the rubber tube he was able to regulate the flow by a screw-clip. A temperature a trifle over a hundred was quite sufficient for any purpose that he used it for. He explained to Mr. MacKenzie how the wheel was maintained at the same level, and he further explained to Mr. Coats why the screw was called a feather screw. He further stated that they must be able to start it at once, stop it at once, or reverse it at once, and they could do the whole of these in an instant if it was steadily fixed. The masses he had used it for were semi-fluid.—A vote of thanks was given to Mr. Forret for his paper.—The Chairman intimated the additions to the Museum and the Library, and in doing so referred to the xanthaline in a show-case presented by Messrs. T. and H. Smith as one of the newest, if not the newest, of the alkaloid products of opium. The meeting terminated with a vote of thanks to the Chairman.

BRISTOL PHARMACEUTICAL ASSOCIATION.

The annual dinner of this Association was held on Wednesday, March 16, at Bristol. Mr. Alderman Townsend presided, and was supported by Mr. Walter Hills (President of the Pharmaceutical Society of Great Britain), Dr. Baron, Messrs. G. H. Perrin, G. W. Isaac, B. Allen, B. Keen. Alderman Gadd (Exeter), Whitson (Bath), E. Young, R. S. Atkins (Salisbury), J. G. Plumley, H. E. Boorne, J. Stroud, J. Pitman, T. Buxton, J. W. White, W. Berry, G. T. Turner, J. Cooper (Weston-super-Mare), etc.—The President gave "The Queen and the Prince and Princess of Wales and the rest of the Royal Family," observing that the Queen's influence upon European politics at the present time was invaluable, as it made for peace. The President next gave the toast of

The Pharmaceutical Society of Great Britain.

He welcomed the President as the successor of a long line of distinguished men, many of whose names were familiar to them all. Two hundred years ago a very celebrated author of a pharmacopœia said: "Man being made of the slime of the earth, a slimy substance recovers him when he is wasted." That was the pharmacy of two centuries ago, and he had no doubt that Mr. Hills could show that the pharmacy of the present day was a very different thing. He did not intend to touch upon questions of trade, because this was a social occasion, and if the Pharmaceutical Society had done nothing else—and it had done much more than promote social intercourse—that would have been a great deal. But there was a point he would like to say was worth introducing, and that was that they had established a noble benevolent fund, and he was quite sure as time went on its usefulness would not only be increasingly felt but it would be more and more liberally supported. After an allusion to the death of Mr. Schacht who did so much for the interests of the craft, he said he was interested to learn from Mr. Hills that the new Pharmacy Bill might possibly get into Committee on Thursday in the House of Commons, and he was very gratified to find that the whole of the present Council were agreed upon the point that it was necessary to enlarge their boundaries, and that a large number of men who had passed the Minor examination, which was far better than the Major of years ago, should be eligible for election to the Council. He thought that was a step in the right direction. —Mr. Walter Hills, who was received with applause, said: My first visit to Bristol in 1875 was on the occasion of the meeting of the B.P.C.—under the presidency of Mr. T. B. Groves—my uncle, Mr. T. H. Hills, being present as a Vice-President, and as President of the Pharmaceutical Society, Mr. G. F. Schacht was at that time Treasurer of the Conference. My second visit was on the occasion of Mr. Schacht's funeral, a little more than twelve months ago. One cannot but realise, on visiting Bristol for the third time, what a great gap the death of that distinguished man has made in the ranks of the Bristol Pharmaceutical Association, and I feel that even on a festive occasion like the present, I must pay another

tribute to his high and amiable character and to his great intellectual powers. Twelve months later you lost another distinguished citizen in the person of Mr. R. W. Giles, a man of exceptional ability and strong character, and ever a loyal supporter of the Pharmaceutical Society. Schacht and Giles, together with Stoddart, who was a Vice-President of the B.P.C. in 1875, were all men of whom Bristol pharmacists may well be proud, and the record of whose lives will long live in the memory of the thoughtful inhabitants of this important city. In these days of free discussion many criticisms, friendly and occasionally unfriendly, are passed on the Society, but consider for a moment or two what might be the condition of affairs if the Pharmaceutical Society did not exist.—"What would life be without Yum-Yum?"—It is only necessary to take up the Calendar to see the amount and variety of work carried out under its direction. Imagine examinations conducted and qualifications granted by a department of State, or under medical supervision. Picture to yourselves proceedings against persons for carrying on the business of chemists and druggists otherwise than according to law, taken at the instance of a public department and not by the Society. Think of the distressed members of our calling without the relief so generously and considerately granted by the Benevolent Fund of the Society. Realise that there might be no School of Pharmacy with its high ideas of pharmaceutical education; no *Pharmaceutical Journal*, with its weekly budget of useful information; no Library, with its countless volumes of useful knowledge, and no Museum, famed throughout the world for its valuable treaures of materia medica. Think of no headquarters for useful information at the service of all who need it, and of no organisation to resist unfavourable, or to promote beneficial, legislation. It is well sometimes to try and realise what might now be the condition of affairs if clear-headed and earnest men had not taken steps to found and develop the Pharmaceutical Society, which I now have the honour to represent as President. Now, although, alas! the majority of registered chemists and druggists have not as yet voluntarily associated themselves with the Society, there is abundant evidence that there is at the present time a very valuable *esprit de corps* amongst those who are connected with it. I have found this remarkably so during the last few weeks, whilst I have been endeavouring to further the progress of the Pharmacy Acts Amendment Bill through the House of Commons. You all know that the Pharmacy Acts Amendment Bill has passed the second reading, and I have been struck with the amount of support the Society has received from every part of Great Britain. I am glad to say that the opposition of Manchester has been withdrawn, and I take this, the first opportunity, of thanking our friends there for their loyalty to the majority of those connected with the Society. Although that opposition has disappeared another has cropped up from Glasgow. There are certain amendments down, but I have strong hope that when the honourable member who has given notice of them fully understands the Bill, he will withdraw, and afford the Bill an opportunity of passing unopposed, which is its only chance, and I am very sanguine that this will be so. But if we do not succeed now, it is early in the session, and we must try again. Referring to other subjects, Mr. Hills said the position of local secretaries was not satisfactory, and might be improved. He had been much struck with the strong power that the past few weeks had revealed, and he could only hope that they would always use that power for the public good as well as their own good.—Mr. Atkins then gave the toast of

The Medical Profession,

observing that even chemists when seriously ill did not prescribe for themselves, but sent for the medical man. The medical profession had the confidence and gratitude of the public. Dealing with the lines of delimitation between medical men and pharmacists, he said medical men diagnosed, then prescribed, and pharmacists prepared and distributed medicines. Those were the lines of delimitation. But when they came to the Hinterland what did they see there? How different it was in the Hinterland. As a member of the Council he could say that the policy of that body was to preserve the lines of demarkation between the two, and no house had done more to insist upon that than the house with which the President of the Society was connected.—Dr. Barclay Baron responded, and acknowledged the closeness of the ties between his profession and that of the pharmacist. In Bristol the pharmacists did not go into the horrible Hinterland, but observed the lines referred to by Mr. Atkins. They kept doctors up-to-date as to new drugs with unpronounceable names, and they so modified prescriptions sometimes as to improve and beautify them.—Mr. Alderman Gadd proposed "The City and Trade of Bristol," to which Mr. G. H. Perrin replied.—Mr. J. Cooper proposed

The Bristol Association,

and spoke of the advantages of discussion which such associations afforded, and said if the Bill now before Parliament passed there would not be the slightest excuse for any member of the craft remaining outside the Society. Speaking of the Bristol Association, he said they had in Mr. Keen an Hon. Sec. who could not do more for the members if they paid him £1000 a year.—Mr. B. Keen, who was heartily cheered, said in reply, he thought local associations should stand to their own districts in the same relation as the Society did to the whole country; that might be a high ideal, but they should have high ideals, and they must not rest and be thankful. The Association had subscribed £5 last year to the Benevolent Fund, and last week he had the pleasure of handing £10 from the Fund to an old chemist in Bristol, to whom it was very welcome indeed. That was one thing which he might say in reply to those who asked "What good does the Association do?' Pharmacists had still grievances, and one was that what was utterly illegal for one man to do became perfectly legal if he got six others to join him. He was sorry to some extent for the members of the craft who sold themselves, he was going to say, to this kind of corporation. What they would do when their hair became grey he did not know. Then there was the perennial question of education, and their difficulty in Bristol was to get men to come to classes. What was wanted was a compulsory curriculum, just as they had for young men entering the medical profession.—"Our Visitors" was given by Mr. G. Young.—Mr. Hills then proposed "The Chairman," and Mr. Townsend having responded, the proceedings terminated.

BRITISH PHARMACEUTICAL CONFERENCE.

A meeting of the Ulster Executive Committee was held in 10, Garfield Chambers, Royal Avenue, Belfast, on Tuesday, 15th inst., at 11.30 a.m., Mr. J. C. C. Payne, J.P., in the chair. There were present Dr. Fielden, Messrs. Tate, Guiler, S. Gibson, Elliott, Moffatt, Rankin, and R. W. McKnight.—The minutes of the previous meeting having been read by the Local Secretary, a considerable amount of business was transacted with regard to excursion arrangements and other matters of importance.—Dr. Fielden, Secretary to the Sub-Committee, who waited on the President of the Queen's College, reported with regard to their interview. The report, briefly, was that the President kindly offered the whole College buildings for the use of the Conference.—The Hon. Local Secretary was instructed to write to Dr. Hamilton, thanking him for the kind manner in which he received the deputation, and his generosity in placing the College at the service of the Conference. — A deputation consisting of Sir James Haslett, M.P., Mr. Payne, J.P., Mr. S. Gibson, and Dr. Fielden, was appointed to wait on the Lord Mayor, to ask him to receive the delegates at the College on August 9, and on behalf of the citizens of Belfast to offer them a hearty welcome.—Mr. Payne explained that this had been done on former occasions at places where the Conference met.—The Secretaries reported favourably on the progress of the guarantee fund, and they were instructed to issue a circular asking the gurantors to send half of their amounts guaranteed to the Hon. Treasurer, Mr. S. Gibson, King Street, Belfast, as funds are wanted to meet current expenses.

EDINBURGH CHEMISTS', ASSISTANTS', AND APPRENTICES' ASSOCIATION.

The eighth meeting of the twentieth session was held in the Pharmaceutical Society's House, 36, York Place, Edinburgh, on Friday, March 11, 1898, at 9.15 p.m., Mr. George Sinclair, President, in the chair.—The minutes of last meeting having been read and adopted, Mr. W. B. Cowie gave an interesting lecture and demonstration on

The Volumetric Composition of Hydrochloric Acid, Water, and Ammonia.

By means of elaborate apparatus, Mr. Cowie illustrated his remarks by both analytical and synthetical methods, the current for the electrolytical decompositions being conveniently obtained from the City Corporation supply now in use in the Society's House.—On the motion of the Chairman a vote of thanks was awarded to the author, and the meeting closed.

OXFORD AND DISTRICT CHEMISTS' ASSOCIATION.

At the annual meeting held at the Clarendon Hotel on March 8, the following officers were elected for the ensuing year :—President, Mr. H. Mathews; Vice-Presidents, Mr. G. C. Druce, Mr. H. Thurland, and Mr. Prior; Committee, Messrs. Burbank, Dolbear, Jessop, and Jenkins; Hon. Secretary and Treasurer, Mr. C. P. A. Morrison.

PARLIAMENTARY NOTES.

The Pharmacy Bill has attracted the unwelcome attention of Mr. Alexander Cross, the Unionist Member for the Camlachie Division of Glasgow, and it must now be numbered with the opposed Bills whose hope of consideration before midnight is more or less forlorn. The amendments Mr. Cross has put upon the notice paper are not particularly relevant, and if they should be submitted to the judgment of the House, the result may prove instructive to the honourable member. But, unfortunately, the question of relevancy does not arise, as any motion to amend a non-official bill is an effective block to progress. Judging from the terms of his notice, it would appear as if Mr. Cross had been approached by those who desire that apothecaries' assistants shall be exempt from the provisions of the Pharmacy Act, 1868, for in the remarkably innocent Clause 2 of the Bill which relates to the admission of "Student-Associates" to the voluntary Society, he has proposed the insertion of the words "or who is the assistant of a legally qualified apothecary, having served not less than three years at the trade." Fancy insisting that eligibility to join the Society should be made to depend upon serving behind a counter! And how would legally qualified apothecaries like to be classed among the trades? What makes the thing more ridiculous is that even supposing the words had been inserted in the Bill, assistants who were unregistered would still have been amenable to the provisions of the Pharmacy Act, 1868. With reference to Clause 3, the amendment only proposes to insert "legally qualified apothecary" after the words "chemist and druggist," thus making the medical man eligible to become a member of the Pharmaceutical Society!

Clauses 4 and 5 of the Bill are to be struck out, Mr. Cross being apparently quite satisfied with the present procedure as to the election of Council and the reception of voting papers. But there irrelevancy terminates, and business begins. Mr. Cross desires the alteration of the 1868 Act, and proposed to do it by adding the following clause to the Bill now before the House :—

> That nothing in this Act nor in the Act to regulate the sale of poisons—31 and 32 Vict., c. 121, entitled The Pharmacy Act, 1868—shall apply to or interfere with the business of persons who are engaged in the sale, distribution, or manufacture of insecticides, destroyers of vermin or disease germs in plants, of ant destroyers, of preparations for prevention of disease in potatoes, grain, or other field or garden crops, or for the preservation and protection of plants from disease in greenhouses, or in the open air, or for other such or similar purposes.

Comment is quite unnecessary. It may be remarked, however, that, whilst the Pharmacy Act, 1868, may or may not be of public utility, and its administration offers legitimate scope for praise or blame, the present Bill has nothing to do with such considerations, and there is no more logic in his stopping the internal readjustment of the affairs of a voluntary association of chemists than there would be in the Society demanding a voice in the management of the honourable gentleman's club. As we go to press we learn that Mr. Cross has added one more amendment to his list, viz., one that is intended to knock the bottom out of Clause 3 by restricting membership to persons who have passed a "pharmaceutical examination."

The University of London Commission was constituted in Committee of the House of Peers on Tuesday last. The names of the Commissioners are: Lord Davey, the Bishop of London, Sir William Roberts, F.R.S., Sir Owen Roberts, Professor R. C. Jebb, Professor Michael Foster, F.R.S., and E. H. Busk, Chairman of Convocation. Thus, Law, Medicine, Arts, Sciences, and the Church are admirably represented, and equitably balanced. Sir Owen and Sir William Roberts are pretty well known to pharmacists, the former as a prominent member, and Vice-President of the Society of Arts, and the latter as an authority on the chemistry of urine. Professor Jebb occupies the Regius Chair of Greek at Cambridge, and Professor Foster, who needs no introduction to the members of the Pharmaceutical Society, also hails from that University. Oxford is not specifically mentioned, but as Lord Davey is a Fellow of University College, the sister university cannot be said to be unrepresented.

The Petroleum Inquiry is to be continued, and the first step took place on Monday last, when the Selcct Committee to inquire into the sufficiency of the law relating to the sale, storage, and conveyance of petroleum and similar inflammable liquids was nominated. The personnel of the Committee is considerably changed, and of the fifteen names submitted to the House little more than half were included in the first Committee; the deaths of Mr. Mundella and Mr. Wootton Isaacson, amongst other circumstances, necessitating the introduction of new members. One thing worthy of note is that only one metropolitan Member of Parliament is on the Committee, viz., Mr. Macdona, M.P. for Rotherhithe.

It is a Bold Government which is sufficiently sustained by conscious virtue to deal with the vaccination question. But Mr. Chaplin has done it on behalf of his colleagues, and appears to have come through the ordeal with *éclat*. The right honourable gentleman on Tuesday, in moving for leave to introduce his Bill, explained that the object of the Government was to remedy every reasonable grievance against vaccination, and the discovery of the preservative and germicidal properties of glycerin in preparation with calf lymph made it possible to go far in the desired direction. The Bill may be said to effect four radical changes :—

1. Abolition of compulsion in respect of vaccination by any other means than by calf lymph, and the adoption of the recommendation of the Royal Commission as to an adequate supply of lymph.
2. Attendance at Public Vaccination Stations to be replaced by the attendance of the vaccinator at the child's home.
3. Extension from three to twelve months of the period within which a child must be vaccinated.
4. Abolition of repeated penalties in cases where there is conscientious objection to vaccination.

It will thus be seen that the objectionable "arm-to-arm" method is to disappear altogether, and that the risk of disease is to be greatly minimised by the proposal to provide a system of home vaccination. The Bill revolutionises the present procedure of the Local Government Department, and will involve a largely increased expenditure, but when Sir W. Priestley and Sir Walter Foster approve of the alterations there is little doubt that they are worth the money. The nation cannot afford to be niggardly in the matter of insurance against disease. The second reading of the Bill is to take place on Monday.

Companies Committee.—The first business meeting of this Committee this session took place on Monday last under the presidency of the Lord Chancellor. The principal witness was Mr. F. B. Palmer, a barrister, who claimed to have assisted at the birth of some thousands of companies—perfectly honest companies, naturally. His view is that only some 2 or 3 per cent. of the companies formed are of fraudulent origin, and that it is thus inexpedient to place restrictions and fetters on the formation and working of industrial corporations. He was against restrictions being placed on the issue of debentures at the same time as ordinary and preference shares. In short, he did not favourably regard an extension of the present law, except in regard to define more specifically the duties and liabilities of promoters. In regard to that point he saw no objection to retaining the words requiring "reasonable care and diligence" in directors if those words expressed the present law, but if they went beyond the present law they should be struck out. He further expressed the opinion that the clauses referring to directors' liabilities as to debts would probably have the effect of throwing the direction of companies into the hands of second-rate men. That may be, but the question arises, Would it not be better for shareholders to have their interests rather in the hands of second-class directors who are honest than in the case of less scrupulous, but smarter men?

[Many Answers to Correspondents are unavoidably held over on account of pressure on our space.]

COMMUNICATIONS, LETTERS, etc., have been received from

Messrs. Ashford, Atkins, Bayley, Beacock, Beeny, Blake, Brown, Bussy, Cooper, Cruickshank, Cumming, Davis, Deed, Gardner, Gledhill, Grimble, Harrison, Hill, Hodder, Jackson, Kendall, Kent, Nicholls, Picken, Priestley, Robb, Russell, Vibert, Warren, Williams, Wilson, Wyatt.

Pharmacy, and the Allied Sciences.

A REVIEW OF CURRENT WORK.

Action of CO on Platinum and Palladium. According to E. Harbeck and G. Lunge, both platinum and palladium form, with carbon monoxide, a compound which is stable enough to be called a true chemical compound. One reason advanced in favour of this view is that the carbon monoxide cannot be displaced by another gas, whilst the quantity of it taken up is unaffected by previous treatment of the metal with hydrogen. Again, on heating the compound of platinum and carbon monoxide to 250°, the gas is given off suddenly, whilst a third reason for assuming the chemical nature of the compound is that, when it exists, the free surface of the metal is prevented coming in contact with ethylene and hydrogen that may be passed over it, and the reaction which normally takes place—expressed by the equation $C_2H_4 + H_2 = C_2 + H_6$ —is also prevented.—*Zeit. f. Anorg. Chem.*, Jan. 18, 1898.

Vanilla and Vanillin. Simultaneous treatment of vegetable products on more than one side is becoming characteristic of scientific workers in pharmacy across the Atlantic. As a result the number of monographs produced which treat of drugs, etc., is continually increasing. The latest contribution of this kind is that in which Professor H. H. Rusby deals with the species, distribution, and habits of vanilla plants, and the cultivation and curing of vanilla, whilst Dr. S. E. Jelliffe treats of the microscopical character of vanilla, and Dr. Virgil Coblentz of the chemistry of vanillin (*Journ. of Pharmacology*, v., 29, *et seq.*). Concerted work of this nature might profitably be conducted by British pharmacists, as it is only by the union of purely botanical with histological and chemical research that a complete knowledge of any given drug or other plant product can be attained.

Ichthyol Suppositories. Ichthyol suppositories require a certain addition of wax to bring the basis to a firm consistence. Eschenburg states that the melting-point of cacoa-butter and wax mixtures (which is higher than the temperature of the body) is considerably lowered by the addition of ichthyol. For instance, a mixture of 3 parts cacao-butter, 0·2 part white wax, and 1 part ichthyol melts at 36° C., and 2 parts cacao-butter, 0·05 part white wax, and 0·5 part ichthyol at 33° to 34° C. The ichthyol should be added when the basis just commences to congeal.—*Pharm. Centr.*, xxxix., 7.

Chemistry of Writing Inks. Professor C. A. Doremus has lectured before the American Chemical Society on the chemical examination of writing fluids, describing their behaviour on heating or on applying reagents. Of the sympathetic inks, the colour of which is developed by heat, those containing a cobalt salt become blue, whilst a nickel salt turns green, and onion juice brown. Lead acetate in ink is blackened by hydrogen sulphide, a copper salt gives a brown with potassium ferrocyanide, and a mercuric salt reacts with very dilute potassium iodide solution, forming a red precipitate. Potassium ferrocyanide yields a blue coloration with ferric chloride, tannin a violet black with the same reagent, pyrocatechin turns green with iron salts, and dimethaniline becomes violet in the presence of chromic acid. Amongst other constituents of inks, eosine produces an orange-yellow colour with hydrochloric acid, whilst corallin turns yellowish with the acid and red with alkaline β-naphthol. Amine turns yellow with hydrochloric acid (original colour with β-naphthol), safranine blue, chrysaniline yellow (purplish-red with β-naphthol), carmine has its intensity reduced, and fuchsine is bleached (red with β-naphthol). Logwood ink darkens to purple with sodium nitrite, is bleached by hydrochloric acid, and its colour is restored by β-naphthol. Brazil wood turns darker red with the nitrite, is not affected by the acid, but becomes reddish-purple with β-naphthol.—*Amer. Drug.*, xxxii., 70.

Dicamphor and Dicamphendion. According to the patent for the preparation of these bodies, sodium is allowed to act on camphor bromide in the presence of an indifferent solvent (toluol), and at a temperature of about 90° C. Besides an acid, small volumes of camphor, dicamphor $(C_{10}H_{15}O)_2$, and dicamphendion $(C_{10}H_{14}O)_2$ are formed. These can be separated by crystallisation from diluted alcohol, and then from petroleum ether. Dicamphor crystallises in colourless needles, melting at 165° to 166° C., and dicamphendion in yellow prismatic needles, melting at 192° to 193°. With hydrazine hydrochloride in acetic acid solution, dicamphenpyridazine, $(C_{10}H_{15})_2N_2$, and dicamphenyl-pyridazine, $(C_{10}H_{14})_4N_2$, are formed.—*Chem. Zeit.*, xxi., 964.

Anethol and its Isomers. The researches of Orndorff, Terrasse, and Morton may be summarised as follow:—Methylchavicol of Eykman and estragol of Grimau have the same molecular weight and are metameric forms of anethol. From the results obtained by various investigators it must be concluded that they are identical. Fluid metanethol has the same molecular weight as anethol, and is a metamer of this substance. From its chemical behaviour and its physical properties it must be a stereoisomer of anethol, and it is probably $\underset{CH_3CH}{\overset{\|}{HC}}C_6H_4OCH_3(p)$. Anisoin, a resinous polymeric modification of anethol, which acts as a colloid towards the solvents, acetic ether, acetone, benzol, etc. Solid metanethol and the fluid isoanethol have both the same molecular weight and are polymers of anethol. As their molecular weight is twice that of anethol it is proposed to call them solid and liquid dianethol respectively; as both act like saturated compounds they may possibly be derivatives of tetramethylene. Anethol, heated under pressure to 250-275° C., is converted into isoanethol, the methyl ester of paracresol, $C_6H_4{<}^{OCH_3}_{CH_3\,(p)}$, and the methyl ester of parapropylphenol, $C_6H_4{<}^{OCH_3}_{C_3H_7\,(p)}$. Under these conditions there is apparently a tendency to form saturated compounds.—*Chem. Zeit. Repert.*, xxii., 10, after *Amer. Chem. Journ.*, xix., 845.

Reduction of SO_2 to H_2S. Hot solutions of stannous chloride and sulphurous acid decompose, forming sulphuretted hydrogen, which is, however, usually transformed to sulphur on the continued action of the sulphurous acid. The reaction probably occurs as follows:—

$$3SnCl_2 + SO_2 + 6HCl = 3SnCl_4 + 2H_2O + H_2S.$$

The reaction is of practical use in separating small volumes of arsenic and antimony from a large excess of tin. For this purpose the solution is mixed with a little fresh stannous chloride solution strongly acidulated with HCl, and after it has been brought to boiling-point a solution of sodium sulphite is added drop by drop. The sulphides of arsenic and of antimony are precipitated. Sulphuric acid can also be tested for arsenic thus:—10 to 15 C.c. of the acid are diluted with an equal volume of water and added to a strongly acid solution of stannous chloride; after heating to

boiling-point a solution of sulphite is added drop by drop. When arsenic is present the separation of the characteristic sulphide is distinctly apparent, while if none be present the fluid is merely opalescent from the separated sulphur.—*Chem. Zeit. Repert.*, xxi., 322.

Orcein Stain for Flagella of Bacteria.

T. Bowhill finds the following solutions and method to give excellent results in staining the flagella of bacilli. No. 1 solution: Orcein, 1 gramme; absolute alcohol, 50 C.c.; distilled water, 40 C.c. No. 2 solution: Tannin, 8 grammes; distilled water, 40 C.c. Equal parts of 1 and 2 are mixed before using. Two platinum loops of material are taken from the surface of a young agar-agar culture and suspended in 2 C.c. of sterile water. One drop of this suspension is placed on a cover-glass and dried, then fixed in the flame. It is then stained in the above orcein solution by heating without boiling, and leaving the specimen in the solution for ten or fifteen minutes, then washing and drying. A drop of Erlich's aniline-water-gentian-violet solution is filtered on to the cover-glass, and heated gently until it steams. Then wash off, dry, and mount in xylol balsam.—*Vet. Record*, x., 395.

Bismuth as a Cider Preservative.

L. Defour and Daniel find that the addition of 10 Gm. of bismuth subnitrate to each hectolitre of cider prevents, or materially retards, the hardening of the beverage on exposure to air during use from casks; not only so, but the presence of the bismuth salt renders alcoholic fermentation more complete.—*Comptes rendus*, cxxv., 1125.

Poisoning by Picric Acid Dressings.

La Touche sounds a note of warning with reference to the indiscriminate use of dressings of saturated solution of picric acid in the treatment of burns. In a communication to the Société de Chirurgie de Paris, he states that he has observed serious symptoms of poisoning, vomiting, colic, diarrhœa, and tendency to jaundice following the application of this solution. Others present at the meeting confirmed these unfavourable results, sometimes produced by the remedy in certain cases.—*Répert.* [3], x., 83.

X-Rays and Germination.

Maldeney and Thouvenin find that seeds of *Convolvulus arvensis*, *Lepidium sativum*, and *Panicum miliaceum* all germinate more rapidly when exposed for a few hours daily to the action of the Röntgen rays. In the experiments, electrical influence was eliminated by using a sheet of aluminium which was connected to the earth as a screen between the lamp and the seeds. No notable rise of temperature, not even sufficient to effect a pair of thermolectric needles attached to a Thompson's galvanometer, was observed after exposing the earth containing the seeds to the rays for two hours. The influence on germination must therefore be due to the *x*-rays alone.—*Comp. rend.*, cxxvi., 549.

Preservation of Eggs.

Extensive experiments have been conducted at Freiburg for the purpose of discovering the best method of preserving eggs, twenty eggs having been prepared by each of twenty different methods and kept for a period of eight months prior to examination. Fresh eggs only were used, the test of freshness being inability to float in a solution of 120 Gm. of common salt in 1 Lit. of water. Of the twenty methods of preservation only three yielded universally satisfactory results. Those three depended upon the use of water-glass, lime water, and vaseline respectively. A solution of water-glass was found to be best of all, as lime water tends to communicate a disagreeable odour and taste to the eggs, whilst coating them with vaseline is too tedious an operation.—*Journ. Soc. Arts*, xlvi., 370.

FORMULÆ FOR PERFUMES.

The following formulæ have been arranged for the benefit of readers who ask for information on the subject from time to time. They should also refer to the special article on the subject which appeared in the *Pharmaceutical Journal* of Feb. 26 last, page 197.

Essence of White Clover.

Vanillin, 20 grains; heliotropin, 20 grains; coumarin, 20 grains; tincture of storax, ½ ounce; tincture of civet, ½ ounce; tincture of orris, 1 ounce; otto of rose, 60 minims; oil of bergamot, 60 minims; oil of neroli, 90 minims; extract of tuberose, 4 ounces; extract of jasmin, 8 ounces; oil of cloves, 5 minims; oil of bitter almonds, 5 minims; terpineol, 60 minims; rectified spirit, 8 fluid ounces; glycerin, 1 fluid drachm.

Essence of Crab Apple.

Hyacinthin, 5 minims; cratægin, 10 grains; oil of ylang ylang, 30 minims; volatile oil of nutmeg, 10 minims; oil of lignaloe, 20 minims; oil of wintergreen, 2 minims; musc baur, 10 grains; extract of cassie, 2 fluid ounces; extract of violet, 4 fluid ounces; tincture of orris, 1 fluid ounce; glycerin, 30 minims; extract of jasmin, 4 fluid ounces.

Essence of White Iris.

Ionone, 3 minims; oil of orris, 10 minims; heliotropin, 30 grains; terpineol, 60 minims; oil of ylang ylang, 20 minims; oil of lignaloe, 5 minims; solution of amyl acetate, 10 per cent., 5 minims; glycerin, 20 minims; essence of jasmin, to make 10 fluid ounces.

Essence of White Violet.

Ionone, 60 minims; musc baur, 10 grains; essential oil of orris, 10 minims; extract of violet, 18 fluid ounces; extract of rose, 2 fluid ounces; oil of sweet orange, 5 minims; oil of neroli, 5 minims; tincture of orris, 4 fluid ounces; heliotropin, 30 grains; terpineol, 5 minims; solution of oil of patchouli (1 in 10), 20 minims; glycerin, 30 minims.

Essence of Wallflower.

Essential oil of orris, 2 minims; oil of sweet orange, 1 minim; heliotropin, 5 grains; oil of neroli, 2 minims; extract of orange, 2 fluid ounces; extract of tuberose, 2½ fluid ounces; extract of jasmin, 15 fluid ounces; coumarin, 3 grains; glycerin, 30 minims; oil of bitter almonds, 5 minims.

Essence of Heliotrope.

Heliotropin, 30 grains; essence of jasmin, 4 ounces; oil of ylang ylang, 5 minims; oil of bitter almonds, 2 minims; cratægin, 1 grain; oil of neroli, 10 minims; oil of lignaloe, 30 minims; terpineol, 10 minims; otto of rose, 5 minims; rectified spirit, 10 fluid ounces.

Essence of White Lilac.

Terpineol, 3 drachms; heliotropin, 30 grains; extract of rose, 2 fluid ounces; oil of ylang ylang, 10 minims; extract of jasmin, 4 fluid ounces; rectified spirit to produce 20 fluid ounces.

Essence of Lily of the Valley.

Extract of tuberose, 6 ounces; extract of jasmin, 8 ounces; tincture of civet, 1 ounce; oil of lignaloe, 30 minims; terpineol, 10 minims; oil of sweet orange, 2 minims; heliotropin, 20 grains; oil of neroli, 3 minims; glycerin, 20 minims; tincture of chlorophyll, 30 minims; extract of rose to produce 20 fluid ounces.

Essence of Narcissus.

Caryophyllin, 10 minims; extract of tuberose, 16 fluid ounces; extract of jasmin, 4 fluid ounces; oil of neroli, 20 minims; oil of ylang ylang, 20 minims; oil of cloves, 5 minims; glycerin, 30 minims; solution of amyl acetate, 10 per cent., 20 minims.

Essence of Wood Violet.

Ionone, 10 minims; extract of violet, 18 ounces; extract of cassie, 4 fluid ounces; extract of jasmin, 4 fluid ounces; tincture of orris, 10 fluid ounces; tincture of musk, 20 minims; otto of rose, 5 minims; glycerin, 30 minims.

NOTES ON CEYLON, GENERAL AND PHARMACEUTICAL.

BY OPHIR.

Occasionally vacancies on the dispensing staff of commercial houses here in the "Spicy Isle" are advertised, and to those who may contemplate applying for these posts, a little information regarding the nature of the business, the climate, country, vegetation, etc., may not be unacceptable; to the general readers also of the *Pharmaceutical Journal*, these short notes may be of interest.

The majority of our pharmacies exist in connection with general "stores." We have very few purely pharmaceutic establishments, but a number of merchants have a "dispensing, drug, and patent" department combined with their ordinary business or "store." I am attached to one of these latter in the capacity of dispenser. By the way, the "chemist" and "pharmacist" of home is invariably the "dispenser" out here. The scene of my humble labours is situated in the heart of one of the largest tea districts in the island, at an altitude of some 4000 feet above sea level. My remarks throughout will, therefore, apply more particularly to the hill districts. The actual work is very similar to that of a good-class business at home. The dispensing is up to-date, gelatin and other coated pills, capsules, cachets, and other refinements being in daily demand. The various proprietary preparations so well known at home are prescribed frequently. New drugs and synthetic remedies quickly find their way to us. Relations between doctor and pharmacist are rather more friendly than in the home land, at least, such is my experience. It is very unusual to find a doctor dispensing his own medicines, except in remote districts; the dispenser accordingly avoids "counter practice" as much as possible, as prescriptions are obliged to come to him for preparation. Our hours of business are, generally speaking, shorter than those at home, averaging about nine hours daily, including an hour for breakfast or "tiffin" in the morning. From 8 a.m. to 5 p.m. is the general rule. Tamil coolies bring the orders to the store, and squat in the veranda until the medicines, etc., are ready.

These coolies often come long distances, sixteen or eighteen miles being not uncommon. They make the return journey the same day, frequently bearing heavy loads on their heads. A jog trot is a favourite pace, and they will continue this for some hours without tiring. In passing, I would remark that a good practical knowledge of the preparation of galenicals is very useful, as being so far from the wholesale depôts you have often to depend on your own exertions in order to keep up a proper stock. The salary which dispensers receive in Ceylon is similar to that in India, while the currency, the rupee with its divisions, is the same. The rupee fluctuates considerably in value almost daily, and this fact should be taken into consideration on signing agreements. Although the rate of pay is higher than at home, the cost of living is proportionately greater, while the dispenser has in almost every case to bear the cost of his home passage, with its incidental expenses. It will be seen, therefore, that the financial gain during a term of, say, three years, cannot greatly exceed that accruing from a similar time spent in a pharmacy at home. These remarks do not, of course, apply to the not uncommon case of a man staying for a further term at an increased salary, with perhaps a good commission in addition. But there are many evident advantages other than those of a financial nature which result from a few years' experience abroad.

The climate of Ceylon is influenced chiefly by the two monsoons, the south-west, prevailing from May to October, and the north-east, from November to April. Both are usually ushered in by a violent storm—the "burst" of the monsoon. Ceylon being in the direct track of these monsoons receives an abundance of rain, which is, however, somewhat unequally distributed, the variations being caused mostly by the different positions of districts with regard to mountain ranges, some places receiving only 40 inches or so annually, and others 250 inches or even more than this large amount. The influence exerted by the mountain systems on our climatic conditions is seen in a striking manner at Nuwara Eliya, our sanatorium in the hills. Here, during the south-west monsoon, rain pours incessantly for weeks together; everything is thoroughly soddened and the general aspect most cheerless; but one has to go only some four miles eastward—on the other side of the range—to enter warm bright sunshine with a deep blue sky overhead. During the north-east monsoon these conditions are exactly reversed. The mean shade temperature of the air in the low-lands is about 80° F., the maximum rarely going beyond 100° F., or the minimum much below 70° F. In the hill districts the temperature is, of course, modified by the altitude. Where I reside the yearly mean is 66° F. The mercury is seldom seen above 86°. Night and early morning during the dry, hot north-eastern monsoon are often very cold; then 40° down to 34° is common in the veranda of my bungalow at 6 a.m., but by 10 a.m. it has run up to 78° or 80°. These extremes are unpleasant until one is accustomed to them. At Nuwara Eliya (at 6200 feet) a thin film of ice is sometimes formed; the inhabitants relate this fact with pride.

Europeans enjoy, on the whole, very good health in Ceylon. Malarial fever, liver disorders, dysentery, are the most frequent complaints. With proper precautions the conditions of life seem as favourable as at home. Temperance in all things is most emphatically a golden rule. Adequate protection to the head and neck from the intense heat of the sun's rays is very necessary, and undue exposure to the sun should be carefully avoided; new comers are often indiscreet with regard to this—walking in the direct sun just as they would at home—with results which are sometimes serious.

As regards the country itself, the whole of Ceylon abounds in the picturesque and the beautiful, the hill districts especially so. Here panoramic views greet the eye—grand mountains, lovely valleys, winding rivers, charming waterfalls meet the gaze in every direction. The roads are good, though sometimes steep, and one of the most pleasant of recreations is a spin on a bicycle, or in a ricksha, during the cool of early morning.

The vegetation of Ceylon is proverbially luxuriant, and comprises many plants of interest to pharmacists. Tea is now the chief staple of the island. Coffee held this position up to a few years ago, when the ravages caused by a fungus together with other enemies rendered coffee-growing unprofitable. At this juncture tea-planting was vigorously introduced, and the new industry has now almost entirely supplanted the old. The hardy tea plant flourishes everywhere—from sea-level districts to the summits of our highest hills at some 7000 feet. The tea plant in its natural state grows to a height of 20 feet or more, but under cultivation is kept by pruning to about 3 feet, forming a large spreading bush. Plucking is carried on continuously; in this respect we differ from China. The young and tender leaves only are used. The majority of the gardens, or "estates" as they are usually styled, have their own factories close at hand, water from our numberless streams being the popular motive-power for the machinery. It is most interesting to watch the process by which the green and almost inodourless "leaf" is tranformed into the black and fragrant tea we all know so well. Briefly, the manufacture is as follows: First, the fresh, green "leaf" is allowed to "wither" or slightly dry at the air temperature for some forty-eight hours; secondly, the "withered" leaf is "rolled" in a machine-roller

for an hour or so. During this operation the vegetable tissues are thoroughly crushed, and each leaf assumes a more or less cylindrical form; thirdly, the "rolled" leaf is allowed to ferment in heaps for a short time. Much depends on the proper regulation of this stage, as important changes take place during fermentation; fourthly, the fermented leaf is re-rolled and then submitted to the action of a current of hot, dry air (at about 210° F.) for a certain time. The tea is now in a manufactured state, and has only to be sorted into the different grades. Loss of weight from green leaf to made tea is from 75 to 78 per cent. The characteristic of the beverage produced from tea grown in the lowlands is its "strength," and that of high-grown tea delicacy of flavour. A cup of tea prepared from a high-grade product of an up-country factory is a revelation to lovers of the fragrant beverage.

Many tea-planters have a block of cardamoms on their estates. There are also plantations devoted solely to the culture of cardamoms. In addition to the export trade in this article to Europe and India, a large local demand exists, as the natives use it in their curry, etc. The theobroma cacao is largely grown in some districts. Its product is highly esteemed, having a fine flavour. The cocoanut-palm is a most important member of our flora, as it is capable of supplying every need of the native. It is computed that eighteen of these trees form a competency for a whole family. These graceful palms are quite a feature of the island, in many places they fringe the sea-shore for miles, giving the coast a very picturesque appearance. They are often so near the water's edge that the fruits when detached fall into the sea with a loud splash. The export trade in the cocoanut and its oil is very large. Cinnamon, the spice with which Ceylon has been associated from time immemorial, is still carefully cultivated. The plant is grown chiefly in the neighbourhood of Colombo, where is found the siliceous soil which it prefers; but a good amount of the spice is obtained from wild jungle bushes in the hill forests. The collection of cinnamon is in the hands of a distinct caste of Ceylonese.

Several species of eucalyptus, imported from Australia, grow well in our hills, and are largely planted on many tea estates to supply the fuel for the tea factory, being well adapted for this purpose, as they "form wood" rapidly. Great numbers of cinchona trees are felled to be used as firewood, and in the majority of cases the bark is not removed, as at the present rates the collection is unremunerative. A few years ago Ceylon exported enormous quantities of bark, but from various causes, chiefly, it seems, from the large output of Java's rich barks, the industry has almost completely decayed. The cinchona tree has pretty foliage, and is on this account frequently planted around bungalows. The papaw tree flourishes in the warmer districts. It is grown for ornamentation and shade, also for its fruit. The tree has a remarkably quick growth, especially in the hot, moist situations, which appear to suit it best; but even at my elevation it springs up rapidly to a good-sized tree. I have several in my garden, the largest, aged about three years, has a maximum girth around trunk of 33 inches and is about 16 feet in height. The fruit, green when unripe, a rich yellow when ripe, has a very luscious pulp; in fact, from personal experiments I think it one of the nicest of our numerous fruits. The leaves are sometimes used to wrap around tough meat in order to make it tender. A scratch on any part of the tree is sufficient to cause an instant flow of the "milk," which quickly solidifies to a gelatinous mass. The plantain is cultivated everywhere by the natives, who are very fond of its nourishing fruit. Plantain trees almost invariably accompany native dwelling places, the tiny huts forming, with the background of graceful foliage, a very pleasing picture. The cultivation of rice or "Paddy" as it is generally named, gives employment to the bulk of the Ceylonese peasantry, rice being the staple food of the natives and the Indian coolies. The erythroxylon coca, introduced from Kew some years ago, does well in our hills at about 2500 feet, but not at greater elevations. Considerable quantities of the leaves are exported.

Among a host of other interesting plants grown in Ceylon are: rubber, cloves, pepper, croton (wild and cultivated), tobacco, sugar, vanilla, cubebs, bael fruit. The lovely botanic garden, near Kandy, of which the late Dr. Trimen was director, contains a vast number of tropical and sub-tropical plants. Prominent features of the garden are its enormous rubber trees and fine avenues of nutmeg trees.

One short note in conclusion. Life in the out-stations of Ceylon is a very solitary one, and unless a man likes quietude, and can enjoy his own society, he would probably, after a month or so, find the monotonous routine of every day almost insufferably dull. His only neighbours are the planters. Unfortunately these gentlemen, from some occult reason, elect to be very exclusive. They form socially one large clique, the doors of which are barred to business and semi-professional men. This is regrettable, as it places the latter in an unpleasantly isolated position, and is apt to engender ill-feeling. This subject deserves the careful consideration of any fellow-craftsman who may think of embarking for the "Land of palms and pearls."

NOTE ON THE INDIAN AND AMERICAN RESINS OF PODOPHYLLUM.

BY EDGAR J. MILLARD.

Since attention has been drawn to the larger yield of resin obtained from Indian podophyllum (*P. emodi*), it is not surprising that manufacturers have prepared it in increasing quantities and supplied it under the name of podophyllin.

A recent examination of a number of commercial samples obtained from American, German, and English manufacturers showed that the latter are sometimes supplying the product of *P. emodi* under the title of podophyllum resin B.P.

Over a year ago E. Merck issued a warning against the use of yellowish-green podophyllin, based apparently upon H. J. Lohman's remarks,* adding that preparations which are not perfectly soluble in alcohol (1:10) and ammonia (1:100) should by all means be rejected as not conforming to the requirements of the Pharmacopœia. If this was intended to distinguish the resin of the Indian drug from that of the American it was not very useful. It has been repeatedly pointed out that colour is no criterion of the purity of podophyllin, and it may be added that it is still less an indication of origin. Moreover, when properly prepared, the resin of *P. emodi* is perfectly soluble in alcohol. In liquid ammonia (0 880) a difference is perceptible, but the official resin is not wholly soluble in the proportion of 1 in 100.

I have noticed that the Indian resin gives an orange to red colour with strong sulphuric acid when a minute quantity is sprinkled on a few drops of the acid placed on a white surface. The official resin gives a yellow coloration tending to brown, according to the quantity used. But a more useful test is the following:—To 6 grains (0·4 Gm.) of the resin in a test-tube add 1 drachm (3 C.c.) of diluted alcohol (s.g. 0·920) and 8 or 10 drops (0·5 C.c.) of solution of potash, B.P.; shake gently by rotating the test-tube. In the case of the Indian resin, the mixture assumes in a few seconds a semi-solid gelatinous mass, so that the test-tube can be safely inverted. If this does not occur quickly the mixture should be heated until it just begins to boil, and when cold it will

* *Pharm. Journ.* [4], vol. iii., page 179.

be found to have gelatinised. The official resin similarly treated gives a dark fluid that shows no signs of gelatinising even after standing for days.

A tincture made from the Indian resin can also be recognised by evaporating 6 drachms (20 C.c.) to dryness and warming with the proportion of proof spirit and alkali mentioned above.

Several of the American samples were by no means completely soluble in rectified spirit, and one, labelled podophyllin, "not prepared according to the official process," gavc a vivid red coloration on the addition of the alkali, but did not gelatinise.

Without entering into the question of the relative value of the two resins, which is still under discussion, it is obviously improper for manufacturers to describe the Indian resin as podophyllum resin, B.P., and in the production of those miscible preparations of podophyllin, which depend upon the use of an alkali, it is probable that the Indian resin, even if equal in therapeutic properties to the official, is unsuitable from the readiness with which it forms a gelatinous compound.

ENGLISH PHARMACISTS AND RUSSIAN PHARMACY.

BY P. SPEHR, M. Pharm.

(Concluded from page 232.)

James Frencham returned to Russia in accordance with the wish of the Court of the Tsar. The English resident, Richard Lea Knight, who lived in Moscow, as well as the Russian agent, Gregory Mikvolin, who was sent to England especially for the purpose, carried to Queen Elizabeth the request that the apothecary Frencham would enter again into the service of the Tsar, whereupon the queen again sent him to Russia with a recommendatory letter to the Tsar, Boris Godovnow, dated March 11, 1601. This letter, which still exists, consists of a cross-cut folio sheet, ornamented at the head with a broad golden border of festoons of flowers, and edged on both sides with golden lines; the names of both the monarch and queen were also written in gold, while the rest of the text was written in black. The letter runs thus:—

"Elisabeth, by the Grace of God Queen of England, France, and Ireland, Defender of the faith, etc., To the Right-high, Right-mighty, and Right-noble Prince Boris Pheodorovich, great Lord, King and Great Duke of all Russia, Volodemer, Musko, Novgorod, King of Casan and Astracan, Lord of Vobsko and Great Duke of Smolenskey, Twer, Ughory, Perme, Viatskey, Bulgarhy and other Places, Lord and great Duke of Novgorod in the lower Countries of Chernigo, Rasan, Polotskey, Rostovskey, Yaroslavely, Bealozero and Liefland, of Oudorskey, Obdorskey, Condinskey, and Commander of all Seberland and the Northe Coasts, great Lord over the countreys of Igcrskey, and Lord of many other Kingdoms and Dominions, our most dear and loving Brother, Greeting.

"Whereas we are advertised that this Bearer, James Frencham, hath heretofore served our loving Brother the Emperour Iwan Basilowich, Your Ma^{tis} most noble Predecessor, for his Apothecary, and that as well by mocion made by Your Highness' Chancellor unto our late Ambassador, Sir Richard Lea Knight, as by Your Ma^{tis} own Ambassador also, our said subject hath been requested to repaire unto Your Ma^{tis} service, with promise of entertaynment for his said Art and faculty, being both for his Skill and trust, sufficiently alredye knowne, unto Your Ma^{tie}, we have therefore, upon his humble suite unto us made, given hym our free leave and libertye to depart forth of our Kingdome for Your service. Praying Your Ma^{tie} that seing our saide subject for love and true affection towards Your Highness, hath a desire to leave his natyve country, and to undertake so great a journey with his wife and children for the same; that You will accordingly accept of his endevors and gyve hym that Employement, as his knowledge shall best desearve. Assuring Your Ma^{tie} hee is a man very skylfull in his profession and for his honesty hath byn employed under us in a office of good reputation and trust. And so leaving to trouble Your Highness any furder at thys tyme, wee commit the same to the dyvine protection. From our Royal Pallace of Richmond the eleventh of March Anno D^{ni} 1601 and of our most happy Raigne 44. Elisabeth R."

On November 7, 1601, James Frencham arrived for the second time in Moscow, after an absence of many years, this time with his whole family, consisting of his wife, three daughters, and two sons. It seems, therefore, as if Frencham were decided to settle in Russia permanently, but how long he remained in Moscow after his second emigration and what became of his family is unknown. It appears from an official record that he had, on his second journey to Russia, noticed the pestilence in several cities and districts of Germany and other countries. According to his own statement, this was principally the case in Stettin, Dantzic, Vilna, Riga. He had found many smaller places so desolate "that there were not enough healthy people to take care of the sick and to bury the dead."

From this document it is therefore apparent that Frencham did not take the maritime route *viâ* Archangel, and from there by Vologola to Moscow, which was most used in those days, but that he took the land route across Germany, Riga, Vilna, etc., though the latter may probably hardly be considered as the more convenient, on account of the many government formalities and molestations.

Unfortunately there is absolutely no information to be found as to the names of the other apothecaries who emigrated at the same time with Frencham to Moscow in 1581. Only some scanty biographical memoranda of later times, about several English apothecaries who entered into service at the Court drug store in the seventeenth century, can be found.

In those days considerable courage was required to undertake the emigration to the empire of the Tsars—especially to the Court of John IV., though foreigners enjoyed far better treatment from him than did his own subjects. That he was especially favourably disposed towards the English is to be seen in the negotiations which were entered into with a view to the marriage of John with an English lady of high rank, Mary Hastings. Another indication of John's prepossession in favour of the English is the derisive tone in which a Russian dignitary, Schelkalov, addressed the English ambassador directly after John's death: "The English Tsar is dead now, and they (the Englishmen) have lost their protector." However, there were occasionally times during John's lifetime which were not favourable to the English residents, and it is not astonishing in a country where, in those days, there were scarcely any germs of a nation's rights and culture according to Western ideas, and where the will, the whim, and the arbitrariness of the Tsar were law, without appeal. Cases of very inhuman treatment were common among the Russians, and were not rare among foreigners.

The drugs and utensils that belonged to the outfit of an apothecary's shop in those days were probably brought from England in 1581 or shortly afterwards. A considerable addition to the drug store, which had then already been in existence for a score of years, took place on James Frencham's return in 1601, as will presently be seen. It is characteristic of the manner of importation of foreign merchandise at that time that foreigners who were going to western Europe temporarily, were requested to bring goods with them on their return; this mode of proceeding had been usual for a long time, the formation of a regular postal system not taking place in Russia until the end of the seventeenth

century. The list of goods Frencham brought with him has only been preserved in a Russian-Latin translation, which has been made much worse by the attempt to correct it, *i.e.*, it really represents a Latin register written in Russian letters. On account of the interest it represents for the materia medica of that time, it may be given here in a modified form.

FRENCHAM'S LIST OF MEDICAMENTS.*

Confectio eryngae, Confectio prunorum, Conditum cydoniorum, C. baccae uvae, Prunadamascenacondita, Conserva berberum, Conserva ribium, Conserva rorismarini, Conserva symphyti, Succus liquiritiae inspissatus, Cydonia in succo non salito, Syrupus acetositatis citri, Oleum cydoniorum, Oleum cinnamomi, Oleum nucis moschatae aethereum, Oleum macidis, Oleum caryophyllorum, Oleum anisi, Vitrioli, Vitrioli amygdalarum, Aqua vita, Rossolis dicta, Spiritus vini, Spiritus cinnamomi, Spiritus D^ris Stephani, Spiritus juniperi, Spiritus juniperi compositus, Spiritus cochleariae, Cortex citri, Cortex capparis, Cortex liqui sancti, Cortex granatorum, Cortex aurantiorum, Cortex tamarisci, Cortex mandragorae, Radix brusci, Radix ciperis, Radix paeoniae, Radix eryngal, Gummi benzoë, Gummi ladani, Prix burgundica, Gummi elani, Storax calamita, Gummi laccae, Mastix in sortis, Mastix electa, Gummi ammoniacum, Gummi hederae, Gummi olibanum, Gummi tragacanthae, Gummi sanguinis draconis, Gummi bdellium, Gummi bdellium optimum, Gummi sarcocollae, Gummi tacamahacae, Gummi galbanum, Gummi carannae, Gummi asafoetidae, Gummi opoponax, Pyrethrum, Adianthus aureus, Spica celtica, Radix rubiae tinctorum, Lignum santalinum rubrum, Lignum santalinum citrinum, Lignum santalinum album, Baccae myrtyllorum, Tartarus albus, Radix carlinae, Bolus armena, Radix aristolochiae longa, Radix aristolochiae rotunda, Borax, Pistachiae, Spodium ustum, Citragosen melissa, Semen cynae, Agaricus albus, Radix turpethae, Radix polypodii, Folia mandragorae, Lignum aloës, Manna, Spica nardica, Sorbes aucuparia, Mespili, Folia sennae, Folia sennae alexandrina, Nuces cupressus, Amygdalae amarae, Farina hordei, Radix galangae, Myrobalani indici, Myrobalani citrei, Myrobalani nitrici, Myrobalani bellirici, Diacrydium, Sulfur citrinum, Herba salviae, Herba rorismarini, Aloë, Corallia rubra, Corallia alba, Crocus martis, Crocus flores sulphuris, Confectio alkermes, Sapo venetus, Terebinthina veneta, Semen synapi, Semen apii, Semen agnus casti, Semen carthami, Siler montanum, Semen paconiae, Semen psyii, Semen aquilegiae, Os sepiae, Semen portulacae, Semen cydoniorum, Semen thymi, Semen calendulae, Semen foeniculi, Lumbrici terrestres, Hyssopus, Flores balaustuorum, Soldonella, Stachydis, Origanum, Gentiana, Colocynthides, Terra sigillata, Herba capillorum veneris, Radix calami aromatici, Herba scordii, Lignum sassafras, Cubebae, Cantharides, Lapis smiridis, Cerussa veneta, Squilla praeparata, Hypocystissen lapis osteocollae, Bolus alba, Lythargyrium, Camphora, Piper album, Piper longum, Opium, Lapis judaei, Vermillon vel cinnabaris finissima, Blattae byzantinae, Lapis lazuli, Lapis spongiae, Flores anthos, Herba magoranae, Herba thymi.

The form of the present sketch does not admit of a detailed statement of the mode of carrying on business. What is proposed is to give a sketch of the apothecaries who were of English origin and employed in the seventeenth century at the drug store of the Tsar. We have very scanty information as to the apothecary Ranwall Warley. Whether he was the husband of the apothecary's wife who was noted down in 1625 as godmother in an old Moscow parochial register—"M. Rendels, the English apotheker's, his wife"—cannot be decided. That an apothecary, Warley, had already been, before 1630, in the service of the Court drug-store can be deduced from a letter of King Charles I. of England. In this letter the fact is mentioned that the apothecary Ranwall Warley had died in Moscow, and, it is added, that the king considered it his duty to send the Tsar another apothecary. The letter was dated January, 1630, was addressed to the Tsar Michael and his father, the patriarch Philaret Nicettitch, and was handed to them on June 14 of the same year. It referred also to certain commercial relations between England and Russia. The bearer of the letter was the English subject and apothecary, Philip Briott, the son of an officer of the English Exchequer. In the letter the king recommends this Briott as a man who had successfully learned and practised pharmacy, thanks to his diligence for many years, and wished to enter into the Tsar's service in succession to the apothecary Ranwall Warley, who had died in Moscow. This letter, which has been preserved in the Russian translation, runs thus (that is, re-translated): "August Sire and dearest Brother and Friend, Philip Briott, the bearer of this letter, is the son of an officer of our exchequer, and after some years of study has attained to the dignity of an apothecary and physician, and wishes to serve your Majesty as our subject Jan Martynov, who was Briott's cousin, has served you. Briott and his friends (? relatives) asked us to write to You in this case, and as we know that the apothecary Ranwall Warley is dead, it seemed just to Us to inform Your Majesty of the aforesaid Philip and to beg you to take him, for our sake, into your service, instead of Warley, or give him another place suitable to his talents, and when his terms of service will be over to dismiss him and send him back in order that he may continue his studies and become more worthy of the service at Your Majesty's, and that he may be able to talk of it to his parents, who have reached an advanced age. . . . etc.—1630, in the month of January, King Charles." Though the king recommended him warmly and praises his "experience," and stated in the letter that he possessed, besides the dignity of an apothecary, that of a physician. This Briott seems yet to have been a young man and a beginner, at least the closing words of the letter as to the necessary continuation of his studies may be thus understood. As to the effect of this personal intercession of the king, we know that the solicitation had been taken into consideration, and Philip Briott (of reformed confession) was engaged after an examination by the then Court physician, Arthur Dee (also an Englishman).

On May 31, 1645, he was dismissed after having (? in vain) asked for an increase in his salary, giving, amongst other things, the following reasons for his solicitation. . . . "In order that I may not stand before my colleagues insulted and grieved, and starve with wife and children." The cousin of Briott, the "Jan Martynov" mentioned in the king's letter, is worthy of notice. He is called by a russified Christian name, with the addition of the patronymic appellation. The family name is not given, yet it can only have been an Englishman who had been in the Tsar's service almost as Frencham's contemporary. He is not mentioned in any of the official documents that have become known. One of the most prominent apothecaries of the seventeenth century was Romanus Thius (in Russian, Roman Ulianov Thius, also Thii). He had been for many years in service at the drug store of the Tsar, but we do not know in what year this apothecary, who was a native of England, had come to Russia. At his dismissal, on July 4, 1655, he received an excellent letter of recommendation, in which stress was expressly laid upon his having been active in the office for many years and his being pensioned off only on account of his advanced age and his increasing feebleness. He is mentioned, during his time of service, in a document of December 19, 1644, where he is called Reynold Tiu. As at that time only recom-

* It is extremely difficult to say what many of the articles are, the more especially as the manuscript is far from intelligible in places. [ED., *P.J.*]

mendations from very highly-placed or renowned personages were recognised, it is an extraordinary proof of the high consideration which this apothecary Thius enjoyed that the Tsar had charged him with the honourable commission to engage another apothecary in his place according to his own judgment, and to send him to Moscow.

Though the apothecary Romanus Binian, whom Thius recommended, arrived soon after his retirement from service as his successor, the Tsar tried afterwards to induce Thius to undertake again the administration of the Court drug store. Thius seems to have returned to England after his retirement, which may be seen from the fact that the English agent at the Tsar's Court, John Hebdon, was charged to call Thius again to Russia. The latter seems not to have followed this invitation for the reasons given on the occasion of his dismissal. There is no information to be found as to any later service. It is not impossible that a son or grandson of his might have studied pharmacy as an apprentice in the new second drug store which was founded towards the middle of the seventeenth century, as a young man by the same name is afterwards mentioned in this office; but whether this young Thius remained in Russia as an apothecary remains an open question.

The aforesaid Romanus Binian having been engaged by Thius, who was pensioned in 1655, came to Moscow in 1656, *vid* Archangel. Though he seems to have enjoyed a good reputation as a skilful apothecary, and had been promised the same concessions as his predecessor Thius, yet he must have enjoyed the confidence of the Tsar and of the pharmaceutical magistracy (founded 1620) in a less degree than Thius; later, another effort was made to secure Thius for the administration of the Tsar's drug-store. That Binian had doubtless been a skilful professional man is proved by an extensive record that has been preserved of the laboratory of the Court drug-store, according to which it was his duty to provide for the most complicated and difficult preparations. As to his former mode of living, we know nothing.

It is occasionally mentioned in a document dating from the year 1676, that an apothecary named Robert Benshom, a native of England, had been appointed at the new Court drug-store, but his personalities remain quite unknown.

This is about all that can be found out concerning the Englishmen who were employed in Russia in the sixteenth and seventeenth centuries in the profession of apothecaries, and unfortunately it is very little. There is more known about the personal situation of the professional representatives of other nations, but that, of course, does not interest us here. There is almost no information with reference to the external furnishing of the old Court drug-store of the Tsar founded by Englishmen, and of the ways in which they carried on their business during the first decenniums of its existence, but there is some, though in many respects very incomplete, to be obtained from contemporaries of the second half of the seventeenth century.

The entire administration was probably entirely concentrated, up to the foundation of a special pharmaceutical magistracy (in the first quarter of the seventeenth century), in the hands of the chief apothecary, while a dignitary of the Court, the so-called "aptekarskoy boyarin," had the formal control. The order and the scrupulousness of the preparation and dispensing of medicaments, as follows from old written account-journals, was an almost pedantically accurate one, which is not astonishing considering that the drug-store delivered medicaments almost exclusively for the Tsar's family, and only in very exceptional cases, with the permission of the Tsar, for high dignitaries and persons of rank. Neither could physicians practise freely, they could only treat private persons in exceptional cases and with the imperial permission; therefore they led a very quiet life, and almost always remained at home or in the drug-store, as an old writer of travels, Olearius, ironically reports. The ancient Court drug-store was not only provided with all that was necessary, but even with considerable luxury; the glasses were of the finest cut crystal; many vessels and the screw-lids of the boxes were of chased silver, richly embellished with ornaments, the inscriptions pompously gilt, the cupboards and tables of the most precious kinds of wood. ". . . . So that I can say with truth that I have not seen any such drug-stores far and wide." Thus a writer of travels of the seventeenth century, Schleissing, closes his description of the magnificence of the old Court drug-store of the Tsar.

Perhaps more details can be found in the native country of those ancient English apothecaries who emigrated to Russia, and I should feel very grateful to my present colleagues if such information were forwarded to me through the mediation of the Editor; it would make a valuable contribution to my work concerning Russian pharmacy, soon to be published.

THE DISPENSER'S ART—ITS DEMANDS, CLAIMS, AND RESPONSIBILITIES.*

BY H. MACNAUGHTON-JONES, M.D., M.A.O., M.CH., F.R.C.S.I. AND E.

(*Continued from page* 234.)

Therefore I may say on your part, I hope with perfect truth, that whatever be your aims, scientific, social or financial, they are all subsidiary to the advancement, in the highest sense of the word, of your calling. If this be true, then I am heart and soul with you, for you are fighting the battle of an art which has before it a great future, in its scientific developments and discoveries, an art which, side by side with medicine, tends to the alleviation of human and animal suffering, and rescue from disease and death. Medicine is indeed beholden of her handmaiden. How much does she not owe to botanical research, and who will measure her indebtedness to chemical investigations? What untold suffering in the past has not been prevented, and what immeasurable pain will not be relieved, not to speak of the incalculable saving of human life in the future by anæsthesia, asepsis, and antisepsis?

Let me now ask, Is the art of the dispenser worthy of being designated an art? What does the work you have to perform demand of you in capacity, intelligence, training, education, aptitude, and experience? I will here take it for granted that the Pharmaceutical Society's conditions for chemists and druggists, and still more for pharmaceutical chemists, may be taken as a measure of the minimum standard aimed at as a necessity at the close of your educational career. For I am not to-night addressing imperfect, immature, inexperienced, or bungling workers, but I am discussing the type of work to which I have just referred. It is the work of men responsible for carrying out, with skilful accuracy its details, an accuracy on which hangs the safety of the lives of those who rely upon it. And in order to approach a satisfactory answer to this question, I must ask you to recall to mind how pharmacy has advanced in this country for the last two hundred years. For it is by reviewing thus the traditions and growth of any profession in the past, and the work, of our pioneers and forerunners, and in justly appraising that work that we may best come to realise our own responsibilities and duties.†

If we look back to the commencement of the sixteenth century, and review during this time the relationship of the College of Physicians of London to the Society of Apothecaries and to the Pharmaceutical Society, we see the part played by the latter in

* Inaugural Address to the Public Dispensers' Association.

† I have to acknowledge as the source of most of this historical retrospect the work on the 'Progress of Pharmacy in Great Britain,' by Jacob Bell and Theophilus Redwood.

securing for the public a trained body of men, whose business it should be to dispense skilfully and accurately physicians' prescriptions. And the desire was not only to improve this art of dispensing, but also to fit this same body of skilled pharmacists to carry out difficult chemical analysis, examine into the purity of drugs, assist in the compilation of national pharmacopœias, aid the State in the prohibition of the sale of poisonous remedies, and generally instruct those interested in the progress of pharmacy. Hence the Society took an active part in furthering legislative enactments dealing with the control, education, and sphere of action generally of chemists and druggists and pharmaceutical chemists.

For a period of three hundred years that retrospect shows the gradual evolution of the pharmaceutical art, side by side with the science of chemistry and its twin sister, experimental physics.

From this retrospective perusal, if we take the dates of the foundation of the Society of Apothecaries in 1617 and the publication of the first Pharmacopœia in the year following, we find, as a starting-point, that throughout the seventeenth century there was a struggle between the apothecaries and physicians as to the rights and privileges associated with the selling of physic and the compounding of prescriptions. The eighteenth century was prolific, but not more so than the nineteenth, in the production of pharmacopœias, Edinburgh producing those of 1722, 1736, 1783, and 1792, while in London we have those of 1721 and 1748. The eighteenth century was remarkable for the contests between the chemists and druggists and the apothecaries, and the reading of the recriminations between the two is not pleasant. The chemists vituperated the apothecaries for their inordinate charges and useless prescriptions, the apothecaries retaliated by charging the druggists with usurping the apothecaties' functions through the intrusion of uneducated and unskilful persons into professional practice, holding up to ridicule their ignorance and inefficiency. And here we find the first necessity for a more liberal education, both in regard to general culture, pharmacy and therapeutics, forced upon the druggists by the attitude of the apothecaries, who assailed the former as incompetent dispensers through this want of education. Two amusing instances of this were quoted by a hostile critic; one, of the foreman of a druggist at Croydon, seeking in vain amongst the different preparations in his dispensary for a sample of *Cucurbita cruenta*, and finding a satisfactory explanation in the translation, "an electric shock," while another searched the city of Worcester for a quantity of a "tincture ejusdem," which he found it difficult to obtain.

History has a tendency to repeat itself, and, as we have found in recent years a leaning towards the indiscriminate sale of medicines in places of business in which we should not, under ordinary circumstances, be inclined to look for such, so at the end of the eighteenth century we find it stated that in many places "the grocers took upon themselves this very benevolent office, or at least a part of it," and it would appear that even in some places the grocer went a little further, and prescribed, as well as sold, his drugs. In 1794 this feud between the apothecary and chemist led, on the part of the former, to the formation of the Pharmaceutical Association of 1794, and this Association led to a combination between the higher class chemists and druggists and the apothecaries, to guard their interests against the consequences of injurious Acts of Parliament, which aimed at interferences with their rights and privileges, and it also tended to encourage the formation of a line of demarcation between the functions of the apothecary and those of the dispenser. It also led to another effect —the independent criticisms on the part of skilled pharmacists, both apothecaries and chemists, of the various pharmacopœias, and proved the need for associating in the compilation of the national formulæ expert pharmacists selected from the ranks of the chemists with the members of the Colleges of Physicians and Surgeons.

The value of such association has been evident in the compilation of the different pharmacopœias of this century, from that of 1809 to the one just now being issued. We may hope that modern materia medica and pharmacy have their full and liberal recognition in this edition. Such recognition is sadly wanted. There can be no greater stumbling block in the way or pharmaceutical advance than the appearance of a pharmacopœia that requires re-editing before it leaves the printer's hands. Names of eminent chemists and pharmacists who have served in this capacity will be familiar to you, household names in the progress of pharmacy during the last fifty years, ending with that of one who is now doing yeoman service in this cause—that of Professor Attfield. It is remarkable how certain names of men, who are now active as leaders in the pharmaceutical world, were amongst those most prominent in the early years of this century. At the meeting held on March 14, 1813, to consider an important Bill then before Parliament we find, amongst others, those of Allen, Bell, Curtis, Hudson, and Savory, who were placed on a committee. And again in 1841, to resist another unfair and one-sided enactment, at a public meeting of chemists and druggists, we find the same firms represented, with such well-known ones as Corbyn, Dan. Hanbury, then found added to those of Allen, Dinneford, Hodgkinson, and Stead, Battley, Squire, and others. The active progress of pharmacy during the first half of this century is evidenced by the appearance of the Scotch Pharmacopœias of 1804, 1806, 1839, and 1849, with the English ones of 1809, 1824, and 1836, and the Dublin ones of 1805 and 1806. The criticisms and the suggestions of chemists and druggists—notably those of Mr. Phillips—largely helped to amend and complete all these successive editions, and the collateral works and abridgements bearing on them were largely contributed by pharmaceutical chemists and teachers of the cognate subjects of botany and chemistry. We physicians and surgeons should never forget this.

In Ireland an interval of nineteen years elapsed between the Pharmacopœia of 1807 and that of 1826, the third edition being published in 1851. Pharmacy was then in the hands of the licentiates of the Apothecaries' Hall of Dublin, but has now passed, as you are aware, into those of the members of the Irish Pharmaceutical Corporation.

Following on the formation of another temporary yet necessary and protective body, the Association of Chemists, in 1829, came the efforts to improve the position of pharmacists, in which Mr. Savory took so active a part. Then appeared the London Pharmacopœia of 1836. The parliamentary inquiry which embraced in its scope the relation of the medical profession to the chemists and druggists, was held in 1839, in which year we find, for the first time, the assistants of the druggists and chemists asserting themselves in an effort to secure an amelioration of their position in regard to Sunday closing and better hours generally. But the meeting fraught with the most important issues to pharmacists was the little tea-party held in the house of Mr. Bell, of Oxford Street, which took place on March 20, 1841, at which was determined the basis of a new and independent Society, to be called the "Pharmaceutical Society of Great Britain." Mark its recorded objects: "To benefit the public and elevate the profession of pharmacy; to protect the collective and individual interests of all its members in the event of any hostile attack in Parliament or otherwise; to establish a club for the relief of distressed or decayed members." This early definition of the objects of the Society was subsequently further amplified

and altered. It was stated to be "the union of the members of the trade into one body, for the protection of general interests, and the improvement and advancement of scientific knowledge." These objects brought the Society into line with the corporate medical bodies in the desire to obtain a higher standard of education, and a uniform system of examination, with proper registration. Pioneers of your art were those who met at the "Crown and Anchor" tavern in the Strand, on April 15, 1841, and for ever to be held in reverence are those who were chosen that day to form a committee to carry out the wishes of the meeting. The same impulses that prompted that meeting are those which bring you here to-night. I may venture to summarise these—to elevate the position and character of the dispensers, to obtain a wider recognition of your scientific and general attainments, to separate yourselves out clearly and as a class from all other so-called "assistants" in trade or business, to obtain credit for the conditions you are compelled to fulfil in order to arrive at your positions; in short, to stand together as an independent body of educated men, highly skilled in your technical art, with a trained intelligence which is the guarantee of security you give to us doctors and the lay public of the trust and confidence reposed in you.

(*To be continued.*)

DENTAL NOTES.

Refitting Rubber Dentures.

Rubber dentures can be refitted by first scraping the palatal safe of the old plate, then using a mix of thin plaster. Replace in the mouth, close the teeth tightly with the plate in place, varnish the impression flask, and pour the impression. Then separate the flask, remove the thin coat of plaster, roughen the plate and pack in enough rubber to fill the space.—*Dominion Journal.*

Quick Soldering.

Wrap the tooth well with asbestos cloth, cutting out the wrapping just where the solder is to flow, then make a pit in the solder block, into which place the wrapped tooth, and pack asbestos fibre round it. This investment is said to be as efficient and safe as one of plaster or sand.—*British Journal of Dental Science.*

A Low Fusible Metal.

A mixture of bismuth, 48 parts; cadmium, 13 parts; and tin, 19 parts, melts below the boiling point of water and is very hard. It melts at so low a temperature that it can be packed with the fingers. An ordinary plaster impression can be poured at once without waiting for it to dry.

Drawing Teeth Together.

In regulating teeth when the central incisors stand apart, dry the teeth, wrap No. 5 linen thread carefully round them three or four times and tie it. The shrinkage of the thread when moistened with the saliva will draw the teeth together.

Practical Hints.

When the fingers will not hold on a smooth surface such as glass, etc., use a piece of rubber dam to catch hold with.

A pellet of cotton held with a pair of pliers is superior to a camel-hair brush for applying varnishes, etc.; one is not then troubled with loose hairs.

To prevent tartar rinse the mouth freely once a day with water, in which a pinch of alum has been dissolved. It is harmless to the teeth and keeps the gums in good condition, preventing the accumulation of tartar.—*International Dental Journal.*

A substitute for articulating paper can be supplied by taking a piece of thin paper, wetting the finger with alcohol or water, and rubbing on a little polishing rouge. This dries quickly, and only takes a few moments to prepare.—*Brit. Journ. Dent. Science.*

Cases of white spots of decay on front teeth treated by burnishing them with a steel burnisher moistened with pyrozone will prevent recurrence of decay and save the teeth.—*Cosmos.*

A new formula for a local anæsthetic is given in *Zahnarz. Wochenblatt*, as follows:—Chloroform, 10 parts; ether, 15 parts; menthol, 1 part. Apply the spray to the surface, carefully guarding the nostrils meanwhile.

NOTICES OF BOOKS.

The 'Cumulative Index,' by Cedric Chivers and Armistead Cay (London: 10, Bloomsbury Street, W.C. 1*s.* 6*d.*), gives full particulars of all recent new books, under author, subject, and title, with cross references. It is published monthly, and each month's record is a permanent contribution to the year's bibliography.

The 'Scientific American Supplement' is perhaps not so well known in this country as the *Scientific American* itself, and it may be explained, therefore, that it is a periodical each number of which partakes of the nature of a monograph on some particular subject of scientific interest. The price of each part is 10 cents, post free, and a 'Reference Catalogue' just published (New York: Munn and Co., 361, Broadway), gives particulars regarding the contents of more than a thousand numbers.

The 'Handbook on the Workmen's Compensation Act, 1897. by M. Roberts-Jones (Cardiff: 'Western Mail,' Limited, 2*s.* 6*d.*), is a handy little book, now in its fifth edition and should be possessed by all employers of labour. It includes approved schemes of compensation, the Statutes referred to, notes, explanatory remarks, and other useful information.

The "Journal of Applied Microscropy" is a monthly publication, recently started by the Bausch and Lomb Optical Company, of Rochester, N.J. The second part of the journal contains articles on the study of the Myxamœbæ and the plasmodia of the Mycetozoa, a method of preserving the eye for sectioning, photography in the biological laboratory, the sectioning of seeds, and several others of a practical nature. Abstracts of important papers are also given, and a notes and queries column is begun. The annual subscription to the paper is five shillings post free, and the London publishers are Messrs. Dawbarn and Ward, Ltd., 6, Farringdon Avenue, E.C.

The Philadelphia Museums were established in 1894, after the close of the World's Columbian Exposition, with the view of gathering from all parts of the world, and to make immediately available to business men, full and specific information concerning trade conditions and trade connections. It was also proposed to place on exhibition manufactured products from other countries, in order that American manufacturers may be properly informed concerning the requirements of markets which it may be possible for them to enter; to bring before the manufacturers, dealers, and consumers of the United States samples of all the varied products of the world, that they may know and choose such as are useful to them; and to make complete examinations, analyses, and tests of these products, and to publish such information concerning them as may lead to a general understanding of their usefulness. There is a scientific department, the work of which is directed toward the collection and exhibition of the world's raw products, and the analysis and examination of all such materials. In addition, there is a bureau of information, the work of which is directed toward securing complete and practical information concerning all the principal trade centres of the world, the character of the business houses located in each centre, and the local demand for commodities of every description. The information collected is of such a kind as to render material assistance to any manufacturer or exporter who may be desirous of a more extended trade in foreign markets. The above particulars are gleaned from the official report of the museums, and fuller information concerning the institution may be obtained from the Secretary, 233, South Fourth Street, Philadelphia, Pa., U.S.A.

THE STUDENTS' PAGE.

EXPLANATORY NOTES ON THE B.P.

Spiritus Rectificatus.—The ultimate source of most of the alcohol used is starch from grain or potatoes. In the former case the grain is malted, that is, allowed to germinate. During germination there is formed in the embryo an unorganised ferment known as diastase, whose function is to convert the insoluble starch in the endosperm into a soluble form of sugar, to be utilised for the growth of the seedling. At a certain stage the germination is stopped by drying at a temperature sufficiently low not to destroy the diastase. The dried product, when ground, constitutes malt and contains sufficient diastase not only to convert its own starch remaining unconverted, but also the starch of a considerable quantity of unmalted grain, when the latter is mashed up with water and digested with it. The action of diastase on starch produces dextrin, of which several varieties are known, and ultimately maltose, a form of sugar directly fermentable by yeast. Malt extract is made by digesting ground malt in water. The expressed liquor is strained and evaporated *in vacuo* at a low temperature to avoid destroying the diastase which, during the digestion converts the starch almost entirely into maltose. The thick extract consists chiefly of maltose, and should contain also the mineral salts characteristic of cereals as well as diastase. The presence of the latter is recognised by the ability of the extract to convert a relatively large quantity of starch in the form of thick mucilage into a limpid solution of maltose and dextrin. Starch may also be converted into a fermentable form of sugar by boiling its mucilage with dilute sulphuric acid. The starch in this case is first hydrolysed to dextrin, but the final product is dextrose, not maltose.

When sugar solutions are fermented by yeast about 95 per cent. of the sugar is converted into ethyl alcohol and carbon dioxide, the remaining 5 per cent. appearing as glycerin, succinic acid, and the various forms of butyl and amyl alcohols, which together constitute the fusel oil of commerce. The exact mode by which the yeast produces its fermentative effects is unknown: it has been suggested, however, that the sugar molecules are taken up by the yeast cell and that the substances found in the fermented liquor are excretory products formed as the result of metabolic changes in the yeast protoplasm. Possibly the yeast retains a small fraction of the material for its own growth. Yeast, like all other forms of living matter, requires certain inorganic salts for its proper development. The actual amount is, however, relatively small, and sufficient is always present in ordinary fermenting liquors, derived from the water used or associated with the saccharine materials employed. In some breweries, by carrying on fermentation in vats of suitable construction, the carbon dioxide evolved during the process of fermentation in making beer is collected, and liquefied by pressure. The liquefied gas, preserved in steel tubes, is utilised for various industrial purposes, *e.g.*, the production of aërated waters.

The separation of the alcohol from the fermented liquor is one of the oldest applications of the process of fractional distillation. The distillate from the fermented solutions described above, when fractionated until the product has a sp. gr. of ·838 at 15·5° C. constitutes spiritus rectificatus, B.P. Spiritus vini gallici, or brandy, is defined in the Pharmacopœia as spirit distilled from French wine this being an alcoholic fluid obtained by the fermentation of grape juice, which contains both dextrose and lævulose. The distillate from such wine will be colourless and contain various esters and other volatile bodies derived from the wine, to which its characteristic flavour is due, while the colour of brandy is supposed to be derived from the casks in which it is stored. Much of the brandy found in commerce, and particularly the cheaper qualities, is nothing but plain spirit artificially flavoured to imitate the genuine and coloured by caramel. In some cases a certain quantity of real brandy is added to make the product resemble more nearly the article it is intended to represent. Brandy as imported is usually about "proof" strength. Fractional distillation is not capable of eliminating the whole of the water from alcohol, and commercially it is only applied to the extent of obtaining a distillate containing about 90 cent. of alcohol. The remaining 10 per cent. of water is abstracted by distillation after the addition of hygroscopic substances, such as anhydrous calcium chloride and potassium carbonate. The distillate will now contain something less than 1 per cent. of water, and constitutes the alcohol ethylicum or absolute alcohol of the Pharmacopœia. The removal of the last traces of water may be effected by the addition of a small quantity of metallic sodium, which reacts with the water to form sodium hydroxide. Even after this it is exceedingly difficult to obtain a distillate perfectly free from water, owing to the hygroscopic nature of ethyl alcohol, which causes it to absorb moisture rapidly from the air.

Sulphuris Iodidum.—The proportions of iodine and sulphur, 4 : 1, are almost exactly in the ratio of their atomic weights, 127 : 32. The compound, however, is a very unstable one, for although it dissolves in glycerin, in which free sulphur is insoluble, other solvents, *e.g.*, alcohol and ether, extract iodine and leave the sulphur.

Suppositoria.—The soap suppositories of the Pharmacopœia have not met with any success and will probably be omitted from the next edition. In making suppositories with oil of theobroma, care should be taken to keep the temperature of the melted oil as low as possible, and the mixture should not be poured into the moulds until it is beginning to thicken preparatory to setting. In making any desired number of suppositories—say six or twelve—it is necessary to mix materials for one or two extra to allow for the inevitable loss in manipulation. Do not add a piece of oil of theobroma without the corresponding quantity of medicament, for in this case 15 grains of your mass will not contain the full quantity of medicament ordered. It is usual to lubricate the surface of the moulds with oil, soft soap, or soap liniment; these can, however, be dispensed with if the moulds be well cooled, and the mixture poured in just before it is going to solidify.

Succior Expressed Vegetable Juices.—Preparations of the type of the official *Succi* were formerly more employed in medicine than they are at present. Investigations have shown that they are liable to very considerable variations in medicinal activity. It was held by many medical authorities, and is now by some, that the expressed juice containing the active principle or principles in their natural combinations was a more desirable form in which to administer certain drugs than a preparation obtained by the selective effects of a solvent, or by extraction with chemical substances. The introduction of liquor morphinæ bimeconatis is due to this idea, and is an attempt to imitate the action of morphine, as it occurs naturally in opium.

Syrups.—The official syrups are solutions or liquors (prepared by infusion, percolation, etc.) of various substances nearly saturated with refined cane sugar. In making them, care should be taken to accurately adjust the weight or volume of the finished product as directed. If this precaution be neglected, the syrup may be too strong or too weak in sugar; in the former case, some of the sugar will crystallise out on standing, and in the latter the syrup will be liable to ferment. For although a syrup of the strength indicated in the Pharmacopœia will keep perfectly well under proper conditions, weak solutions of sugar form a very favourable nutrient medium for the cultivation of moulds and bacteria. The weight of the pan or other vessel in which the syrup is finished off should, therefore, be carefully recorded so that the final adjustment may be accomplished without the necessity of transferring its contents to another vessel.

Terebinthina Canadensis.—This substance is always called by the synonym "Canada balsam," although it does not belong to this class of bodies, if the definition be accepted that balsams are resinous bodies containing benzoic or cinnamic acid. Note, however, that it is called Canada balsam in the official formulæ for the preparation of Blistering Paper and Flexible Collodion. Canada balsam is an oleo-resin; on exposure to the air it therefore solidifies, partly by evaporation of the oil and partly by the oxidation and consequent resinification of the oil. The solidification of resinous bodies by addition of magnesia or lime is due to the acid constitution of resin. Resins, therefore, combine with bases to form complex salts—the so-called resin soaps, and in the case of the two bases mentioned we get insoluble magnesium and calcium soaps. For this reason the addition of magnesia or lime to resinous or oleo-resinous bodies which are to be made into pills should be avoided. The addition of these substances, although greatly facilitating the formation of a pill mass, renders the product practically insoluble in the fluids of the body. Aqueous solutions of potash, soda, or ammonia usually react with resins with formation of soluble soaps. The chief use for Canada balsam is for mounting microscopical specimens. As the natural balsam hardens so slowly it is best to replace the oil by some more volatile solvent, such as benzol, xylol, or chloroform. For this purpose the balsam is heated on a water bath until the residue becomes brittle on cooling, and then the solvent is added until the desired consistency is obtained.

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THE BRITISH PHARMACOPŒIA.

In anticipation of the publication of the 'British Pharmacopœia, 1898,' the *British Medical Journal* has devoted a timely leading article to consideration of the scope and object of the national medicine book. All that is specified on these points by the Medical Act, 1858, is that the General Council shall cause to be published a book to be called 'The British Pharmacopœia,' "containing a list of medicines and compounds, and the manner of preparing them, together with the true weights and measures by which they are to be prepared and mixed, and containing such other matter and things relating thereto as the General Council shall think fit." The interpretation of this clause practically leaves the Council a free hand, and that body in turn has, for the most part, left the arrangement of details to its Pharmacopœia Committee. The original idea of the compilers appears to have been to include only drugs of established reputation, reflecting current practice, and establishing a standard of purity, without assuming the task of instructing. Almost of necessity, however, the Pharmacopœia has become not only a standard for the purity and strength of drugs and their preparations, but also a guide to the most appropriate association of remedies, and a basis for text-books of materia medica and therapeutics. Nevertheless, it is not itself a text-book, to be read through page by page; for the expert it is a work of reference, whilst for the student it is a book full of information to be assimulated gradually, and requiring for its interpretation frequent reference to many other works, to say nothing of the necessity of experimental illustrations. But above all else, the Pharmacopœia should be regarded as a uniform standard and guide, enabling everyone engaged in the prescribing and dispensing of medicine to obtain and employ drugs, chemicals, and galenical preparations of undoubted purity and uniform strength.

In the opinion of Dr. A. T. Wilkinson, as expressed in a lecture delivered before the Manchester Therapeutical Society, it would be an advantage to the medical profession if there were three recognised books, revised at stated intervals by competent authorities. First, an extra-pharmacopœia, in which proposed new remedies could be included until they acquired established reputation; second, the British Pharmacopœia, containing none but well authenticated remedies; and third, a sort of index expurgatorius or list of medicaments that have been tried and found wanting. At the same time, he thinks that, as a book, it is surely unique; for "everbody professes acquaintance with it, hardly anybody possesses it, and the bulk of its preparations are rarely if ever used." This, of course, is the medical position, as explained by a leading Manchester physician. He is of opinion, and with some show of reason, that a medical Cromwell is needed to purge the Pharmacopœia, to rid it of its redundancies, and also to effect some radical changes in its constitution. The Pharmacopœia itself Dr. Wilkinson regards as the heirloom of the profession, and a very valuable one at that. Though the work has been much modified in the course of years, he thinks it still needs considerable reconstruction before it can be said to match modern medicine. Possibly, however, the work now in the press may meet his ideas on this point to a great extent, though he is not likely to find elegant pharmacy run riot to such a degree as he would seem to desire. His complaint concerning the old Pharmacopœia (? 1867) is, that whilst it rightly kept prominently before it the "fortiter in re," to a large degree it ignored the "suaviter in modo." In strict homœopathy there is little but the latter principle left, but it is thought that present-day medical practitioners may nevertheless learn a lesson therefrom. All are now said to feel that it is a matter of duty to present medicines to patients, and especially to children, in the least objectionable form, and it is urged that the time has gone by when the administration of medicine was considered wholesome discipline—good for the soul as well as for the body.

Accordingly, after quoting the success of prominent proprietary medicines in support of his views, Dr. Wilkinson pleads that, if such medicines are not to be prescribed by the profession, it ought to be possible to present the drugs in equally palatable form, but prepared according to official formulæ. The extended use of tabellæ, granules, compressed tablets, jelloids, capsules, etc., is indicated as suggesting ways by which the older medicinal preparations might be supplemented or supplanted, while the prescribing of proprietary medicines is avoided. Amongst other desiderata called for are "an innocent, well-flavoured, soft, or at any rate easily masticated, lozenge, with which any prescribed drug could be incorporated"; official "formulæ for each of the elementary preparations in which the excipients are alone included," the prescriber thus being left absolutely free in his choice of the active ingredients and able to avoid the everlasting mixture and pills. In like manner there is need for a stable solution of butyl-chloral hydrate to correspond with the syrupus chloralis hydratis; a preparation of "oil" of male-fern "saponified" with senega and suitably flavoured; an alcoholic solution of tar; a revision of existing ointment bases; a simple tincture of benzoin and a good antiseptic varnish. A plea for new flavouring agents, official asthma powders, and the use of more palatable preparations generally concludes the somewhat lengthy list of suggested additions to the "B.P.," at the close of which it is remarked that some of the official preparations were surely never tasted by those who introduced them; or, if once, never again. In fact, says Dr. Wilkinson, they are like a certain tincture which a friend of his only prescribes when he wishes to get rid of a patient. This, however, is criticism of a moribund work which will be replaced in a few short weeks by the outcome of the wisdom of a large number of experts in chemistry, botany,

pharmacology, and practical pharmacy, and as such, though interesting, it comes rather late in the day. The main point to note is that a representative medical practitioner considers that, if the Pharmacopœia "descended a step or two further from its throne," it would not be thought less dignified, nor would the profession disdain to be taught. Moreover, as bearing upon this point, it is suggested that a series of laboratory experiments "at the gustatory expense of the professors" (*sic*) would save the practitioner time and the public nausea, and would afford another illustration of the self-sacrifice of the profession. With this suggestion our readers will cordially agree, and doubtless many of them will be pleased to secure the collaboration of medical men in that direction.

OF PARLIAMENTARY PROCEDURE.

WHEN any statutory body arrives at the conclusion that a change in the legal conditions under which it exists is desirable, it is, of course, first necessary to draft a Bill. That preliminary step accomplished, a Member of Parliament must be found to introduce the Bill, and it is usual to ask others to give him at least moral support by "backing" it, that is by allowing their names to be inscribed on the back of the document. The next thing is for the Member in charge of the Bill to give notice that he intends to move for leave to introduce it, but the introduction is quite a formality, and the first reading of the Bill is a misnomer, for nothing is read but the title, and the actual "Bill" handed to the clerk at the table is seldom more than a blank sheet of paper. Prior to that, however, even if the Bill be nominally an unopposed one, it becomes necessary to decide whether it shall be exposed to the chances of war in discussion, or not. In the former case, and also if the Bill be an opposed one, a place must be found for it, no easy thing for any other than a Government Bill nowadays.

If, however, the Bill be unopposed, it is put down on the order paper for some particular night, and if the absence of opposition continues, the embryo Statute is duly brought up for the second reading after all the other business of the House has been disposed of, *i.e.*, after twelve o'clock at night, and, provided no one objects, is advanced another step in its course. For a Bill to have passed the second reading implies that the House approves of the principle involved. But details have yet to be settled, and the committee stage follows in due course. That is the time for amendments to be proposed, and after this ordeal is passed, the third reading usually follows without question. This is, course, a very bald summary of what actually takes place. The procedure in the House of Lords is much the same, but more speedy. The periods of danger for a Bill, in either House, are the second reading and the committee stage. The former has been successfully passed by the Pharmacy Acts Amendment Bill, so far as the House of Commons is concerned, but a single Member of Parliament has prevented the Bill advancing further. It is hardly desirable that we should consider in detail the object of this quite unnecessary and only temporary check, but it seems quite obvious that it is not caused by any particular regard for public policy on the part of the individual Member concerned. It is, unhappily, quite possible for public and private interests to clash in the fulfilment of what should be a purely public function, but whilst we recognise the pity of it, the only remedy is to wait patiently and work for the removal of the stumbling-block.

ANNOTATIONS.

PHOTOGRAPHIC CHEMISTS are on the increase, the result of recent inquiries being to show that probably not far short of a thousand registered chemists deal to a greater or less extent in photographic materials and appliances. Accordingly, they constitute a very large proportion of those amongst whom the *Pharmaceutical Journal* regularly circulates, and from time to time space has been devoted in these pages to their special requirements. It would appear, however, that more, rather than less information in this special direction would commend itself to our readers, and it is proposed, therefore, to endeavour to treat the subject more systematically in future. Not that any attempt will be made to compete with the regular photographic journals; the intention being rather to supply such information as can be turned to definite commercial advantage. To inaugurate the coming season, a special photographic supplement will be issued with next week's Journal, and in connection with the preparation of that the aid of leading photographers—pharmaceutical, medical, and others—has been invoked.

READERS WHO REQUIRE SPECIAL INFORMATION, advice, formulæ, etc., are once more reminded that they need only ask and receive, arrangements having been made to refer all queries to experts, whilst replies will be published as promptly as possible. If the information supplied does not meet the requirements of the case, like Oliver Twist, the correspondent should ask for more. Frequently, however, queries sent in are far from definite, and in consequence it is not always easy to determine what is actually wanted. On the other hand, readers whose requirements have been met by the replies published, and particularly those who have obtained satisfactory results with the formulæ suggested, are reminded that an acknowledgment of the fact would be a desirable thing, the more especially as the knowledge of success in any case is of value in enabling those who reply to the queries to proceed more confidently in future instances. The equivalent of a correspondent's subscription to the Journal is frequently more than absorbed in replying to one or two queries that he sends, and in common fairness to other subscribers he ought to feel it incumbent upon him at least to intimate whether the process or formula recommended has proved successful. Beyond that, he may often have useful hints to impart, and in such a case it is hardly necessary to state that the hospitality of these pages is freely offered to him.

THE PROCTOR TESTIMONIAL is to be presented on Wednesday next, March 30, on which day the complimentary dinner will take place at the Métropole Hotel, West Clayton Street, Newcastle-on-Tyne. We regret to learn that Mr. Proctor will not be present, as he is unfortunately unable to leave his house, being in a very uncertain condition of health. Nevertheless, it is to be hoped that as many as possible of his old friends and newer acquaintances will make a point of being present on the occasion, in order that they may testify their appreciation of the great work he has done for pharmacy during so many years. Applications for tickets (4*s.* each) should be addressed to the Hon. Secretary (Mr. Geo. F. Merson), 24, Newgate Street, Newcastle-on-Tyne.

THE BRITISH PHARMACOPŒIA, 1898, is now in the hands of the printers, and in response to numerous inquiries, it may be stated that the work will be made accessible to the public in advance of official publication, by placing copies of the book in the Registrar's Offices in London, Edinburgh, and Dublin. The London office is 299, Oxford Street, W.; the Edinburgh office, 1, George Square; and the Dublin office, 35, Dawson Street. Official publication is intimated by advertisement in the London, Edinburgh, and Dublin

Gazettes, and from the date of such advertisement the new Pharmacopœia will be for all purposes deemed to be substituted throughout Great Britain and Ireland for the Pharmacopœia of 1885, now in use. For the information of readers who may not be able to refer to the copies at the Registrar's offices, it may be stated that the Executive Committee of the General Medical Council has formally resolved to send other advance copies to the medical journals and to the *Pharmaceutical Journal*, and that no time will then be lost in rendering the contents generally available.

The Question of Registration, and its necessity or non-necessity in the case of medical men, was recently raised at Westminster Police Court, when an application was made on behalf of the General Medical Council for a summons under the fortieth section of the Medical Act of 1858, against a person who was alleged to have falsely asssumed a medical title. It was stated that the person referred to had for some offence had his name erased from the Medical Register, but notwithstanding that, he continued to practise, using titles implying that he was still a registered practitioner. The magistrate—Mr. Sheil—expressed the opinion that there is nothing compulsory about registration if a man possesses the necessary qualifications, and he asked to be shown anything in the Act which says that a man who has a degree is prevented from practising owing to non-registration. He said that even if a person had been struck off the Register for grave misconduct that would not make him any the less M.D., if he had ever taken that degree, and he did not think there was anything in the Act making it obligatory for a qualified man to be registered. Mr. Shiel thought there ought to be such a provision, but, under the circumstances, he declined to grant a summons. It will be distinctly interesting to watch the developments of this case, if it should be carried further, as we hope it may be.

The Association of Chambers of Commerce, at its thirty-eighth annual meeting, concluded at the Whitehall Rooms, Hotel Métropole, on Thursday, March 17, resolved unanimously that the compulsory adoption within some limited period of the metric system of weights and measures legalised by the Act of last session should be advocated by every possible means, with the view of inducing Her Majesty's Government to afford facilities for the amendment of the law in that respect, and that a copy of this resolution should be sent to the President of the Board of Trade and to the First Lord of the Treasury. Meanwhile, the Association urges the Government to adopt the metric system of weights and measures, as far as possible, in all Government contracts and returns, so as to make it familiar to the people, and has resolved that a communication to that effect shall be made to the President of the Board of Trade. It is further recommended that individual chambers of commerce should press the matter upon the attention of local governing bodies, to the end that those also may employ the metric system in all public contracts, and thus facilitate its general adoption.

The Lord Chief Justice, speaking at the annual dinner of the Birmingham Law Students' Society, held on Saturday last, on legal education, said he recognised the advances which had been made in that direction in some large cities, but expressed the opinion that in the main the education of those who desire to become solicitors is carried on by a system of cramming and not of enlightened study. He acknowledged that in his own branch of the profession things are not much better, and whilst pointing out that there are certain exclusive privileges given to members of the Bar, and certain important offices which are almost exclusively considered to belong to them, he desired to know what right barristers can urge for the maintenance of those exclusive rights and privileges unless they are able to show special and peculiar learning and fitness for the discharge of the duties appertaining to those positions. The Inns of Court have in bygone days done great things, but in the matter of legal education they are lagging far behind the needs of the day. They have means of carrying on legal education on a broad and enlightened basis, but instead appoint a limited number of readers to deliver a certain number of lectures, at which attendance is required, followed by an examination which can, by the cramming of a man of average ability, be mastered in a period not exceeding six months. That, said the Lord Chief Justice, is supposed to be adequate preparation for the pursuit of a profession which involves not only great opportunities, but also grave responsibilities. However, the promised Teaching University for London offers an opportunity, of which he hopes the Inns of Court will avail themselves, of remedying this state of things, by creating a faculty or school of law in connection with that University. By reading "registered chemists" for "barristers," in the above remarks, the position of the former at the present day is not unfairly represented, and it may be suggested that the remedy for existing evils in both cases is obviously the same.

The Encyclopædia Britannica is well known as the leading work of reference in the world. It embraces all branches of human knowledge, and was written by specialists of the highest distinction, including scholars, divines, masters of science and philosophy, statesmen, soldiers, sailors, financiers, jurists, surgeons, artists, engineers, manufacturers, sportsmen and travellers. Unfortunately, this collection of treatises upon all conceivable subjects is not available to the man in the street, the catalogue price of the work being no less than thirty-seven pounds. But, by an unprecedented exhibition of enterprise on the part of the proprietors of the *Times* newspaper, a new re-print of the latest edition of the Encyclopædia is offered complete for fourteen pounds, or on payment of one guinea with the order and thirteen monthly instalments of one guinea each, after delivery of the twenty-five volumes. Readers desirous of taking advantage of this exceptional offer should apply at once to Mr. George Edward Wright, *Times* Office, Printing House Square, London, E.C., enclosing the initial instalment of one guinea.

Analyses by Public Analysts continue to furnish grounds for grave scandals, and on Friday last week, in the House of Commons, Mr. Duckworth asked the President of the Local Government Board whether he was aware that, in the course of a fortnight, three separate analyses of the analyst of the Islington Vestry had been proved to be inaccurate when the samples dealt with were referred to Somerset House. He also asked whether the Local Government Board would take any steps to inquire into mistakes which so seriously affect tradesmen against whom summonses are issued upon such mistaken certificates. Mr. Chaplin, in reply, said he had already taken steps to inquire into the cases referred to, and found that the results of the analyses by the public analyst referred to did not accord with those made at the Government laboratory. The cases were therefore dismissed, the defendants being awarded costs. It would, he said, be impossible to go into the details of those cases as represented by the Vestry and the chief officer of the Government laboratory within the limits permissible in an answer to a question. He remarked, however, that under the existing law the Court, in any case where proceedings are instituted in respect of alleged adulteration, can, on the application of either party, refer the sample to the officers of the Board of Inland Revenue, with a view to its being analysed and reported on by them.

Pharmaceutical Transactions.

LIVERPOOL CHEMISTS' ASSOCIATION.

A very successful and in many respects unique affair was

The Annual Dinner

of the above Association held on Thursday evening, 17th inst., in the Adelphi Hotel, under the direction of the President, Mr. John Bain. The presence of the Lord Mayor of Liverpool (Alderman J. Houlding), the Lord Mayor of Manchester (Alderman Gibson), and the Mayor of Bootle (Dr. McMurray), added considerably to the importance of the occasion, which was further enhanced by the attendance of Professors Boyce, Carter, and Harvey Gibson, Drs. Brannigan, Carthew Davey, O'Flaherty, Barnes and Moore, and the following individuals of note in the world of pharmacy :—Dr. Symes and Mr. J. Rymer Young, members of the Pharmaceutical Council, Dr. Paul, Editor of the *Pharmaceutical Journal*, Mr. J. Smith, Local Secretary for Liverpool, and Messrs. John Evans, E. N. Evans, T. F. Abraham, A. H. Samuel, R. C. Cowley, J. J. Smith, J. Hocken, C. J. S. Thompson, P. H. Marsden, W. Pearson, H. Jackson, A. S. Buck, and a full muster of the councillors and other office bearers of the Association.—After a capital dinner had been duly discussed, the hundred and twenty guests settled down to enjoy a long programme of toasts and musical selections.—The usual loyal toasts having been disposed of, the President proposed the health of

The Lord Mayors of Liverpool and Manchester, and of the Mayor of Bootle.

The Lord Mayor of Liverpool had special claims upon their gratitude for the part he took in philanthropic work, which he had prosecuted among the poor during the whole of his long public career. It was almost unnecessary for him to remind his hearers that in the Lord Mayor of Manchester they had a brother pharmacist of whom they might justly feel proud, and for whom the Manchester people should cherish considerable regard, for it was due in no small degree to Alderman Gibson that the electric light installation of his city was of such a perfect and well-thought-out description. No words were needed to commend the name of the Chief Magistrate of Bootle, for, though the northern township was a separate municipality, from a business point of view it was none the less an important and integral part of the great city of Liverpool, and the centre of a busy shipping trade.—In acknowledging the toast, the Lord Mayor of Liverpool claimed to be as much of a chemist as any of his audience, judging by the chemical operation he conducted weekly, which was one in which, by the aid of barley, malt, and hops, he converted some thousands of gallons of water into what had been aptly characterised by no less an authority than the great Mr. Gladstone himself, as the only modern substitute for the "nectar of the gods." The passing of the Pharmacy Act was one of the best things which had ever happened for the good of the public, and it was only right and proper that the operations of dispensing and selling drugs of a poisonous nature should be confined to the hands of persons properly educated for the purpose, and certified as competent by examination.—Referring to the rivalry said to exist between "Liverpool gentlemen" and "Manchester men," the Lord Mayor of Manchester said facetiously that in Manchester they were determined to take the shipping trade entirely away from Liverpool to their own more convenient port of Manchester. He would act the part of a prophet and say that in the future Liverpudlians would have the mournful consolation of seeing their trade going past their empty docks to the more commodious ones of Salford and Manchester. The time was not far distant when such a state of affairs would come to pass; in fact, he would be more precise, and say that it would take place about the same epoch when the classical New Zealander would be engaged in his mournful survey of the dead city of London. Seriously speaking, however, he trusted that the trade of both Liverpool and Manchester would only grow and expand, for they were so mutually dependent on each other that a misfortune in one was just as greatly felt by the other. If he were to judge by the gathering of that evening, trade amongst his brother chemists must be in a flourishing condition, going far towards justifying the remarks he made at the dinner given to him by the Manchester chemists, where he said that the retail drug trade of to-day was more prosperous than when he first knew it. For this he was taken to task by one of the trade journals, the Editor of which must, he supposed, be a young man, without much experience of the subjects on which he wrote. For that paper taxed him with not only being unduly optimistic, but also with having made his own fortune by leaving the retail drug trade. His answer to that was that the money he had made was due entirely to the fact of the greatly improved condition of the retail chemists as a body, which enabled him to supply the demand their prosperity and increased trade created. He was so satisfied with the good that a training as a chemist conferred on its possessor that, if he had a hundred sons, he should train them all as chemists, for if they wished to go into other businesses afterwards, they would find their previous training invaluable.—The Mayor of Bootle endorsed the remarks of Alderman Gibson, saying that his early training was that of a chemist, in fact he was a pharmaceutical chemist when he joined the medical profession. He had, consequently, very great pleasure in proposing the toast of the

Liverpool Chemists' Association,

coupling with it the name of Mr. T. H. Wardleworth, one of the Hon. Secretaries.—In his reply, Mr. Wardleworth read telegrams from the President of the Pharmaceutical Society and the North Staffordshire Chemists' Association conveying best wishes for the success of the dinner, the Staffordshire chemists, who were also dining at Stoke, expressing regret at the death of Mr. Conroy, who was with them at their last dinner.—The toast of

The Pharmaceutical Society

was given by Professor Harvey Gibson, in a thoughtful speech, in which he pointed out the good work the Society had done, and was doing in the cause of education—the only sure method of raising the pharmacist to equality with the members of other professions and with their continental brethren. The opportunities of the Liverpool Chemists' Association to help in this great work were numerous, the principal being the co-ordination of the means already possessed for teaching the various subjects required by the examinations, so that they in their own town could do something to give that thoroughness to the education of students which he found in his capacity of examiner to the Society they were so often deficient in.—Mr. Rymer Young (Warrington) and Dr. Paul responded to the toast.—The other toasts were "Our Guests" and "The Chemical and Drug Trade." The musical programme, furnished by the Lyric Glee Singers and by Messrs. Raper, Platt, Eyton Jones, Bayard-Haddock, and Mr. R. Savory Ladell, was well rendered and carefully chosen.—The arrangements made by Messrs. Bain, Dutton, Wellings, and A. S. Buck ran smoothly and contributed to make the function, which terminated at midnight, a great success.

NORTH STAFFORDSHIRE CHEMISTS' ASSOCIATION.

The annual meeting of this Association was held at the Copoland Arms Hotel, Stoke-upon-Trent, on Thursday, February 17.—The chair was taken by the President, Mr. J. Averill, J.P., Stafford. The annual reports of the Hon. Secretary, Mr. Edmund Jones, and the Treasurer, Mr. Weston Poole, were read and confirmed. The latter showed a satisfactory balance in hand.—The election of officers resulted in Mr. Averill being re-elected President; Messrs. F. Adams and J. W. Moore, Vice-Presidents; Mr. Edmund Jones, Hon. Secretary; and Mr. W. Poole, Treasurer. A number of gentlemen were elected members of the Committee.—Votes of thanks to the officers for their services during the past year closed the meeting. Afterwards

The Annual Dinner

was held with highly gratifying results from all points of view. Mr. Averill presided, and there were also present the Vice-Presidents, Messrs. F. Adams and J. W. Moore, Mr. G. S. Woolley, (President of the Manchester Association), Mr. W. G. Cross, J.P. (Shrewsbury), Dr. A. R. Moody (Hanley), Mr. Edmund Jones (Hon. Sec., Hanley), Mr. Weston Poole (Treasurer, Newcastle-under-Lyme), and a large number of members and friends.

After the usual loyal toasts, Mr. J. W. Moore gave

Success to the Pharmaceutical Society.

The toast, he said, was one of the most important, in many ways, of the evening. It concerned all who practised the art of pharmacy, and they were glad to recognise in the policy of the Society matters which would benefit chemists generally. During the last thirty years—the period he could best remember—there had always been hopes of an improved condition of things in pharmacy, and although much had been done for which chemists ought to be gratified, there was still room for much advancement.

The policy of raising the standard of examinations with a view of raising the status of the trade seemed satisfactory for districts where select pharmacy was practised, but in districts like the Potteries, where a general trade was principally practised and the higher branch was so little in demand, he questioned very much its beneficial or efficacious results. At the same time he sympathised with the action. The present Bill before Parliament did not contain all he could wish to see, but it was preparing the way for further progress. He hoped all chemists would seize the opportunities which the Society is endeavouring to place at their disposal for their benefit. If they did this the trade would gain much and the Society be encouraged. In conclusion, he referred to the high honour which Her Majesty the Queen had conferred upon the Pharmaceutical Society and the trade generally by presenting Mr. W. Hills with a Jubilee Medal.

Mr. W. Gowen Cross (member of the Pharmaceutical Council) responded. He said he was proud to be present to acknowledge the toast. The Pharmaceutical Society, far from being a small or insignificant society, represented the best features of a true old guild, and was looked up to as being all that was best of pharmacy in Great Britain and the Colonies. The Society was originated by founders who had the cream of businesses of their own in order that others might be better fitted to share in the cream. He referred to the consideration of the Pharmacy Bill by the Council, who, he said, tried hard to find a Bill with which all would be able to agree, and, having found one, they had already made considerable progress in Parliament with it, and there was now every likelihood of it becoming law. Mr. Moreton, M.P., and Dr. Tanner, M.P., who had supported the Bill with great skill and tact, and the President, Mr. W. Hills, through whom it was introduced, deserved the thanks of all chemists and druggists. Speaking of local associations, Mr. Cross was glad to see that they were increasing in number and growing in strength. He believed, and he thought all should believe, that the more chemists combined and formed themselves into local associations for the discussion of matters of interest and concern to themselves, the better chance would they stand of improving their position by political or Parliamentary, as well as by social action. He complimented the North Staffordshire Association upon having so genial and able a President, and he hoped that the members would give the officers, who worked for the success of the Association, their sympathy and support. He wished them the highest success.

Mr. W. Poole proposed the toast of

The Medical Men.

He said he would like to see a closer alliance or relationship between medical men and chemists, and to see a more distinct line of demarcation drawn between prescribing and dispensing. If chemists strove to advance legitimate pharmacy the medical profession and the public would, he thought, recognise that it would be best to have experts to prescribe and experts to dispense, but custom had a great deal to do with the existing state of things which, in his opinion, was neither to the interest of the medical profession nor the pharmacists.—Dr. Moody, who responded, said few medical men were not prepared to admit the help that chemists had rendered, and were rendering, to the medical profession. He thought it would be a very good thing if all the chemists would unite to persuade medical men to give up dispensing. At the same time, he considered it a *sine quâ non* to attaining this end that chemists should abstain from prescribing. Chemists must bear in mind the fact that the British public were somewhat materialistic in their nature, and were scarcely satisfied to pay for advice on paper only, without having something more tangible in the shape of a bottle of physic or a box of pills to carry away with them. He did not think the public at present, especially in manufacturing centres, would welcome the idea of having to pay two fees—one to the doctor for his prescription, and one to the chemist for the medicine. He would gladly welcome an arrangement whereby chemists would give up prescribing and doctors cease to dispense.

Mr. Woolley, in proposing the toast of

The North Staffordshire Chemists' Association,

said he was a believer in provincial associations, and he had worked in connection with the Manchester Association for over forty years. During that time they had not met with the success they could have hoped for, but at the same time, he thought they could claim to have done good work, and they certainly had bright prospects of doing still more. Local associations had done good service in connection with the new Pharmacy Bill. There had been opposition in Manchester, but, fortunately, that had been withdrawn. He believed it was a generous and broad-minded Bill, and it was very much wanted. The Vice-President had alluded to the Bill as not containing all that was wanted, but it was not the slightest use going to Parliament for all they required without the Society had a solid basis. There were 15,000 or 16,000 chemists on the Register, but only 4000 or 5000 were associated with the Pharmaceutical Society. With only a small proportion like that it was impossible for the Society to do all that seemed desirable. He had seen it stated that the present Bill was nothing but a Bill for acquiring guineas. He knew something of the work of the Pharmaceutical Council, and he was sure that nothing was farther from the idea of the Council in presenting the Bill than a desire to acquire guineas. The Council was actuated by something far higher than that—by something that could not be measured by pounds, shillings, and pence. They wanted to get a solid Society, so that concerted action could be taken and some good done for all. It seemed to him that there were considerable elements of danger in a proposed Government Bill to regulate the sale of carbolic acid, and every association in the country ought to work in the direction of averting that danger. The Pharmacy Acts were based upon the principle that the safety of the public lay in the education of the vendor, and the Government ought not to go back upon that principle. If an unsatisfactory Bill was passed a great injury would be done to the trade. It was a matter that all associations should keep before them, and the President of the Pharmaceutical Society would give them the cue how to proceed in the matter. He hoped the North Staffordshire Association would continue to increase.

Mr. Averill, the President, responded. He said the Association could already claim to have done some amount of work, although it had only been in existence a year. The membership had increased and was likely to increase. So firmly was he convinced of the important influence that such associations had that he thought where chemists are not numerically strong enough in a town to form an association themselves they should amalgamate with other towns and form a district association. That would be a benefit to the Pharmaceutical Society in the first place, and consequently a benefit to the chemists. The North Staffordshire Association thoroughly approved of the new Pharmacy Bill, and the members looked forward to great advantages being derived from it. As for the North Staffordshire Association, it had been the means of bringing the chemists of the district together, with the result that they looked upon each other in the most friendly manner. Much praise was due for the Association's success to Mr. Edmund Jones, the Hon. Secretary, who had been the means of working the Association up to the present state of efficiency.—Mr. Jones also responded, and several other toasts were subsequently proposed.

TUNBRIDGE WELLS PHARMACEUTICAL ASSOCIATION

A general meeting of the chemists of Tunbridge Wells and neighbourhood was held on March 11 to consider the desirability of forming a local association. Among those present were Messrs. Booth, Chatterton, Dunkley, Gough, Gower, Green, A. Nicholson, G. Nicholson, Ogle, Pearmund, Robinson, Rogers, Sells, Stanley Smith, Tute, Wardley, and A. E. Hobbs (Local Secretary Pharmaceutical Society and P.A.T.A.). The chair was taken by Mr. R. A. Robinson, L.C.C. It was decided to form an association, and a sub-committee was chosen to arrange rules, etc., for a subsequent meeting to decide on. A cordial vote of thanks to Mr. R. Howard for his services as Local Secretary to the Pharmaceutical Society during a number of years was unanimously passed. A general discussion took place, and several matters of interest were deferred till a subsequent meeting.

CHEMISTS' ASSISTANTS' ASSOCIATION.

On Thursday, March 17, this Association met at 73, Newman Street, W., Mr. T. Morley Taylor, President, in the chair, when Mr. E. W. Hill gave a practical demonstration of

Water Analysis,

this making the third of the series of practical demonstrations given before the C.A.A. this session. At the outset Mr. Hill said he need make no apology for introducing such a well-worn subject, since it was work that could, with care and application, be carried out by the majority of chemists. Although the bacteriological examination of water was of recognised value, yet the science of bacteriology was not so advanced that a chemical analysis could be dispensed with, as in many cases where specific bacteria could

not be recognised a chemical examination revealed the presence of the organic accompaniments or pabulum of bacterial life, and indicated contamination. For the collection of the sample of water to be examined, a clean stoppered Winchester quart should be used, the bottle previously to the final filling being rinsed out with the sample. Care must be taken to collect a fair sample of water. A quantity should be allowed to run from the tap, or a gallon or so pumped to waste before filling the bottle. The water should be examined as soon after collection as possible. The physical appearance of the sample is first noticed and its colour observed in a two-foot glass tube over a white tile. Any smell when warmed is particularly important. Any suspended matter is separated in a depositing jar and examined under the microscope. Mr. Hill had brought a specimen of Cyclops obtained from a sample of water. The total solids are estimated by evaporating 100 C.c. of a clear (filtered if necessary) sample, to dryness in a tared dish and weighing the residue. The weight in milligrammes multiplied by ten gives parts per million the usual mode of expression in water analysis, or if grains per gallon are required, multiply the number of milligrammes by seven and divide by ten. The residue is afterwards strongly heated, any blackening being noted, and then again weighed for total mineral matter. The sample tried blackened considerably, indicating the presence of organic impurity. Total chlorine is estimated by titrating 50 C.c. of the water with solution of nitrate of silver, of which 1 C.c. corresponds to 1 milligramme of Cl, a solution of chromate free from chlorides being used as indicator. The sample contained 120 parts per million, a very high figure. A high chlorine figure implies contamination with animal matter, unless the source of supply is contiguous with the sea or salt deposits. Ammonia is estimated by Nessler's colorimetric method. In a water containing the above large quantity of chlorine, if a reaction with Nessler's solution is obtained with the sample, sufficient evidence has been obtained to justify a condemnation of the supply. Ordinarily it is necessary to distil 250 C.c. of the water in a perfectly clean retort with a little recently-ignited sodium carbonate, until all the ammonia has passed over. The distillate is then placed in a Nessler glass with some Nessler solution, and compared with the colour produced by a known quantity of ammonia contained in a standard solution of ammonium chloride. Free ammonia from shallow wells implies organic contamination, whereas free ammonia from deep artesian wells is of little significance, being derived from the deep-lying strata, especially from albuminoid ammonia, or the ammonia derived from the joint oxidation and hydration of organic nitrogenous matter, as distinguished from that liberated from ammonium salts by alkali, is estimated in the sample used for the previous operation after the removal of free ammonia. 25 C.c. of Wanklyn's alkaline permanganate solution is added to the residual water in the retort with some ammonia-free distilled water if necessary, distillation being continued till no more ammonia passes over. The distillate is then Nesslerised, as previously described. Hardness before boiling and after (total and permanent hardness) is estimated by means of a standard soap solution, which is added to a definite quantity of the sample till a permanent lather is obtained. One degree of hardness in Clark's scale is equal to 1 grain of $CaCO_3$ to the gallon. The amount of oxygen absorbed in fifteen minutes, and four hours from acid solution of permanganate at 80° F. gives an idea of the total oxidisable organic matter contained in the water. The permanganate unreduced is estimated by the addition of iodide of potassium and titration with hyposulphite of soda. Nitrates are estimated by means of the zinc and copper couple. A piece of zinc foil is placed in a 3 per cent. solution of copper sulphate until a layer of copper is deposited. The foil is then washed and placed in a bottle with a quantity of the water for twenty-four hours. Nitrates are reduced to ammonia, which is estimated in the usual way. The presence of nitrates is important, as giving evidence of previous organic contamination. Nitrites are detected by acidified solution of iodide of potassium and starch paste. Their presence indicates recent contamination, but it is sometimes due to the passage of the water through iron pipes, the latter effecting a reduction of the nitrates. To detect presence of lead, copper, or iron, evaporate some of the water to a small bulk, test for lead and copper with ammonium sulphydrate and for iron with potassium ferrocyanide. Having obtained these analytical data concerning the sample of water under examination, it becomes necessary to judge of its suitability for domestic purposes. To this end it is necessary to have information concerning the source of the supply, the nature of the gathering ground, and the depth and position of the well. From a knowledge of the district whence the water is obtained it is often possible to explain an apparent abnormality, and thus save an unnecessary condemnation; but in any case, a water which gives rise to genuine suspicion should be condemned.—Mr. Morley Taylor said this was a valuable addition to the series of practical demonstrations given this session. He thought that the accurate use of colour tests required experience and a practised hand.—Mr. Fell, F.C.S., asked Mr. Hill if he had tried Tichborne's method of making soap solution with oleic acid and solution of sodium hydrate. In the estimation of nitrates he said the figure for albuminoid ammonia must be deducted. He would like to know if Mr. Hill had tried the ammoniacal solution of phenol test recently quoted in the *Pharmaceutical Journal* from a German source. He (Mr. Fell) had found it a failure.—Mr. Hyman recommended the indigo process for the estimation of nitrates. The standard solution was difficult to make, but the results were very satisfactory.—Mr. Pearson said Mr. Hill had omitted to mention peaty waters. In these waters he believed the oxygen absorption figure was very high, and the figures were in many respects misleading.—Mr. E. W. Hill briefly replied.—A splendid assortment of apparatus had been kindly lent by Messrs. Gallenkamp, everything necessary for a complete examination of water being shown. One of Messrs. Burroughs and Wellcome's Water Analysis cases was also exhibited.

PLYMOUTH, DEVONPORT, STONEHOUSE AND DISTRICT CHEMISTS' ASSOCIATION.

In connection with the Junior Section of the above Association, on Wednesday, March 16, at the Rooms, Whimple Street, Mr. J. D. Turney delivered a lecture on

The Structure of Foliage Leaves.

Mr. Turney, with the aid of an excellent lantern, illustrated his remarks in an able manner, and quoted interesting passages from Sir John Lubbock's works to emphasise his remarks.—At the conclusion the lecturer was warmly thanked, and a hearty vote of thanks was passed to Mr. Jas. Maurice for his generous gift of the lantern and accessories.

NEWPORT AND MONMOUTHSHIRE CHEMISTS' ASSOCIATION.

On Tuesday, March 15, this Association met at the Shaftesbury Hotel, Newport, Mr. T. Philip Garrett in the chair.—The P.A.T.A. movement was referred to, and Mr. J. W. Phillips having spoken in favour of the scheme, the Association resolved to use its influence to induce all chemists in the district to join.

The Pharmacy Acts Amendment Bill

then came on for discussion.—The Hon. Secretary, Mr. Benson Harries, who introduced the question, strongly supported the Bill, which he thought would tend to unite chemists into one body and would be of benefit not only to the Pharmaceutical Society, but to the whole trade. The local Members of Parliament had been written to asking them to support the Bill, and favourable replies had been received. Speaking of a curriculum, he advocated that it should include studies of a strictly business character.—After a general discussion a resolution was passed supporting the Bill.

Determination of Caffeine.—Trillich and Göckel give the following method for the determination of caffeine in coffee:—Moisten 10 grammes of finely ground coffee with ammonia in a separating funnel fitted with a glass wool filter. The mixture is set aside for half an hour, and then 200 C.c. of acetic ether is added, and the whole macerated for twelve hours with repeated shaking, the acetic ether solution is then run off, and the residue washed with three successive 50 C.c. of the solvent. The ethereal extract is then distilled and the residue boiled with magnesia, filtered and evaporated to dryness. The caffeine is dissolved out of the residue with acetic ether, or with chloroform, and filtered into a tared basin, the solvent evaporated off, and the residue weighed. A preferable method to the direct weighing of the alkaloid is to determine the amount of nitrogen in the residue by Kjeldahl's method, and from this to calculate the amount of caffeine.—*Pharm. Zeit.*, xlii., 53.

MEETINGS OF SCIENTIFIC SOCIETIES

ROYAL INSTITUTION.

On Friday, March 18, a lecture was given by J. Mansergh on

Bringing Water to Birmingham

from the Welsh mountains. Birmingham has an area of over twelve thousand acres and a population amounting in 1891 to 648,000. It lies on a slope having an altitude of from 300 in the north east to 800 feet in the south-west. The town was formerly supplied with water from the river Tame and by some wells in the red sandstone. It became evident that the sinking of new wells would fail to provide for the increasing population, and in 1892 a Bill was introduced into Parliament to enable a supply to be brought from Wales. By means of lantern slides the districts from which water is brought to Liverpool and Manchester were illustrated, and also that from which the Birmingham supply is obtained. The supply of Liverpool comes from a drainage area double that of Manchester, and the drainage area secured for Birmingham was double that of Liverpool. The Bill met with some opposition in Parliament, notably by the London County Council, who had a scheme for obtaining a supply from the same locality, and also by people interested in angling, for whose benefit a supply of 27,000,000 gallons a day had to be reserved prior to the river being tapped. In order to have a reserve supply for Manchester without lessening the quantity in Lake Thirlmere, from which it is obtained, the surface level of the lake was raised, and for Birmingham a series of six reservoirs will eventually be constructed, one of which—the Caban Goch—will contain more than the reserved supply in Thirlmere. Among causes affecting the constancy of supply the amount of rainfall and the compensating influence of evaporation were allowed for in the calculations. Since an overflow would greatly endanger the dams of the reservoirs, it was necessary to build them to a safe height, which amounted in one case to 128 feet. The water is conveyed by an aqueduct built of concrete and brickwork, which has a gradient of 1 in 4000. For crossing valleys steel pipes are used, which in one case—where they cross the Severn—descend to a depth of 550 feet, giving a high hydrostatic pressure. The service reservoir is situated at Frankley, six miles from Birmingham, where the water is made to pass through a series of filter beds. The structure of dams of earthwork and masonry were illustrated by means of diagrams thrown on a screen with the lantern. Photographic views of the river in the normal state and in time of flood were also shown, the flood, as is usual in mountainous districts, being very high. On the site chosen for one of the reservoirs there stood a church and burial ground, which had to be removed. A new church had to be built, and all the bodies in the graveyard taken up and re-buried. A description of the village built for the accommodation of the workmen employed was given. This village was provided with a school, hospital, and fire brigade. The arrangements made were so good that although small-pox was prevalent in the neighbourhood not a single case broke out in the village, while the children at the school passed their examinations with the highest credit. Views of the work in several stages of completion were shown on the screen, and greatly appreciated by the audience.

CHEMICAL SOCIETY.

At a meeting held on Friday, March 18, Professor Dewar, F.R.S., President, in the chair, it was announced that a notice of resolutions had been received from Messrs. Harden and Hartog, the first of which proposed that a ballot should be taken to determine the opinion of the Society upon the desirability of obtaining

A Supplemental Charter

that would allow of voting at the annual general meeting by proxy or by post. The second resolution proposed that if a majority favoured this scheme the necessary application to obtain it should be made by the Council. These resolutions had been considered by the Council, who had replied to Messrs. Harden and Hartog, pointing out that the first resolution would put into effect the proposed charter before it was obtained; that such action had been shown by counsel to be repugnant to the charter now held; and the resolution would therefore have to be ruled out of order by the President. It would further be *ultra vires* to use the funds of the Society for the purpose of taking such a ballot, but any private individual remained free to do this at his own expense.—A paper by Winifred Judson, B.Sc., and J. Wallace Walker, M.A., Ph.D., was read on

The Reduction of Bromic Acid and the Law of Mass Action.

The reduction of bromic acid had been carried out before with the use of hydrogen iodide as reducing agent, but it appeared that the method involved two things interfering with the observations on mass action. One of these is that the iodine produced, becoming dissolved in the hydrogen iodide solution, renders the reaction slower, and the second effect is that due to the formation of hydrogen bromide. In this work, therefore, the authors had carried out the reduction with hydrogen bromide. The method first employed was that of Harcourt, sodium thiosulphate being added as the bromine made its appearance, but in this way no velocity constant was obtained agreeing for different concentrations. Probably the velocity constant is represented by a cubical equation, but the presence of thiosulphate has a disturbing effect, bromine reacting on it directly in the acid solution. A definite constant was, however, obtained in working in the absence of thiosulphate with many different concentrations. The authors afterwards proceeded to study the action of hydrogen bromide and hydrogen bromate in absence of hydrogen sulphate, and here again a velocity constant was obtained. The velocity constant in the former case belongs to an equation of the fourth degree, and that of the latter to one of the second degree. In the latter case it amounted to 1/58th of that obtained by Ostwald with hydrogen iodide and bromic acid; that is to say, hydrogen iodide works fifty-eight times faster than hydrogen bromide upon bromate. The results of the work confirmed the deductions of Noyes upon the subject.—A paper was read by R. S. Morell, M.A., Ph.D., and J. M. Crofts, B.A., Ph.D.,

On the Action of Ferric Chloride on the Ethereal Salts of Ketonic Acids.

The authors of this paper have been engaged in attempts to isolate some of the brilliantly-coloured substances that are produced when ferric chloride is added to ethereal salts of ketonic acids. Reference was made to the work of Claisen, who believed that the compounds produced were of the type $FeRCl_2$ and FeR_2Cl. When ferric chloride dissolved in absolute ether is added to acetoacetic ether a purple oil is produced, soluble in much ether, giving a solution which is bleached by chloroform. The oil being separated, washed with ether, and dried *in vacuo*, was found to be extremely unstable, oxidation setting in while the iron became reduced. Similar effects were obtained with some other ethers, such as oxalacetic ether, and analyses were made which indicated that the substance was an addition product, but as they oxidised so readily the numbers obtained were only approximate. With ketophenylpyraconic ether a red oil was produced, which set to a solid mass, the analysis of which agreed closely with the formula $RFeCl_2$. On washing with water, ferric chloride separated and a compound of the formula FeR_2OH remained. Operating on the lactone of ethyl oxalcitrate, the authors obtained an oil having the composition of an addition product, which, on treatment with water, regenerated the normal salt of ethyl oxalcitrate.—A contribution by J. C. Porter, M.A., was entitled

Note on the Volatility of Sulphur.

It was observed by Mr. Porter that sulphur is continuously lost by evaporation at the temperature of the water-bath. By keeping a flask containing sulphur at this temperature for several days, a considerable amount of sublimate was obtained, which formed two zones on the neck of the flask, the one consisting of prismatic crystals, the other of octahedral. A neutral layer between these zones was found to have a temperature of 95°, which is the transitional temperature. It was found further that sulphur is easily volatile *in vacuo* at 100°, when it condenses in fairly mobile liquid drops. No diminution of the smaller drops comparable with the behaviour of dew drops could be observed, but it was found that all the drops cleared away around a central larger one, and it was therefore inferred that the greater drops grew at the expense of the smaller through volatilisation.—Professor McLeod remarked that the same observations had been made about the year 1870, and that phosphorus behaves in the same way, the vapour which has not been raised to the liquefying temperature of the substance yielding a

liquid on condensation.—The President remarked that the volatility of sulphur at the ordinary temperature could be easily observed by cooling a part of the vessel with liquid air, when a sublimate is at once visible.—A paper was given by T. B. Wood, M.A., W. T. N. Spivey, M.A., and J. H. Easterfield, M.A., Ph.D.,

On Cannabinol.

From the resin extracted from *Cannabis sativa* by extraction with ether a fraction is obtained which has been named cannabinol. This substance boils at 404° C., at the same time splitting off a hydrocarbon, which does not resinify by exposure. By the action of acetyl chloride on cannabinol a hydrogen atom is replaced, and a substance is obtained of the formula $C_{15}H_{18}O_2$, which has already been described by Messrs. Dunstan and Henry, who considered it the acetyl derivative of a substance $C_{18}H_{24}O$. When oxidised caproic acid and fatty acids of a lower type are produced; there is also obtained a product, oxycannabin, which has been described by Bolas and Francis, who gave it the formula $C_{20}H_{20}N_2O_7$. The composition also agrees, however, with the formula $C_{11}H_{11}NO_4$, while Messrs. Dunstan and Henry found its composition to be $C_{10}H_{10}NO_4$, who also had given it a higher melting point than the present authors. Four papers were given by B. Brauner, Ph.D., on the subject of

Thorium, Cerium, and Didymium,

under the titles of "Contributions to the Chemistry of Thorium," "The Atomic Weight of Thorium," "The Compound Nature of Cerium," and "Praeso- and Neo-Didymium." The first paper treated of the method of obtaining pure thorium compounds. This was done by recrystallising the double salt of thorium oxalate with ammonium oxalate, a compound by the analysis of which the atomic weight obtained for thorium was 232·59. While ammonium oxalate dissolves but little of the oxides of lanthanum, cerium, and others, it dissolves thorium oxide to an extent two thousand times as great, forming not an ordinary double salt but one of complex composition. The tendency of these earths to form such complex salts may be stated to be inversely as their basicity. Didymium was split into praeso- and neo-didymium by Welsbach, who gave the former as atomic weight the number 143·6, and to the latter the number 140·8. A description was given of the separation of lanthanum, praeso- and neo-didymium. On determining the atomic weights, praeso-didymium, to which Welsbach had given the atomic weight 143·6, gave the number 140·8, while neo-didymium gave 140·8 instead of 143·6, as described by Welsbach. The sulphate of praeso-didymium was found to be isomorphous with ythium, sulphate, and the metal therefore belongs to the type of yttrium giving the oxide Pr_2O_3. But a higher oxide also exists, Pr_2O_4, and an investigation was made to determine to which of the two classes of peroxides this one belongs. When treated with dilute acids it gave off oxygen, but formed no hydrogen peroxide, and appeared, therefore, to have the character of manganese peroxide, but it was subsequently found that this was not the case, the hydrogen peroxide produced being destroyed by reaction with the peroxide of praeso-didymium. It therefore belongs to the class of peroxides of which the type is barium peroxide. An analogy is shown by the salts of neo-didymium with those of cobalt, and by the salts of praeso-didymium with those of nickel. In conclusion, Dr. Brauner said that nothing could give him greater pleasure than that this work should be published in England, and in the English language.—Dr. Armstrong rose to congratulate Dr. Brauner upon the importance of this work, and to express the gratitude of the Society for his bringing this before them.—The President also expressed the gratitude of the Society for this valuable contribution which, he wished it to be noticed, was not the first the Society had received from Dr. Brauner.

Silver Sulphocarbolate as an Antiseptic.—This salt is introduced for use in the form of fine prismatic, white, odourless needles, which must be preserved in the dark. The salt commences to decompose at 120° C., liberating vapours of phenol. The residue contains silver sulphate. A still higher temperature decomposes the latter, leaving silver oxide and metallic silver. The solution of the salt is neutral; a black precipitate of oxide of silver is caused by potash solution. No decomposition is effected by ammonia. The salt contains 28·29 per cent. of metallic silver. Silver sulphocarbolate is a powerful antiseptic, and is to be preferred to silver nitrate, as it is non-caustic and is more soluble in water. It has given good results in surgical and ophthalmic clinics.—*Pharm. Zeit. f. Russ.*, xxxvi., 519.

PROCEEDINGS UNDER THE PHARMACY ACTS.

Pharmaceutical Society of Great Britain *v.* Harris.

At the County Court, Haslingden, on the 17th inst., before His Honour Judge Coventry, the Council of the Pharmaceutical Society of Great Britain sued W. Harris, of 69, Abbey Street, Accrington, for a penalty of £5 for selling poison contrary to the provisions of the Pharmacy Act, 1868.

Mr. R. E. Vaughan Williams, instructed by Messrs. Flux, Thompson and Flux appeared for the Society.

Mr. J. N. Withers represented the defendant.

In opening the case Mr. Williams said that the proceedings were taken under Sections 1 and 15 of the Pharmacy Act, 1868, the jurisdiction and mode of procedure being determined by the Act of 1852. After referring to various sections of the Statute which had a bearing upon the action, he stated that by Section 15 it was made unlawful for any person to sell a poison in any part of Great Britain unless such person was a duly registered pharmaceutical chemist or chemist and druggist, and that "to sell" included not merely an unqualified proprietor but also an unqualified assistant who conducted the actual sale. In this case the defendant was employed by a Mr. John Law, who carried on business at 69, Abbey Street, Accrington, and who was a qualified chemist and druggist. On November 13 last, a witness acting upon instructions from the Registrar of the Pharmaceutical Society went to the shop, where he purchased a bottle of Towle's chlorodyne. It was sold to him by defendant, who was not a qualified person. This chlorodyne contained a poison, viz., morphine, which was the chief toxic constituent of opium, and whether as "morphine" or a "preparation of morphine" it was included in the Schedule of Poisons to the Act. Upon these facts he should ask His Honour to find that this sale of poison was made by an unqualified man without the proper supervision of his master or of a qualified person.

Arthur Foulds examined: On November 13 last I went to 69, Abbey Street, Accrington. It was a chemist's shop, and the name over it was Law. I first asked to see Mr. Law, and was told by defendant that he was not in. I asked defendant for some castor oil and a bottle of Towle's chlorodyne. Defendant was the only person in the shop when I went in. He took the bottle out of a glass case on the counter, where there were other bottles of the same article exhibited. He did not refer to anyone before serving me. I subsequently handed the purchase over to Mr. Moon.

Cross-examined: I put my label on the wrapper the same day as I made the purchase.

Re-examined: Defendant told me his name was Willett Harris, and that he was a nephew of Mr. Law.

Harry Moon examined: I am clerk to the Registrar of the Pharmaceutical Society, and conveyed the instructions to Foulds to make the purchase. I received the bottle of chlorodyne from him. The wrapper was then unbroken. Subsequently I handed it to Mr. Eastes. I opened the wrapper in his presence and marked the bottle which was inside, and is now produced.

Cross-examined: The Society is allowed by the Treasury to retain the penalties. The application of penalties is dealt with by the Statutes. The Society does not take into consideration whether the qualified employer is a member.

Re-examined: The Society proceeds in every case of infringement reported to them. The Society is largely out of pocket in taking these proceedings; they are taken for the benefit of the public.

Ernest John Eastes, examined: I am an analyst and Fellow of the Institute of Chemistry. I received the bottle from Mr. Moon. I analysed the contents. I found it to contain 0·85 grain of morphine. That is a dangerous quantity, more than enough to kill a healthy grown-up person.

His Honour: Have you got any decision as to selling by assistants?

Mr. Vaughan Williams: Yes, Wheeldon's case, which I will hand to your Honour.

His Honour: Do you call witnesses for defendant?

Mr. Withers: I am afraid I cannot.

His Honour: Here is a decision directly in point and against you.

Mr. Withers: What I complain of is, if it had been a poison in the first Schedule, there might have been ground for complaint, as the sales of such poisons have to be conducted in a certain way, but here you have a poison not subject to any such regulations,

and the defendant is not told that he must not sell it. It is the defendant who is liable, and not his master, and he ought to have been told that he must not sell. Mr. Law does attend at the shop, and, although possible, it is highly improbable that he was out on the occasion referred to. I can only give general evidence, as it is impossible for Mr. Law to remember, and defendant does not remember whether he was asked by the witness if Mr. Law was in. I am bound to submit to the penalty, but I ask your Honour to exercise your discretion as to costs.

Mr. Vaughan Williams: I would call your Honour's attention to Section 13 of the Act of 1852, which gives the successful party full costs of suit; this, I submit, takes away discretion.

His Honour: There is another case against another assistant for selling Winslow's Syrup.

Mr. Withers: In the other case I shall have to submit to the penalty.

Mr. Vaughan Williams: I am, of course, prepared to prove the other case, which is against another assistant of the same chemist. I may say that the Society is bound to take up these cases in the interest of the public, as it is of the utmost importance that unqualified persons should be stopped from selling these dangerous articles.

His Honour: In these cases there has been not only an infringement of the Act, but an exceedingly bad infringement of the Act. I cannot do better than read the judgment of Mr. Justice Hawkins in the case which has been handed to me. "The facts are few and simple. The defendant was the assistant or servant of a duly qualified chemist, but he was not himself a registered pharmaceutical chemist or a chemist and druggist. It was contended that it was not unlawful under Section 15 for an unqualified assistant to a duly qualified chemist to sell poisons in his master's shop in the ordinary course of his master's business, that the sale being a mere sale by him as a servant in the discharge of his duty, the master was in law, and, in fact, the seller. It was further suggested that great inconvenience and hardship would result to small chemists who could not afford to employ qualified chemists if we were to hold otherwise."

Now the same judgment goes on to say, "We do not agree in the view thus presented, nor are we at all impressed by the suggestion of inconvenience or hardship. Nothing, to our understandings, can be clearer than that the object of the Act was, beyond all other considerations, to provide for the safety of the public and to guard as far as possible all members of the community from the disastrous consequences, so frequent in occurrence, arising from the sale of poisons by persons inadequately acquainted with their baneful properties, and the whole object of the Act would be frittered away and the Act itself become a dead letter were we to declare by our judgment that an unqualified assistant can lawfully and with impunity sell any of the poisons to which the Act applies, unless upon each occasion of such sale he acts under the personal superintendence of a qualified employer, or of a qualified assistant to such employer. By such personal superintendence we mean not mere presence in the shop or room where the sale takes place, but actual personal superintendence, so that every individual sale shall be so guarded round by those precautions prescribed by the Act that the safety of every member of the public may be provided for as far as the law can accomplish that object."

After that it would be absurd of me to give my own opinion. This is a bad case, letting two boys sell poison. I give judgment for the plaintiffs for the penalties with costs.

Pharmaceutical Society of Great Britain *v.* Riley.

At the same Court William P. Riley, of 69, Abbey Street, Accrington, was sued by the Council of the Pharmaceutical Society of Great Britain for a penalty of £5 for selling poison contrary to the provisions of the Pharmacy Act, 1868.

Mr. R. E. Vaughan Williams, instructed by Messrs. Flux, Thompson and Flux, appeared for the Society.

Mr. J. N. Withers represented defendant.

The judgment given in the previous case included judgment against the defendant in this case for the penalty and costs.

Pharmaceutical Society of Great Britain *v.* Chapman.

On the 22nd inst., at the Leicester County Court, the Council of the Pharmaceutical Society of Great Britain sued M. Chapman, of Bull's Head Street, Great Wigston, for a penalty of £5 incurred by keeping open shop for the retailing, dispensing, or compounding of poison contrary to the provisions of the Pharmacy Act, 1868.

Mr. T. R. Grey, instructed by Messrs. Flux, Thompson, and Flux, appeared for the Society.

Defendant appeared in person.

Mr. Grey stated that the Society was sueing the defendant, who kept a shop in Bull's Head Street, Great Wigston, for a penalty for keeping open shop for the sale of poison, viz., a preparation of opium called laudanum. After referring to the Sections having reference to the action, Counsel pointed out that opium and all preparations of opium were included in Part 2 of the Schedule to the Act, and that the sale of poisons in each part of the Schedule was subject to special regulations under Section 17 of the same Statute.

His Honour (to defendant): Do you admit this?

Defendant: I do not know what I am summoned for. I do not sell poison, I never sold a pennyworth of poison in my life.

Arthur Foulds examined: On October 27 last I went to Great Wigston. I went to defendant's shop—a general shop—the name over it being "Matt. Chapman, Football Outfitter and General Dealer," and purchased some tea, castor oil, and one pennyworth of laudanum. Was served by a woman, who poured the laudanum out of a large bottle labelled laudanum, which she took from off a shelf. The bottle into which the laudanum was poured was not labelled.

His Honour: Do you ask any question?

Defendant: I should like to say one thing. I am away in the summer time playing cricket, and I leave the shop in my wife's hands. I know the laudanum was sold, but I did not know it was in the shop. There has only been a shillingsworth in the shop since we opened it. I did not know I could not sell it.

His Honour: Ignorance of the law is no excuse. Dealing in poison is a dangerous thing, and it has to be put under strict regulations. It seems to me you do not dispute the sale.

Defendant: It was bought by my wife and sold by her.

His Honour: You left your wife to sell in your absence: she clearly sold this poison, and you are liable for the penalty. It is a most dangerous thing to allow poison to be sold in this way, and to let a poison go without a label upon the bottle. Is the penalty a fixed amount?

Mr. Grey: Yes. Section 15 fixes the penalty for each offence.

His Honour: I find a verdict for the plaintiffs for the penalty of £5 with costs.

PARLIAMENTARY NOTES.

The Pharmacy Acts Amendment Bill.—Just before the rising of the House on Thursday, March 17, as the orders of the House were being gone through, the committee stage of this Bill was called on, and Mr. Alexander Cross (Camlachie), at once moved to report progress.—Dr. Clark said he believed it was a harmless Bill, simply applying to members of the Pharmaceutical Society.—Mr. Cross: I am strongly of opinion that legislation regarding pharmacy should be all under one Act, and I object to proceeding with this Bill at this hour.—Progress was reported accordingly.

Mr. Cross triumphed, therefore, when the Bill came up for the committee stage. It was several minutes after midnight when the clerk at the table mumbled the name of the Bill, and the Serjeant-at-arms advanced with repeated bows to remove the mace to its committee position "under the table." Nearly two hundred members were present, and their sympathy with the pharmaceutical infant found expression in "Oh, oh!" when the fact of Mr. Cross's opposition was announced. Dr. Clark (Caithness), constituting himself the champion of the Society, appealed to the honourable gentleman to allow the Bill to be reported, and stated his grounds very well. The Bill, he said, only affected certain persons who desired to join a voluntary Society, and moreover, the points to which Mr. Cross desired to draw attention might well be discussed when the Poison Bill, which the Government had promised to submit, had been introduced. But the sweet reasonableness of the Doctor failed to charm the member for Camlachie, who, with the remark that "all amendments to the Pharmacy Acts should be contained in one Bill," sat down with the consciousness that for that night at least there would be no progress. The Serjeant replaced the mace, and the Pharmacy Acts Amendment Bill was deferred till the following day, when the same little drama of

opposition was repeated. The Bill was again down on the order paper for Monday, but no further attempt to advance it will now be made till Monday the 28th instant.

Notices of Motion relating to the Estimates offer conclusive evidence of the difficulty of pleasing everybody. At the present time there are no less than sixteen proposals to reduce the hard-earned salaries of Ministers. No department appears to have escaped the attention of the malcontents, the Home Secretary, Mr. Curzon, Mr. Chamberlain, Mr. Ritchie, Mr. Long, Mr. Chaplin, Sir John Gorst, and the Postmaster-General all being threatened with a more or less serious diminution of official income. Of course, in the long run, no one will be one penny the worse, but the motions for reduction afford a valuable opportunity of bringing to light various grievances which might otherwise never be known. We must confess to a feeling of regret that there are not two additional notices on the paper—one aimed at the Local Government Board in respect of Poor Law dispensers, and the other at the Home Office, touching the administration of the Pharmacy Act in Scotland.

South Kensington Museums.—Replying to Lord Balcarres on Monday, Mr. Akers-Douglas, the First Commissioner of Works, stated that the science collections now housed on the west side of Exhibition Road will in due time be removed to new buildings to be erected on the east side of the same road. The Indian and Oriental collections will follow the scientific treasures to their new home. The disposition of the present buildings has, according to Mr. Akers-Douglas, not yet been decided upon by the Government, and it is premature to discuss the matter until the new buildings for the reception of the various collections approach completion.

Parcel Post with the United States.—Mr. Henniker Heaton is at his usual useful work of urging postal reforms, and it must be confessed that the authorities are doing much to render his task easy. Replying to the Honourable Member for Canterbury on the 21st, Mr. Hanbury pointed out that the delay in establishing a service of parcel post between Great Britain and America has been due to the reluctance of the Government at Washington, which has since 1885 resisted all the attempts of Her Majesty's Ministers to bring about an agreement. There now appears, however, to be a better feeling at Washington and the Post Office authorities are sanguine that it will be possible shortly to announce the establishment of the service.

Adulterated Imports.—Major Rasch (Essex, S.E.) has given notice that he will ask on the 25th instant whether it is true that milk adulterated to the extent of 40 grains of boric acid per gallon is permitted to enter this country from the Continent, and whether it is a fact that such milk is prohibited for retail in the countries exporting it, and is really a specially doctored article for the British market. If the facts are admitted, Major Rasch will ask the Government whether steps will be taken to stop the importation. The object may perhaps be effected by publicity, for it is improbable that buyers here will run the risk of taking an article which may involve them in a Food and Drugs Act prosecution.

The Petroleum Committee met on Tuesday last and arranged its course of procedure. Mr. Jesse Collings was appointed to the chair formerly occupied by the late Mr. Mundella. It was decided to take no further expert evidence, though the advice of Col. Majendie, H.M. Chief Inspector of Explosives, will be invited at the next meeting of the Committee. The Inspector has already given his views to the Committee on a former occasion, when he put his finger on the chief defects of the present law. After the examination of Col. Majendie the Committee will probably utilise its other meetings in considering the stupendous volume of evidence, of a highly contradictory character, which has been addressed during the course of the inquiry from all sorts and conditions of men, commercial and scientific. It is not a light task to face, but the Committee hopes to report early in the Session.

To Drive Away Mice.—According to the *Scientific American*, mice may be driven away by thrusting rags soaked in turpentine down their runs. Substituting crude "carbolic" for the turpentine the same plan has been found effectual near London for banishing rats from a poultry run.

TRADE NOTES AND FOREIGN NEWS.

The Number of Chemists and Druggists and Chemical Manufacturers who were gazetted under receiving orders in bankruptcy in England and Wales during 1897 was 25, out of a total number of 4113, as compared with 27 out of a total of 4155 in 1896. For the month of December the number was 1 out of a total of 318, as against 2 out of 359 in the corresponding period in 1896.

False Trade Descriptions in India.—Copies of reports from the Governments of Bengal, Burma, Bombay, and Madras have been received at the Board of Trade Office with regard to the proceedings taken by the customs officials under the Indian Merchandise Marks Act of 1889. One of the cases in which goods were detained under the Act during the past year is more or less typical of the methods of certain manufacturers and importers of German goods. A consignment of German-made clinical thermometers, marked with the words "5 minutes," "1 minute," or "1½ minutes," was imported by a certain firm. On being tested by the Bombay customs officials the thermometers failed to register the temperature of the human body in the time stated, and the marking was therefore held to constitute a false trade description. Moreover, the goods were invoiced "made in Germany, washable," and on investigation it was found that while the name "F. B. Foster and Sons" was cut into the glass, the words "made in Germany" were marked on in such a manner as to be readily effaceable, thus conclusively proving to the officials that the indication of the country of origin was intended to be removed. A substantial fine was levied, and the thermometers were confiscated subject to redemption for reshipment to Germany on payment of the penalty. As the redemption penalty was not paid, the thermometers were destroyed.

The Rangoon Custom House officials detained amongst other goods fourteen consignments of paints, on the ground that the descriptions on the kegs were "false trade descriptions." The paints were branded and declared as "red lead" "white lead" and "white zinc" paints, the natural inference being that the contents were pure lead or zinc. On subjecting them to analysis, however, the chemical examiner found that the paints contained very varying and in some cases almost infinitesimal percentages of red lead, white lead and white zinc, respectively, the bulk being described as composed of so much sulphate of barium, and in one case of an organic colouring matter and brick dust. The Madras customs officials detected some 203 cases out of 8775 packages opened, involving provisions, paper, paints and oils, turpentine, dry colours, medicines, gilt thread, glassware, hardware, clocks, watches, beer, wine and spirits, piece goods, yarn, etc. The cause of detention in the majority of the cases appears to have been in not distinctly marking the goods, with the country of origin, and in trying to pass foreign goods as of English make. For instance, a consignment of German tobacco bore English descriptive words with the name of the German town of manufacture instead of the country of origin on the labels. German lavender water was found put up in bottles moulded with the English words "lavender water" without any indication that it came from Germany. Italian foolscap paper was imported with the sheets bearing a representation of Britannia on one side and the words "extra strong" on the other. Consignments of Dutch cheese, margarine, and butterine; Belgian gin, sheet and silver plate glass; Japan clocks; French, German, and Italian brandy; German beer, whisky, port wine, and sherry were all detected passing through with English words on the boxes and labels without any indication as to their country of origin. In most cases fines were imposed and the goods allowed to pass after being stamped "Made in Italy, France, or Japan, etc.," according to the country of manufacture. In other cases the goods were confiscated and sold when not redeemed, and the proceeds credited to the Government.

Chinese Oil Tree.—The United States Consul-General at Shanghai in a recent report states that the Chinese oil tree (*Aleurites cordata*) belongs to a family very common in China known as the "tung," the "Ying tzu tung" being especially cultivated for oil production, although it is said to be derived from other varieties. The tree is found chiefly in Hunan, Hupeh, and Szechuen. According to Hosie it grows to the height of fifteen feet, and seems to prefer thin, solid, rocky ground. It has large, beautiful green leaves, small pink white flowers, and large green fruit like an

apple. The oil is expressed from the seeds, which are large and poisonous, the fruit being gathered in August and September. The machinery used for extracting the oil, which is sent to market in tubs with tight-fitting lids, is of a very rude description, consisting of wooden presses with wedges. The oil is used in the manufacture of paint and varnish, waterproof paper, and umbrellas, for lighting purposes, and for caulking boats.

American Caviare.—The American Consul at Hamburg has been studying the demand for American caviare in Europe, and is of opinion that there exists a growing and profitable market for that article. Both lake and river caviare are now sent to Germany, chiefly from the Delaware River, Georgetown, Chesapeake Bay, the Fraser and Columbia rivers, the Great Lakes, and the Lake of the Woods. Lake caviare is preferred to that from the rivers on account of its larger roe, the latter being small and black in the river caviare. It is chiefly consumed in the cheap restaurants of Berlin, and a considerable quantity is also sent to Austria, Italy, and other European countries. United States caviare for the German market is salted in America with German salt, sent thither for the purpose, as it is claimed that this sal possesses preservative properties superior to those of American salt

OBITUARY.

Yeo.—On January 28, Charles Henry Fletcher Yeo, Chemist and Druggist, Brisbane, Queensland, Australia. Mr. Yeo was one of the first members of the Pharmacy Board of Queensland appointed by the Government when the Pharmacy Act came into operation, and has been re-appointed at every election since. He occupied the position of Chairman of the Board for four years, and was recently re-elected Chairman for the current year.

Martin.—On February 26, Richard Martin, Chemist and Druggist, Farringdon Road, London, E.C. Aged 52.

Edwards.—On March 2, Joseph Edwards, Chemist and Druggist, Brighton. Aged 70.

Gibbins.—On March 3, Thomas Henry Gibbins, Chemist and Druggist, Caledonian Road, London, N. Aged 65.

Langbeck.—On March 6, Hugo Waldemar Langbeck, Chemist and Druggist, Leman Street, London, E. Aged 54. Mr. Langbeck was an Associate of the Pharmaceutical Society.

Mitchell.—On March 7, Robert Harry Mitchell, Chemist and Druggist, Old Swan, Liverpool. Aged 32. By the death of Mr. R. H. Mitchell the Liverpool Pharmaceutical Students' Society has lost one of its oldest, hardest, and most enthusiastic workers. One of the original founders of the Society, he successively filled the posts of Secretary, Treasurer, and President, performing the duties of these several offices in a manner creditable to his powers of work and organisation, and to the satisfaction of his fellow "students." He contributed papers and notes on pharmaceutical subjects at each session of the Society, and was to have given an address on the 10th but for his untimely death, due to a heart affection following an attack of influenza. He was also an Associate of the Pharmaceutical Society. Before going into business for himself he had large experience in several good pharmacies in the Liverpool district, and was for some time with Messrs. Symes and Co., as manager of their branch in Tithebarn Street, Liverpool.

Richards.—On March 9, Thomas Lewis Richards, Chemist and Druggist, Borough High Street, London, S.E. Aged 62.

Streater.—On March 9, James Hobbs Streater, Chemist and Druggist, Sloane Street, London, S.W. Aged 50.

Walker.—On March 11, Thomas Walker, Chemist and Druggist, Dumbarton, late of Stirling. Aged 65.

Snook.—On March 19, Joseph John Snook, Chemist and Druggist, Mortimer Street, London, W. Aged 50. Mr. Snook was an Associate of the Pharmaceutical Society, and had long been a familiar figure in the world of pharmacy. He was apprenticed at Bath, and subsequently worked in the Messrs. Corbyn, Stacey and Co.'s Bond Street pharmacy. Later still, he went to Paris, where, as an assistant to Messrs. Roberts and Co., he was a witness of the great siege. Returning to London, he purchased the business of Messrs. Wilcox and Co., and more recently, that of Jozeau, in the Haymarket, as well as that of Roux, in Regent Street. He was very successful in business, and though somewhat blunt in manner, was a man of his word and very straightforward in all his dealings.

EXTRACTS FROM CONSULAR REPORTS.

The Camphor Export from Tainan (Formosa) for the year 1896 was 8001 boxes, a decrease of 2144 boxes on the preceding year, and of 4156 from the export of 1894. First cost prices in the interior during 1896 were—January, 30 dollars per picul (133⅓ lbs.); February to March, 35 to 40 dollars; April to May, 28 to 20 dollars; June, 17 to 13 dollars; November to December, 28 to 24 dollars. The Hong-Kong selling prices were: January to April, 79 dollars; May, 60 dollars; June, 37 dollars; July, 43 dollars; August, 50 dollars; from September to the end of the year, between 45 and 50 dollars. In the month of June the camphor business was practically brought to a standstill in the interior owing to the issue of certain regulations by the Japanese authorities affecting the production and sale of camphor, but repeated remonstrances from the Consular body had the effect of partly alleviating the situation.

The Importation of Opium into Formosa is now a Government monoply. Its importation into Japan, except as a medical necessity, is strictly forbidden, and opium smoking by Japanese is a crime punishable by penal servitude. In Formosa, however, the regulations are not quite so strict; practically every native over the age of twenty is allowed to smoke provided he is supplied with the necessary licence under the regulations and becomes a Japanese subject.

Opium Smoking Licences are issued in connection with the Government Laboratory at Taipeh, where the imported opium is refined and put, in three different qualities, into 1-lb. tins for distribution and sale to licence-holders. The licences are of three kinds, the monthly fees being the equivalent of 6*s*., 3*s*., and 7*d*., according to the class of smokers. A first class licence permits a man to smoke any quality of opium, but a holder of a second or third class licence may not, under a heavy penalty, smoke a higher quality than his ticket indicates.

Opium Police have been established in Formosa, and it is their duty to watch for infringements of the regulations and to enforce the penalty. They have authority, in the discharge of their duty, to enter and search houses informally at all times on a reasonable suspicion. Opium refineries are to be established all over the island, and, it is said, the Government contemplates supplying the outside market after satisfying the home demand.

The Government Sales of Opium in Formosa from April 1 to May 22, 1896, realised 84,384 dollars, and the revenue derived from the sale of smoking licences was £5844. The opium is sold by the Government at a fixed price of 12, 9, and 7 dollars per lb., respectively for the three grades of refined opium turned out from the Laboratory. The first grade is Benares opium, which is imported in its crude state at about 750 dollars per picul, while the refined article is sold at the rate of 1653 dollars per picul, thus leaving a good margin of profit to the Government, even after allowing for considerable waste during the boiling process. The expenses connected with the boiling are calculated to amount to from 20 dollars 22 cents to 21 dollars 3 cents per picul.

British Chemical and Drug Trade in 1897.—While the value of chemicals, dye stuffs, etc., imported into the United Kingdom during past year decreased to the extent of about £770,710 on the previous year, it is satisfactory to note that the export value of chemicals and chemical and medicinal preparations increased by some £431,928. The total figures for the two years 1896 and 1897 are respectively:—Imports, £6,776,920 and £6,006,210; exports, £8,242,936 and £8,674,864.

The Brewing of Beer in Bavaria is subject to certain restrictions imposed by the authorities with regard to brewing substitutes. The brewing must be effected with water, malt, hops, and yeast alone; the addition of any other substance during or after brewing is forbidden, and is punishable as falsification either by fine or imprisonment. Even the addition of compound parts of the beer, such as alcohol or water, after the beer is brewed, is punished as falsification.

LETTERS TO THE EDITOR.

THE NEW PHARMACY BILL.

Sir,—Having read with great interest the correspondence in the *Pharmaceutical Journal* about the above Bill, I should esteem it a favour if you would allow me, as a Minor man, to add my humble quota. Being in an isolated position, I have not yet had an opportunity of expressing any views upon it, either favourable or otherwise. Although an "outsider," I read the reports of the Pharmaceutical Society and its transactions through the Journal, and have not kept aloof through antagonism. I regard the Society as a body having great latent power, which cannot be brought into full action owing to the apathy and indifference of chemists and druggists. The new Bill should remove a great amount of personal animosity and prejudice towards the Society and its work, which so cripples any attempt at legislation. By rendering all Minor men eligible for membership, I confidently hope that it will result in a consolidation of the whole trade, thereby making the Pharmaceutical Society much more powerful than it is at present, able ultimately to approach Parliament with a revolutionary Bill. Why some pharmaceutical chemists oppose the present modest Bill, I cannot see, since it in no way interferes with their distinguishing title. The only equality will be that both pharmaceutical chemists and chemists and druggists will be equally eligible for membership. I am not aware that M.P.S. conveys any impression of qualification; for many old members have not passed either Minor or Major. One of our greatest enemies is illegitimate competition, and after spending time and money in training and qualification, one often finds that he is in a worse position than his unqualified competitor, who ignores Pharmacy Acts entirely. The present Bill appears to be a step in the right direction, and in process of time I trust that we shall see a new Pharmacy Act, having for its main object the improvement of the present wretched condition of pharmacy.

Leeds, March 15, 1898. G. W. KENDALL.

POISONS IN PART I. OF THE SCHEDULE.

Sir,—I should like to suggest a point that, to my mind, requires a little "daylight letting in," viz., the sales of the Syr. Hypophos. Co., whether B.P. or that of any secret manufacture. Such preparations come under the Schedule (I.), and it is very certain that the requirements of the Sale of Poisons Act are not carried out either by bogus or other limited companies. Some customers are quite annoyed when asked for their name and address for the purpose of registration, and retort that the syrup can be purchased elsewhere "without that nonsense." Now, sir, I maintain such laxity ought not to go on unchecked, especially when so much is being poached from the preserves of the law-abiding pharmacist.

Sale, March 23, 1898. ALLEN SMITH.

ANSWERS TO QUERIES.

FORMULÆ FOR PERFUMES.—Your requirements should be met by the formulæ published at page 302. [*Reply to* SYNTHETIC.—7/3.]

NEW BYE-LAWS.—The examination held in September, 1900, will be the first under the new Bye-laws. [*Reply to* A. B. C.—7/6.]

PHONOGRAPHY.—No, but if you already know it, you should make a point of retaining your knowledge. [*Reply to* FONO.—7/5]

NATURE OF POWDER.—The substance is powdered potassium bitartrate, as you should have been able to determine for yourself. [*Reply to* H. M. P.—6/21.]

POTASSIUM CARBONATE.—The first part of your query is founded upon a misconception of terms. You cannot speak of the quantivalence of a compound like potassium carbonate. The word quantivalence is used to indicate the exchange value (in terms of some unit) of elements in chemical reactions. The quantivalence or valency of most elements is variable; for example, sulphur is bivalent in H_2S, and hexavalent in SO_3. The reaction in making potassa sulphurate cannot be indicated by any one equation, because a number of substances are formed in addition to the sulphide, and the proportions in which these various substances are formed depend upon the temperature and other conditions under which the reaction takes place. Do not attach too much importance to equations. [*Reply to* W. M. B.—6/19.]

SANITARY INSPECTORSHIP.—Write to the secretary of the Sanitary Institute, Parkes Museum, Margaret Street, London, W. [*Reply to* SANITARY.—7/14.]

CAPSULE MACHINES.—Messrs. A. and K. Robertson, Rodney Street, Canonmills, Edinburgh, make such a machine as you require. Write to them for particulars. [*Reply to* W. I.—7/12.]

ACID. HYDROCH. PURIS. ON PAPER.—Your query was answered in the *Pharmaceutical Journal* for February 5, page 138. [*Reply to* MONA.—3/29.]

COVERING BY MEDICAL MAN.—The General Medical Council has decided that medical practitioners must not employ unqualified assistants, but no objection appears to be taken by that body to the employment of unqualified dispensers. [*Reply to* NEMO.—7/15.]

DENTAL ACT.—The Act applies only to the United Kingdom, which includes the Isle of Wight, but not the Channel Islands or the Isle of Man. There are no restrictions on the practice of dentistry in those islands, but there are in Australia and, we believe, in South Africa. [*Reply to* DENS.—7/20.]

HEADING THE DAY-BOOK.—If standing by itself, and not forming part of a sentence, Monday is rendered correctly by "Dies Lunæ." In a Latin sentence expressing the fact that something was done on Monday the form "Die Lunæ"—the ablative—would be used. [*Reply to* SIMPLEX.—6/8.]

MICROSCOPY.—Get a copy of Cross and Cole's 'Practical Microscopy' (Baillière, 3*s.* 6*d.*). You should have a good low power aplanatic pocket lens for dissecting purposes and examining botanical specimens, such as are made by C. Baker, 244, High Holborn, London, at fifteen shillings each. [*Reply to* S. P. S.—7/7.]

SPIRIT LACQUER FOR GRATES.—Shellac, 10; sandarac, 2; lampblack or vegetable black, 4; mastic, 1; methylated spirit, 100. Dissolve the resins in the spirit by mixing them and setting aside in a warm place for several days, shaking occasionally. Then stir in the black, and after mixing thoroughly, strain through fine muslin. [*Reply to* F. W. J.—6/13.]

ANALYSIS OF MEAT PREPARATIONS.—There is no work dealing with the analysis of meat preparations in a satisfactory manner. The best book giving analyses of meat preparations, and to some extent methods of separation of albumoses and peptones, is Dr. J. König's 'Die Menschlichen Nahrungs und Genussmittel' (Berlin: Dr. Springer). It must be remembered that the analysis of meat preparations is in a very chaotic condition, and many analyses that are published, extolling certain preparations, are of very little value. [*Reply to* BROCKLEY.—7/10.]

NON-EXCISABLE COCA WINE.—This must contain not less than half a grain of alkaloids per fluid ounce, and the wine must be, in the opinion of the Excise authorities, incapable of use as a beverage. This sometimes necessitates the addition of more extractive matter. Obviously the strength will depend upon the alkaloidal value of the leaves employed, which varies between wide limits. Take 4 oz. of coca leaves in No. 20 powder; moisten them with a little sherry in which a drachm of tartaric acid has been dissolved; pack in a percolator; add more wine, and when percolation commences close the lower orifice and macerate for 24 hours. Then continue percolation until a pint of fluid has been obtained. Determine the amount of alkaloid in this by Gunn's process (*P.J.* [4], iii., 249), and if the liquid is not of the prescribed strength add enough cocaine to bring it to the standard. [*Reply to* VINC.—7/4.]

CORRECTION.

RECTIFICATION OF REGISTER.—The Secretary of the Pharmaceutical Society asks us to state that the following name was inserted in error in the list of names published last week (see p. 300*d*):—

Gilmour, Andrew, 45, Stockport Road, Manchester.

Mr. Gilmour is still carrying on business at the above address.

COMMUNICATIONS, LETTERS, etc., have been received from Messrs. Allen, Bedding, Clague, Clarkson, Cribb, Hacking, Harvey, Hasselby, Hogg, MacGregor, Mason, Merson, Presley, Richardson, Shapley, Smith, Toone Tremeer, Wilson, Wyatt.

THE MONTH."

Strophanthin. Commercial strophanthin generally contains a small quantity of a nitrogenous body, which was first noticed by Catillon in strophanthus seeds. H. Thoms has been investigating this substance, and his results show that the seeds of *Strophanthus hispidus* and *Strophanthus kombé* contain, in addition to strophanthin, the two bases choline and trigonelline. The separation of these bases from strophanthin is best effected by precipitating the aqueous solution of the mixed bodies with ammonium sulphate instead of with tannin, as is usually the case. Strophanthin thus precipitated is then purified by several treatments with alcohol and ether, and finally obtained as an amorphous neutral substance perfectly free from nitrogenous bodies. Thoms intends to ascertain the composition of strophanthin so purified and its decomposition products, and hopes to obtain it in a crystalline form.—*Ber.*, 31, 271 and 404.

Chemical Action of the Electric Current. M. Berthelot has been studying the action of the electric current on carbon oxides, and when mixed with hydrogen and nitrogen as well as on alcohols and ethers. The action of the electric current on carbon oxide was to produce the solid brown oxide C_4O_3, and CO_2, and the same reaction ensued when nitrogen was present in equal volume, the nitrogen undergoing no alteration. Its action on carbon oxide or carbonic dioxide in both cases with excess of hydrogen was to cause a condensation forming

$$C_nH_{2n}O_n, \text{ or } (CH_2O)_n - MH_2O.$$

This reaction approaches the physiological condensation of carbon dioxide and water in plants and the pyrogenic reactions which occur in the formation of CH_2O in the dry distillation of formic acid. The addition of nitrogen to the mixture of hydrogen and the oxides of carbon gave, if the oxides were not in excess, a compound very rich in nitrogen of the formula $(COH_3N)_2$ corresponding to the uric and xanthine series of bodies. If the oxides of carbon were in excess the compound resulting from their condensation belonged to the series of ureides. In the case when free water was produced in the course of the re-actions, especially in dealing with carbon dioxide, the normal product of the fixation of nitrogen with the elements of water, namely, ammonium nitrite, was obtained. The action of the electric current on the various alcohols in presence of nitrogen showed that all the alcohols fixed nitrogen forming condensation products of the nature of amides, more especially amidines and their congeners.—*Comp. rend.* cxxvi., 609.

Colouring Matters of Delphinium Zalil. A. G. Perkin and J. A. Pilgrim find that three colouring matters exist in *Delphinium zalil*, which is much used in India for the production of a yellow colour on alum mordanted fabrics in the form of glucosides. The sparingly soluble colouring matter, $C_{16}H_{12}O_7$, forms glistening yellow needles, soluble in alkalies with a yellow colour. Fused with alkali it yielded phloroglucinol and protocatechuic acid, and by means of hydriodic acid it yielded quercetin with the evolution of 1 mol. of methylic iodide. By methylation it was converted into quercetintetramethyl ether, and by acetylation into a tetracetyl derivative of the formula $C_{16}H_8O_7(C_2H_3O)_4$, colourless needles, m. p. 195°-196°. It was evidently isorhamnetin, a quercetinmonomethyl ether, recently isolated from the yellow wallflower, *Cheiranthus cheiri*. By oxidation in alkaline solution it yields vanillic acid, and with alumina as mordant it dyes a purer yellow than quercetin. The chief constituent of the more soluble portion was recognised to be identical with quercetin, the colouring matter of quercitron bark. The residual colouring matthr, present only in small quantity, was not obtained in a pure condition. It resembled quercetin in percentage composition, and in its decomposition products, but differed from it in not reacting with alcoholic potassium acetate, and the melting point of its acetyl derivative. "Asbarg," as the dried flowers and flowering stems of *D. zalil* are called, resembles quercitron bark in dyeing property, but has only 35 per cent. the tinctorial power of that dyestuff. When freed from the flowering stalks, the material contains 3·47 per cent. of the colouring matter (not as glucoside).—*Proc. Chem. Soc.*, 190, 55.

Rhubarb and its Adulterants. L. E. Sayre has made a careful study of U.S.P. official rhubarb (*Rheum officinale* and *R. palmatum*), and compared it with *R. rhaponticum* and *Rumex hymenosepalus*. Thin sections of the first showed that the lighter coloured ground tissue was composed of thin-walled parenchyma, while the dark and contorted areas were principally fibro-vascular tissue, which was sometimes in regularly arranged spots having a radiate structure. In *R. rhaponticum* the parenchyma was also thin-walled, but there was a distinct and plainly-marked radiate structure, unbroken by such an arrangement of vascular tissue as described above. Starch grains, calcium oxalate crystals, and massed acicular crystals of chrysophanic acid were prominent in both specimens. Sections of canaigre root were totally different from those of rhubarb. Thin-walled parenchyma occupied the whole extent of the sections, being marked off into two areas by a concentric cambium line, and the central area occupied about two-thirds the diameter of the sections. About a dozen groups of vessels radiated from the centre to the cambium. When powdered, the two rhubarbs could not be distinguished, and the starch of canaigre was the only diagnostic feature that could be relied upon to differentiate that root in the state of powder—an ineffectual test at best. The grains are described as being long and slender in form, and exhibiting a long, branching hilum, which extends throughout the major portion of the long diameter. But while official rhubarb powder turns a dark, brick-red colour with ammonium hydrate, the powder of *R. rhaponticum* exhibits a distinctly salmon-red shade, whilst canaigre gives a brownish colour. This test, however, also fails in dealing with mixed powders.—*Am. Journ. Pharm.*, lxx., 129.

Pharmacology of Aconite. Dr. J. T. Cash and W. R. Dunstan find that the extraordinary toxic power of aconitine is mainly dependent on the presence of the acetyl radical in the molecule, whilst the specific action of benzaconine depends on the existence in its molecule of the benzoyl radical. Aconine, which contains neither the acetyl nor benzoyl group, is very inert, but both that alkaloid and benzaconine—the latter in less degree—are said to act as antidotes to aconitine. It is stated by the authors that neither the composition nor constitution of aconitine can yet be regarded as settled.—*Proc. Royal Soc.*, lxii., 338.

Characters of Senna Leaves. R. H. Denniston finds that there are more hairs on both the upper and lower surfaces of Alexandrian senna leaves than on those of Indian senna. The average distance the hairs are apart was found to be three epidermal cells in the first case and six in the other. Moreover, the hairs are somewhat straighter in Alexandrian senna than Indian, and the epidermal cells around the hairs are fewer on the whole in the former. The shape of the stomata was not found to be characteristic, nor the number and size of the companion cells, but the

epidermal cells were found to be somewhat smaller on the average in Alexandrian senna.—*Pharm. Rev.*, xvi., 105.

Decomposition of Chloroform. J. J. Waddelow describes how the vapour of pure chloroform was decomposed in the presence of artificial light during an operation. The room in which the operation was being performed was small, not ventilated, warmed by an oil stove, and illuminated by an oil lamp and a candle. Some of the chloroform was accidentally spilt, and almost immediately a most pungent disagreeable smell was noticed, whilst the whole respiratory tract was affected. Violent attacks of coughing seized the operator and his assistants, and it was five days before the irritative effect passed away in one case. The room was pervaded by a strong odour of chlorine the morning after the operation.—*Lancet*, 3889, 749.

Strychnine Hydride. The reduction product obtained by the action of metallic sodium on a boiling alcoholic solution of strychnine is shown by Dreser to be strychnine hydride, which exerts a physiological action markedly different from that of strychnine, and greatly resembles that of morphine. On frogs it acts as a narcotic paralysant, similar to but more powerful than morphine, and does not give rise to tetanic convulsions. Although its narcotic action is very marked and is capable of neutralising the tetanic action of strychnine, it cannot be employed as an antidote for that alkaloid, since it rapidly produces paralysis of the respiratory system.—*Chem. Zeit.*, xxi., 803.

A New False Ipecacuanha. M. Georges Dethan has described in the *Journ. de Pharm. de Anvers*, two roots which he has found mixed with ipecacuanha, one of which he has identified as that of *Polygala violacea*, St. Hil. The lower part of the root bears a considerable resemblance to that of undulated ipecacuanha (*Richardsonia bransiliensis*), whilst the upper pieces are striated like those of *Psychotria emetica*. The *P. violacea* has a creeping root of a deep brown colour rather thicker than a goose quill, and 10 to 20 Cm. long, becoming thinner towards the extremity. It is coarsely striated, and the fracture is whitish and starchy. The root branches, which are numerous, have a yellowish colour, are more or less twisted and smooth and have an amylaceous fracture, the bark is frequently cracked transversely so as to expose the central cylinder. The roots differ, however, from those of *Richardsonia* in being dichotomously branched. The stem of *Psychotria* is dark brown and smooth, and nearly as large as the root, but that of *Polygala violacea* is paler, yellowish, and rugose, and is more slender than the root. The cork is composed of four to eight layers of elongated cells, filled with a brownish colouring matter. The cortical parenchyma consists of large elongated cells, becoming shorter and more rounded towards the centre of the root. These cells are filled with densely crowded starch grains of a more or less spherical form. The woody cylinder exhibits numerous vessels, generally isolated, but rarely in groups of two or three, and scarcely varying in size. The centre of the root is occupied by a group of the vessels. The medullary rays consist of a single series of cells. The thickness of the bark generally equals that of the wood. There are no raphides present in the root, although macles or cluster crystals are present in the stem, both in the cortical parenchyma and in the pith, diminishing in numbers as it approaches the root. The leaves when present have a plano-convex midrib and are seen to be furnished with unicellular hairs, with a swollen base immersed in the epidermis and filled with a yellowish resinous matter. The stem has two or three rows of pericyclic fibres surrounding the central cylinder in a nearly continuous ring, which, however, ultimately splits up into isolated groups. The absence of raphides distinguishes it from *Psychotria*, *Richardsonia* and ipecacuanha; the vessels also from the last, and the colour of the roots from the first two.

Microscopical Examination of Viscous Urines. G. Michel employs the following method for albuminous viscous urines in order to separate the organised deposit for microscopical examination. 50 C.c. of the urine are shaken several times with 20 C.c. of ether in a cylinder of 100 C.c. capacity, and the mixture set aside for some time. The ethereal layer will then contain all the organised elements. It is drawn off with a pipette and exposed on watch glasses; after the evaporation of the ether the residue is removed with a finely-pointed brush on to slides for microscopical examination.—*Chem. Zeit.*, xxi., 316, and *Pharm. Post*, xxx., 607.

Double Staining Wood Sections. H. Pfeiffer recommends the following process for double staining ligneous sections. The sections are hardened in alcohol and then immersed for thirty to fifty minutes in a concentrated aqueous solution of equal parts of naphthylamine-yellow and hæmalum. They are then washed in water for a short time to remove excess of colouring matter, and placed on the slide, which is heated on a small flame, until the preparation begins to curl up at the edges. The preparation is then mounted in Canada balsam. With this treatment the woody portions assume a yellow colour, while the young parenchyma and the nuclei of the cells appear violet.—*Pharm. Centralh.*, 857.

Mercuric Oxide Ointment. The following method is recommended by Dr. Schweissinger as the only reliable manner of procuring a really finely divided ointment. The prescribed quantity of yellow oxide of mercury is calculated into mercuric chloride, which salt is dissolved in water and precipitated with an equal volume of sodium hydroxide. It is washed carefully on a filter and drained until the precipitate is almost dry. This is then mixed intimately with the fatty basis. The weight of the moisture is, of course, deducted from the fatty substance, so that an ointment of exact strength may be prepared. The author suggests that ung. hydrarg. ammon., ung. zinci, and ointments with other moist precipitates, might advantageously be prepared in this way, care being taken to remove as much of the water as possible.—*Zeit. allg. oest. Apoth. Ver.*, lii., 6, and *Pharm. Centralh.*, 50.

Sugar from Larix Occidentalis A kind of manna from British Columbia, produced by the *Larix occidentalis*, has been examined by Professor Trimble, who finds that it is not identical with the melezitose of *Larix europæa*, but that it reduces Fehling's solution.—*Amer. Journ. Pharm.*, p. 152.

Heat of Electric Glow-Lamps. The carbon filaments of incandescent electric lamps offer great resistance to the passage of electric currents, and as a result heat and light are produced, the latter corresponding to but 5 or 6 per cent., at most, of the energy manifested. The heat produced is so great that immersion in a 16-candle power lamp, at 100 volts pressure, in half a pint of water will cause the water to boil in an hour. If the lamp be buried in cotton-wool, that soon begins to scorch and ultimately bursts into flame. Incandescent lamps appear, therefore, liable to start serious fires when inflammable goods are placed too close to them, and as regards articles made of celluloid, it is noteworthy that a 16-candle power lamp has been found to fire that material in less than five minutes.—*Lancet*, 3889, 737.

Sterilisation of Water. Dr. Repin sterilises a cubic metre of water in the following manner at a cost of about one penny, in an apparatus consisting of a series of flasks through which the water flows. Several metal tubes, through which air ozonised by an electrical discharge is introduced into the water, are passed through the necks of the flasks. The ozonised air coming into contact with impure water destroys all organic matter present, killing the most virulent bacteria, and thus changing, in a few minutes, the most polluted fluid into clear and safe drinking water. Another less elaborate process is the following :—One litre of water is coloured reddish with potassium permanganate, and the permanganate in excess removed by filtering through charcoal. An ordinary flower-pot, the hole of which is stopped with wadding, and which contains a few pieces of charcoal, will serve as a filter.—*Pharm. Zeit.*, xlii., 674, after *Ztsche. f. ges. Külteind.*

Australian Perfumes. Although the Australian colonies are rich in plants yielding delicious perfumes and valuable essential oils, little or nothing has been done, it is stated, to utilise the advantages thus afforded. Systematic flower farming is still in its experimental stages, and there exists an almost untouched field of great extent for those possessing the necessary capital and experience in the manufacture of perfumery and essential oils. In New South Wales the garden flowers of Europe and Asia, especially those emitting the richest fragrance, are found growing in unsurpassed luxuriance, many being obtainable nearly all the year round, whilst they are easily reared. Among the native perfume-yielding plants which remain unutilised are several varieties of acacia, including a few which furnish scented wood. The *Acacia farnesiana* grows plentifully in many parts of New South Wales; and another species of acacia, familiarly known as the "Golden Wattle," is equally useful as a perfume plant; as is also the native laurel, or mock orange. Among the plants from which sweet-scented and other oils may be obtained are the native sassafras, peppermint, bloodwood, blue gum, mountain ash, white gum, ironbark, woolly butt, spotted gum, tallow-wood, mcssmate, red gum, poplar, box, ridge myrtle, tea-tree, native peppermint, dogwood, and turmeric. The trees known by the various names are, of course, not always identical with those with which we usually associate the names in this country.—*Colonies and India*, Feb. 26, 13.

Uses of Australian Oils. With regard to the economic aspect of the Australian oil question, it is found that the essential oil of the red gum is a reliable remedy for chronic dysentery and diarrhœa, that of the Moreton Bay ash makes an excellent furniture polish, and the oil obtained from the native sassafras, which resembles in odour ordinary sassafras oil, with an admixture of caraway oil, is used for medicinal purposes. Eucalyptus oil, of course, possesses many valuable qualities, and the leaves of the various kinds of eucalyptus are found useful in preventing or removing scale in boilers. The oil of the "Mountain Ash," a common species of eucalyptus, is said to dissolve gutta percha readily, and to be capable of use, like kerosene, for lamps, having a greater illuminating power, a pleasant odour, and absence of liability to explosion. The oil obtained from the "Stringy Bark" has been found to be more efficacious in many complaints than the English peppermint, and the oil of the "White Gum" has been suggested as a soap perfume. The "Woolly Butt" oil indelibly stains paper; the oil of the "Grey Gum" posscsses a citronella odour and makes an excellent soap perfume; whilst several varieties of the "Tea Tree" furnish an oil said to possess most, if not all, of the properties of cajuput. Practically, the number of native shrubs and trees in New South Wales capable of being utilised in the manufacture of perfumes and essential oils is without limit. The olive, castor plant, and linseed also grow luxuriantly in the Colony, and are easily cultivated.—*Colonies and India*, Feb. 26, 13.

Photo-Micrography with High Powers. J. E. Barnard and T. A. B. Carver explain how they have overcome the difficulty experienced in photo-micrography with high powers and critical illumination, owing to the unequal intensity of the light emitted from the surface of incandescent limes, or the impossibility of controlling the electric arc so as to maintain a constant position and condition of the crater on the positive carbon. The latter difficulty has now been overcome by having a simple form of hand-feed apparatus, with a pin-hole camera attached, through which an image of the carbon points is projected on to a ground-glass screen. With such a form of arc-lamp absolute "centration" of the light can be secured and maintained, without reference to the microscope, after the necessary position of the image of the arc on the screen of the pin-hole camera has been once obtained.—*Nature*, lvii., 448.

Alinit. This is the name applied to a new manure said to be suitable for all kinds of grain. It is described as a creamy yellow powder, containing 2·5 per cent. of nitrogenous constituents, and its action is attributed to a bacillus—*Ellenbachensis alpha*—of which the spores exist in the powder.—*Nature*, lvii., 418.

New British Plant. A new British sedge, *Carex chordorhiza*, is described and illustrated by the Rev. E. S. Marshall, M.A., in the March number of the *Journal of Botany*. The inflorescence consists of a single ovate, or when in fruit, triangular spike, the upper flowers of which are male. The stigmas are two, the glumes light yellowish-brown, somewhat darker in the centre, with a hyaline border, and the fruit is a pale-yellow dotted oblong lanceolate nut, with a slender beak nearly equalling its length, and projecting a little beyond the obtusely bifid beak of the perianth. The rhizome is about the thickness of coarse twine, and is stoloniferous and sulcate. The leaves are about 1 to 1½ lines broad. The plant grows in very wet peat bogs associated with *C. limosa*, and was found by Messrs. Shoolbred and Marshall in the north of Scotland. On the Continent it occurs as far south as Francc, Bavaria, and the Tyrol.

Agar Agar Ointment Basis. Gallois recommends the employment of agar agar jelly for the application of various drugs to the skin. Thus a sublimate jelly composed of agar agar, 1 gramme; water, 100 grammes; corrosive sublimate, 10 centigrammes; tartaric acid, 10 centigrammes, may be taken as a typical formula. Small portions of this rubbed on the affected area quickly dry, giving a closely adherent film, which has been found to be very effective in the treatment of erysipelas. It possesses the great advantage over gelatin, that in drying on the skin, it does not contract. A jelly of zinc oxide for the treatment of eczema may be prepared from water, 200; agar agar, 2; zinc oxide, 20.—*Bull. Gén. de Thérap.*, cxxxv., 223.

Cultivation of the Camphor Tree. A bulletin describing the camphor tree, its uses, conditions of successful cultivation, a map showing the area of the United States where it might be grown, together with some information as to the commercial outlook for camphor, has been issued by the Division of Botany of the United States Department of Agriculture.

PHOTO-MICROGRAPHY.

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

Owing to the more complete knowledge of the subject gained by the experience of years, and perhaps in a measure to the advent of the perfected dry plate, photography is being rapidly pressed into use to an extent hitherto little dreamed of. In point of fact it may be said to have started in times past as an interesting amusement, but has now become an absolutely scientific and commercial necessity. Indeed, if we look around, what I have said can be easily seen to be true, for there is scarcely any science now-a-days that does not in some way seek its aid. Astronomers, for example, need no longer chart the stars of the heavens as hitherto, by a laborious fashion of eye observation, taking them years and years to finish even an incomplete survey of a portion of the celestial vault, for they can now do in one evening by photography far more than would have been effected by days, or even weeks, of assiduous labour when employing the older method to which reference has been made.

The meteorologist, too, can now record photographically the oscillations of his mecurial column, whether it be of the barometer or thermometer, with the most rigid accuracy, and instruments of this nature are in daily use in all well-appointed observatories. Then, too, of later years the younger, but growing, science of seismometry has taken photography into its confidence, and made it record the tremors of the earth in a fashion that could not have been previously accomplished, except by having a continuous series of ever-watching observers.

But it is not in the sciences only that the action of light on the photographic plate is taken advantage of, for we know that in art, painters not unfrequently take a general view of their subject by photography before, brush in hand, they start their picture; and indeed there are those who find by this method they get an exactitude of detail which is almost beyond their reach by any other method.

Then again, with respect to commercial use, it requires little observation to have noted the number of papers which are illustrated by some form of photography, that is to say, by employing either the collotype or block process, both of which it is well known owe their existence to its use.

But it is of quite recent years that book illustrations of the highest order have been made by this method. Fine hand drawings of objects as seen in the microscope, for example, used to be all in demand, but now photo-micrography has stepped in their place, and pictures are produced with an accuracy hitherto unknown. They leave, too—which is a great advantage—no doubt in the reader's mind as to the accuracy of the final result, for even the most captious critic is unable to state his belief that some of the details have been produced by the imagination of the artist, or by an exaggerated conception of an over-enthusiastic draughtsman.

But the extreme excellency now obtainable by photo-micrography, however, owes much of its increase in accuracy to the introduction of the apochromatic series of lenses constructed by the patience and talent of Dr. Abbe, and the microscopic world owe him a great debt of gratitude.

But, like almost any art or science which reaches to a high degree of perfection, photo-micrography cannot be learnt in a moment, for it requires both knowledge, patience, and skill to carry it out successfully. It is for this object that these articles are about to be written, so as to lay before the reader all the information that it is in the power of the writer to give, after many years of familiarity with the subject. It is hoped, then, it will be distinctly understood that what is to be said is meant to be of real practical service, enabling those interested in the subject to obtain results at once scientific, reliable and accurate. Those who expect to find in these pages information as to the cheapest home-made apparatus capable of producing second-rate results, must, I fear, be content to experience nothing but disappointment.

For convenience of description we may divide our subject into three heads:—

Low Power Work treating with magnitudes from about 1½ to 10 diamcters.

Moderately High Power Photo-Micrography, which deals from 10 diameters to about 700 or 800; and

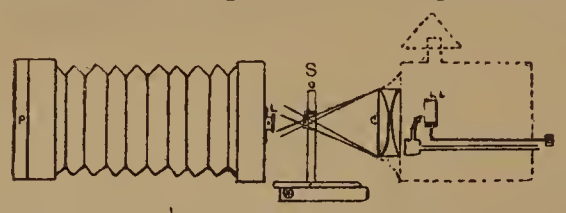
Critical Work, which, commencing where moderately high power work has ended, reaches to above 2000 diameters.

It would seem as if there existed in this arrangement a very unequal division of the subject, especially that low power work should not extend beyond ten diameters; but it must be at once stated that up to this limit photo-micrography is quite a different matter, and indeed requires in point of fact an entirely different form of apparatus. I should, however, recommend those commencing, to begin from the very commencement, inasmuch as the difficulties presented become greater and greater as the initial magnification increases.

Low Power Work of from 1½ to about 10 Diameters.

It may surprise the reader to hear that with low power work the microscope is entirely dispensed with, because the narrowness of the tube so curtails the field of view that the resulting picture is practically of no service. To get over this difficulty resort is made to the ordinary photographic camera, which, for my purpose, should be a quarter-plate one, having an extension of from 12 to 13 inches. I know, in stating this, that many photo-micrographers still prefer a camera of larger size, but I must confess I have never been able to satisfy myself that the gain in use of a larger instrument has ever been commensurate with the increase of cost, both initially and to maintain, for it is self-evident every half-plate costs nearly double that of a quarter-plate.

The arrangement of the apparatus in its entirety is shown in the figure, which in a measure explains itself. Speaking in the first



place quite generally, the camera is supposed to be placed on a rigid support, and the lens is shown fixed in the front of it. The object is placed at S, where it is supported in a manner to be further described, whilst the illuminant I prefer is a limelight enclosed in a box provided with a large condenser, shown at C. The light from the limelight jet, which should be a "mixed one" falls first upon a piece of ground glass which is interposed between the source of light and the condenser.

The box itself enclosing the light may be 16 inches long, 13 inches wide, and 15 inches high. These dimensions, although large, I have found most convenient, inasmuch as there is no fear of the wood becoming injured by the direct heat of the limelight. A suitable chimney to allow the escape of the fumes is shown rising from the summit. The arrangement for turning the lime is also drawn in the diagram, but as this is usually supplied with the best form of jets we need only refer to it.

The actual jet which I have mostly used was made by Mr. Beard, and after an experience of several years, I cannot

too strongly express my satisfaction with its performance. It is at once reasonably cheap, well made, gives an excellent light, is easy to work, not prone to snap, and, moreover, is supplied with a "cut off," which although turning the light nearly ut when temporarily out of use, never quite extinguishes it. I always obtain the best hard limes, and in preference those that are truly "turned." No mention is made of using either a Welsbach gas burner or any other illuminant, for there is no substantial alteration of the arrangement required, save that if a paraffin lamp be employed, one must be chosen with a very shallow cistern, as the wick must be in the axis of the condenser. Neither do I pause to mention the accessories of the limelight, viz., the compressed gas-bottles with their regulators and gauges, as I think it unnecessary.

Between the light and the condenser, as before stated, we usually interpose a piece of ground glass, which causes a general diffusion of light, thus rendering the entire field of the photograph equally illuminated. It is not absolutely necessary that the ground glass should be interposed between the condenser and the light, for there are those who prefer placing it between the two lenses which compose the actual condenser itself. In most condensers this is easily done, but in some the space between the component lenses is so small that it will not admit anything, even the thinnest of ground glass. If placed in this position, too, there is a danger which I feel I ought to point out, namely, that the ground glass may very possibly shake and thereby scratch the surface of one or other lens, and so imperil its perfect performance. If there is no room between the lenses of the condenser there is no option but to put the ground glass where I first mentioned, as it is not a satisfactory plan to place it between the condenser and the object, for if so placed, a curiously granulated effect is ofttimes produced in the final picture, which utterly spoils it.

The compound condenser should be at least 8 in. in diameter, even when using a quarter plate. Its focus is of no material importance, but should not be too short, for if so, the close approximation of the lime which then becomes necessary, may threaten the safety of the back lens, a matter of importance in these large condensers, seeing that they are expensive.

It must not be omitted to state that it has been proposed, and used by many, that an additional protective glass plate should be interposed between the condenser and the limelight, but I have found this to be unnecessary, especially when using the ground glass in that situation, for that in itself affords a protection to the posterior lens, and the less the amount of glass interposed between the light and the object the stronger will be the resulting illumination.

One more point of practical importance must not be overlooked, and that is, the photographer should carefully examine the condenser before using it to see that the lenses are quite loose in their cells, for if they are in the least measure tight when cold the expansion which takes place on their becoming heated will surely cause one or both of them to crack.

Having explained the position and details of the light, its box, and the condenser, we will pass on to consider the support (marked S in the diagram) for the object we propose to photograph. Let this be, for example, a moderately-sized spider, and that we want to enlarge it to fill a lantern slide. These are procurable laid out on an ordinary microscopical slip 3 by 1 inches. It is placed upon the support S (which, it is seen in the diagram, is merely an upright piece of wood with a hole in it), being held there in position by two ordinary clips, such as are used in the microscope. They consist of two pieces of spring, each being mounted on a brass pin. The support is seen to be fixed at right angles to another piece of wood, which is nothing more than the base board of a camera, capable of being racked to and fro by the milled head shown beneath. As will be seen hereafter, this is for the means of final focussing.

We next come to a difficult part of our subject, namely, the selection of a lens. It has been already stated that the microscope affords too limited a field of view for our requirements, a remark which also applies to the use of microscopical objectives. It is easy to understand this, for the field of view for which that class of objective is corrected is naturally small, being only intended to be used with the microscope. The consequence of this is that if a microscopical objective be placed on the camera at L in the diagram, the centre of the field, it is true, will be seen on the ground glass at P, well and clearly defined, but the portion surrounding the centre and extending to the edges will be fuzzy and useless; in other words, the spider's body will be shown sharp and clear, whereas the legs and feet are fuzzy and ill-defined. An ordinary photographic lens is the next thing that suggests itself, but here we are met with a two-fold difficulty: First, suppose, for instance, we were to use a 4 or 5 inch rapid rectilinear, we should require so very great an extension of camera that it would be impossible to reach the focussing screw of the support S without the assistance of a "long arm" such as is used with an astronomical telescope. It is not advisable to make the apparatus more cumbersome than is necessary, and so the only escape from the difficulty is to have a lens of shorter focus.

I must point out here, as perhaps the most suitable place, that the accurate and final focussing should always be done by moving the object rather than by moving the ground glass, as is usual when taking an ordinary photograph. The reason is not far to seek, but to explain it intelligibly we must for a moment enter into the optical aspect of the situation; it is worth a moment's consideration, as it explains the second difficulty connected with using ordinary photographic lenses for photo-micrography.

When photographing in the ordinary manner—say, for instance, taking a view of a landscape—the rays from distant objects impinge on the lens, usually in more or less parallel bundles, and the ground glass is placed at the short conjugate focus, the lens being constructed by the optician with that idea in view. But in making an enlargement with a photographic lens the conditions are exactly the reverse, for then the short conjugate focus is between the lens and the object, and the long one between the lens and the ground glass screen. It will be seen, therefore, that the lens is constructed for one purpose and used for another, hence it is not difficult to understand the absence of critical perfection in the resulting image. It has been suggested, to get over this difficulty, that the lens should, when used for photo-micrography, be turned the opposite way, and this improves the resulting definition with almost any lens excepting a rapid rectilinear, but with this type I have never been able to find any pronounced improvement by so doing, and, indeed, on considering its optical construction I should never suppose that it would.

Another class of lens has been suggested for photo-micrography, and I have often used it where the object is large and the required magnification is small. I refer to a diminutive portrait lens of about 3-inch focus built on the Petzval principle. When it is used in the reversed manner of which I have just spoken, it certainly has given very good results; still, however, if the magnification required was over 1½ to 2 diameters, it was only with difficulty we found ourselves able to reach the milled head to focus with.

Messrs. Dallmeyer, however, have constructed a small rectili-

near about 1¾ inch in focus, which in my hands, with magnitudes over 1½ to 2 diameters, has produced most admirable results, and were it only constructed to work equally well in red, green, and violet rays I should have no fault to find with it, more espccially as it is not at all expensive. But the finest type of lens with which I am acquainted has been recently introduced by the firm of Zeiss, and has been constructed from calculations by Dr. Rudolph for the especial purpose of photo-micrography. It works equally well in all colours of the spectrum, gives a most exquisite definition up to the margin of the plate, and is manufactured in several focal lengths to suit the requirements of different sized objects. The smallest has a focus of 35 Mm., works at F/4·5, and leaves little to be desired, with the exception that its lenses are so closely in contact as to forbid the introduction of any diaphragms whatever, which at times is a great inconvenience. The 75 Mm. is provided with an iris diaphragm, and with it I have been enabled to do anything that I desired, but it is a subject for regret that the firm does not see its way to sell the lenses at lower prices.

The camera, as before stated, that I have found most convenient is a "quarter plate" having an extension of about 12 or 13 inches; but, in addition, I have had made an auxiliary front which drops on where the lens usually fits into the camera, by which expedient we are enabled to increase the camera another 6 or 8 inches, a distance not too great even yet to prevent us focussing at S if the short focus Planar or Dallmeyer lens be used.

Having thus described the apparatus—intelligibly, I hope—only one thing remains before taking the photograph, that is to select a suitably sensitised plate. I have tried most of the brands in the market, but owing to the fact that so few are isochromatic, the selection practically rests with three or four makers. The object of using isochromatic plates will be explained hereafter, and I believe that, as far as isochromatism is concerned, the Cadett plate is the most perfect, but it is very slow, which is a great objection to its use. Not that the exposure need be very long with this class of photo-micrography, but we must never lose sight of the fact that the rays emanating from the limelight being focussed on the object, will very readily make it melt, and therefore it is obvious, within prescribed limits, the quicker the plate the more safety to the specimen. It is quite true that a water-bath can be interposed between the condenser and the object, but it is very inconvenient to use with this lower power work, for the water quickly begins to generate bubbles of steam, which, should they adhere to the sides of the trough, will cause all manner of markings in the resulting picture. I have rarely had the accident happen of melting a slide, although I admit that at times they have become very warm, but I feel certain that if a prolonged exposure had been added to the time necessarily occupied in focussing the object, it is highly probable such an accident would have occurred more frequently.

Lumière's plates are much prized by some photographers, but I must confess that I have little fault to find with the medium isochromatic plates manufactured by Edwards. I have found them most uniform in grain and similar in sensitiveness, easy to develop, and very free from fog, both when using hydrokinone or pyro. I know that others are strong advocates of the Ilford isochromatic plate, but must admit that although they are cheaper I have never felt any inclination to substitute them for the brand I have previously mentioned. In conclusion, whilst making these comments, it should be distinctly understood that many of my friends have different experiences, and I think it only fair to say so.

Every plate must be "backed," and I have no reason to find any fault with the "backing" solution sold in tubes under the name of "Forrester's Effective Backing." It must be dabbed on the glass with a pad and not smeared, as smearing leaves streaks which frequently show in the final picture. The reason of that is this:—When a plate is not "backed" at all, the direct rays impinging upon the film, passing through the emulsion, are reflected off the back of the glass again into the film at definite angles, which depend upon the thickness of the glass and its refractive index. When a plate is "backed," however, these are absorbed by the "backing," and if that is unequally distributed some of them escape, whilst others are absorbed. This would in some cases not so much matter, but as "backing" always sensibly increases the exposure, so if the "backing" be well distributed over one part of the plate and not on another, the bad results referred to are really due to differing exposures on one plate, which are readily manifested when the negative is developed.

Being now prepared to take our photograph we will go practically through the prccess from beginning to end. The mixed limelight being ready, the camera is set in position, the object being placed upside down on the support S. The rays of the limelight are made to converge in such a manner that their point of union is on the lens side of the support. In my experience this is imperative to obtain a good image. They are shown in the diagram crossing both before and behind the specimen. This is readily done by pushing the limelight to and fro, that is to say, nearer or further from the condenser, the tray of the jet being provided with a groove to enable such movement to be done with ease and regularity.

We next look at the ground glass of the camera, which is placed at P (the lens being, of course, screwed in its place at L), and adjust the specimen until it is central. Drawing the head back some 10 or 12 inches will enable the whole field of view to be better scrutinised than it would be if the head were placed nearer. If it is seen that one side is brighter than the other, either the lime jet itself must be pushed a trifle from side to side on the supporting pin provided with the apparatus, or, what is better, the whole limelight box with its condenser should be bodily shifted from side to side. If the light be unequal at the top or the bottom the lime must be raised or lowered as occasion requires. The greatest care should be exercised in getting the illumination equal, and it requires some amount of practice to be able to do it. It repays the trouble, however, for it is exceedingly provoking after taking what might be otherwise a good photograph, to find that a portion of it is not so bright as the rest. There is another reason, too, why the light should be carefully centred, for even in this low power work perfect definition certainly depends in a measure upon it.

Assuming then we have got over this trouble, we now examine our specimen upon the support S, seeing that it is firmly clamped by the spring clips already mentioned. We then push the extended camera quite close to the object—say when using the 75 Mm. lens to about an inch off it. It will be now necessary to push the bellows to and fro till we get the image on the screen. If such image be too large or too small it is very obvious the camera must be removed further off or brought nearer to the object, the bellows being readjusted to obtain the rough focus on the ground glass screen. Some little practice is required in this matter because the exact length of camera and the exact distance of the lens from the object are the factors for producing a definite amount of enlargement. It may be necessary with small objects, when we want 10 diameters magnification, to add the lengthening piece of the camera to which I have already referred; in that case the lens

may have to be pushed up almost in contact with the object When the image is clearly seen and roughly focussed by moving the ground glass it should always be measured, so as to enable the photographer to see whether the magnification is such as he desires. This should never be omitted, for it is often of great service at some future date to be able to refer to the number of diameters an object has been magnified; but besides this, it introduces an element of accuracy which, if the photo-micrographer does not already possess, he must rapidly learn as soon as possible. When taking negatives for the purpose of obtaining lantern slides, this careful measurement is of great importance, for as the size of the ordinary lantern plate is only about 3 inches square, it is very obvious, if the picture be elongated the entire length of the quarter plate, which is 4 inches, a portion of it can never be introduced in the lantern slide at all. To prevent this accident occurring I have found it a good plan to mark upon the ground glass with a pencil two distinct lines, which show the limit of the lantern slide.

The measuring being complete and the amount of magnification noted, focussing is now carefully made by moving the object itself by means of the milled head at S with a faint touch to and fro, and not by moving the screen; for I always have found this to be an unsatisfactory method, only capable of explanation by a study of the optical nature of the image in this situation, which would be unsuitable to an article of this nature.

We now proceed to substitute for the ground glass the photographic plate (carefully backed) in its slide, and having "turned the lime," in case it takes to flaring at the moment of exposure, which would jeopardise the safety of our ground glass, we set the desired diaphragm and place the cap on the lens Sometimes this simple procedure is difficult owing to the fact that the lens is not more than two thicknesses of its cap from the object. When this so happens I have found a black card passed between the lens and the object, resting on the foot of the apparatus just above the screw shown in the diagram, will quite sufficiently cut off the light from the inside of the camera. Having drawn the slide it is well to wait for a few seconds to allow the "shake" in the whole apparatus to settle down.

Exposure will, of course, vary according to the diaphragm employed in the lens. F/16 to F/32 are about the limits which I have used. At the former aperture I have nearly always found the range of exposure is 2 to 5 seconds if the object be an uncoloured one, but much more if it be coloured. The developing formula always employed consists of the following:—

Solution I.

Hydroquinone	160 grains	or	8 Gm.
Potassium Bromide	40 ,,	,,	2 Gm.
Citric Acid	60 ,,	,,	3 Gm.
Water to	20 ozs.	,,	440 C.c.

Solution II.

Sodium Hydroxide	160 grains	or	8 Gm.
Water to	20 ozs.	,,	440 C.c.

Solution III.

Potassium Bromide ..... 1 in 3 of water.

To develop two quarter plates at one time in a half-plate dish, take 6 fluid drachms of Solutions I. and II. and 6 drops of Solution III., filling up to 16 fluid drachms with water.

I have no fault to find with its action, provided that a little extra bromide, about a grain to the ounce of developer, be added during development, which quantity should be renewed once whilst density is being obtained. It has been repeatedly found that this produces a very clear high light in the negative. No special remarks need be made concerning fixing and washing, save that in running water three-quarters of an hour is amply sufficient to eradicate the faintest traces of the hypo with the plates in question.

As regards drying the final negative, I have had so much trouble caused by inequalities in the film, produced by irergularities in the drying, that some time ago I gave much attention to the subject, and seeing that now hardly any trouble in that direction arises, I venture to simply state how it may be avoided.

The negative is placed glass side downwards on a cloth and a fine handkerchief is gently and neatly laid over the gelatine side. It is smoothly and firmly pressed with the hand for two or three seconds, which allows the fabric of the handkerchief to absorb all the superficial moisture. On raising the handkerchief it will be found that the gelatine shows distinct marks of the fabric. This is not of the slightest consequence, for it absolutely and entirely dries out of all existence.

The back must now be carefully wiped, for I found one source of trouble arose entirely from drops of water accumulating there, thus causing an unequal distribution of temperature in the whole plate. A ring of slightly melted gelatine will often be the result, which it is needless to say spoils the picture. This is especially the case when the negative is dried on a hot water tank.

Having superficially dried the plate in this manner, all that is necessary is to separate it from others at least by an inch, for if this be not done what is left of the moisture in the gelatine film of one plate will condense on the back of the other, and this condensation in due course will collect into drops, producing the same effect as if the back of the negative had not been wiped.

Before leaving the subject of low power work I must not omit to describe how to photograph the culture tubes used by bacteriologists, but to that I must refer in another article.

SELECTED FORMULÆ.

Spermaceti Ice.

Olive oil, 1500; spermaceti, 260; lemon oil, 35; bitter orange oil, 15; neroli, 3; otto, 3.—*Pharm. Zeit.*, xlii., 515, after *Seifenfabricant.*

Antiseptic Mouth Wash.

Cresol, 2 grammes; saccharin, 1 gramme; oil of peppermint, 10 drops; aromatic tincture, 25 grammes; tincture of krameria, 50 grammes. Fifteen to twenty drops to be used in a glass of water.—*Odontologie* [2], v., 404.

Depilatory Solution.

Alcohol, 120; collodion, 350; iodine, 7·5; oil of turpentine, 15; castor oil, 20. To be applied in thick layers to the affected parts; when the collodion is removed, the hairs adhere to its surface, and are removed with it.—*Pharm. Zeit.*, xlii., 167.

Powder for Chronic Constipation.

Ewald recommends Pulv. rad. rhei, 4; sod. sulph. ex sicc., 2; sod. bicarbonat., 1. M.d.s.—Up to a teaspoonful according to necessity, to be dissolved in a large tumbler of warm water.—*Pharm. Zeitg.*, xlii., 354.

Solution for Acute Catarrh.

Saenger recommends camphoræ, acid. tannici, aa 2·0; sacch. lactis, 4·0. M. f. plv. To be syringed into the nose.—*Pharm. Zeitg.*, xlii., 354.

New Tooth Powder.

No. 1: Menthol, 0·1; β-naphthol, 0·05; saccharin., 0·025; calc. carbon. ppt., 50·0; saponis, 0·5; ol. rosarum, *q.s.* No. 2: Myrrhæ, 1·0; sodii chloridi, 1·0; saponis, 0·5; calc. carbon. ppt., 50·0; ol. rosæ, *q.s.* Sodium chloride is said to be very efficient for improving the taste of the myrrh.—*Pharm. Ztg.*, xlii., 355.

PHARMACEUTICAL SOCIETY.

PRIZE EXAMINATION QUESTIONS (Session, 1897-98).

MATERIA MEDICA (Advanced Course).

Wednesday, March 23, from 10 to 1 and 2 to 5.

Professor Henry G. Greenish.

1. Prepare, examine, and describe transverse sections of the lamina and midrib of the leaf supplied. Give diagrammatic sketches of the structure and detailed sketches of such parts as may appear to possess diagnostic value. Leave sections mounted in glycerin for inspection.

2. Give a process for the preparation of aloin, stating the reason for each step in the process. What variety of aloes would you select? How would you ascertain the source of commercial aloin? Is it, in your opinion, desirable that the aloin used medicinally should be restricted to one variety or not, and why?

3. Give a process for the assay of ergot. Discuss the desirability of introducing uch a process into the British Pharmacopœia.

4. Describe tbe commercial varieties of *two only* of the following *four* drugs. Point out the means by which each variety may be identified; describe the active constituents (or the composition in the case of benzoin) of each variety, and indicate its relative therapeutic value:—

(*a*) Aconite Root. | (*c*) Jaborandi.
(*b*) Benzoin. | (*d*) Ipecacuanha.

BOTANY (Advanced Course).*

Thursday, March 24, from 10 to 1.

Professor Reynolds Green.

1. Write a short sketch of the most natural system of classification of the Vascular Cryptogams, and briefly describe the chief characteristics of the principal groups, including both ancient and recent forms.

2. What is the *pericycle?* Give a general account of its structure in the axis of dicotyledonous plants; mention any modifications which arise in it during the process of secondary thickening, and explain their several purposes.

3. Give a short account of the peculiar features of the natural order Malvaceæ. Discuss its relationship to other natural orders. What are the chief medicinal plants belonging to Malvaceæ?

4. Give an account of the process of respiration, and discuss briefly its importance to a plant. How is the respiration of a tree related to the structure of the adult trunk?

5. Show in what ways plants respond to changes in their environment. Discuss what happens in the case of differences in intensity and direction of illumination.

PRACTICAL BOTANY (Advanced Course).

Thursday, March 24, from 2 to 5.

Professor Reynolds Green.

1. Prepare delicate sections of the two leaves provided, and mount them in glycerin, after staining them in the manner best adapted to display the different tissues of each.

Sketch them both, and in your sketch call attention to any fundamental differences between them.

To what groups of plants do they respectively belong?

2. Refer the flowers A, B, C, D to their natural orders, giving your reasons in each case. A description of the flowers is not required.

3. Identify and briefly describe the three microscopic specimens E, F, G.

PRACTICAL CHEMISTRY.

Professor Collie.

Friday, March 25, 10 to 1 and 2 to 5.

The salt given you contains two substances:—

1. Determine quantitatively either the constituent soluble in water or the constituent insoluble in water.

2. Determine quantitatively either the acid radicle present in the soluble portion or the basic radicle present in the insoluble portion.

(1) The sample of beer given you is supposed to be poisonous. Determine by analysis whether it is so or not.

(2) Analyse the salt contained in box A.

CHEMISTRY AND PHYSICS.

Professor Collie.

Saturday, March 26, 10 to 1.

Five Questions only to be attempted—two physical and three chemical.

1. If you were given some potassium nitrate, also some tartaric acid, sulphuric acid, benzene and iron filings, how would you proceed to manufacture (*a*) oxygen, (*b*), nitrogen, (*c*) potassium, from the potassium nitrate?

2. Describe fully the properties, reactions, and methods for preparing any two of the following substances:—Phenyl hydrazine, ethylic-aceto-acetate, glycocine, phenol pthaleine, glycerol, allyl alcohol.

3. Caustic potash is often used as a reagent in organic chemistry. State what are its chief uses; also its action on ethylic-aceto acetate, aldehyde, monochlorethane, dibromethylene, chlorobenzene, chloral.

4. How many lactic acids are there, and how may they be prepared? Give a brief account of the formulæ that have been suggested for the optically active forms of lactic acid.

5. Explain the action of a bi-convex lens in magnifying a small object. Show what effects will be produced by altering the distances of the eye, lens and object, from one another.

6. What reasons have we for supposing that light and radiant heat are only different types of the same phenomenon?

7. Describe experiments which show tbat a magnet and a conductor conveying a current mutually affect one another in accordance with certain laws.

* Four questions only to be attempted.

PARLIAMENTARY NOTES.

The Pharmacy Bill and its chances of success need not for a time occupy the mind of froid partisans or perfroid opponents, for its next appearance on the notice-paper is not due till Tuesday, April 19, when there will be a morning sitting for Government measures. This period of truce will afford Mr. Cross time for reflection as to the possible effect of persisting in his attitude of uncompromising obstruction. There is a very trite but particularly pertinent axiom deprecating the throwing of stones by those who live in glass houses, and we invite the honourable gentleman's attention to the same during the Easter recess. After all, obstruction is an accommodating game, which may be played by any number of persons, and it is possible that Mr. Cross may have overlooked the fact that a member having charge of Bills of his own is very much open to reprisals if he wilfully hinders the progress of other members' Bills. It must not be supposed that the Council and its officers will be idle during the interval between this and April 19; it is simply a case of *reculer pour mieux sauter*, and there is some ground for believing that now the obstacles are well defined, and their nature known, the final spring will clear them all.

The Petroleum Committee met on Friday, March 25, when Colonel Sir V. Majendie gave the first part of a report he had prepared on the conflicting evidence submitted to the Committee. His *résumé* dealt chiefly with the evidence respecting the flash point, and he pointed out that the Committee had not been greatly urged to raise the minimum flash point in relation to the storage or conveyance of petroleum, though in respect to oil for illuminating purposes more evidence in favour of raising the safe point had been adduced. Having regard to the fact that low-flashing oil was indispensable in a comparatively large number of industries, and that it had not been shown that oil of even high degrees of inflammability could not be burnt with perfect safety in properly constructed lamps, Sir V. Majendie deprecated any legislation tending to raise the present minimum until other remedial measures had been thoroughly investigated. This is significant, as there is good reason for assuming that this witness's report will practically form part of the Committee's majority report.

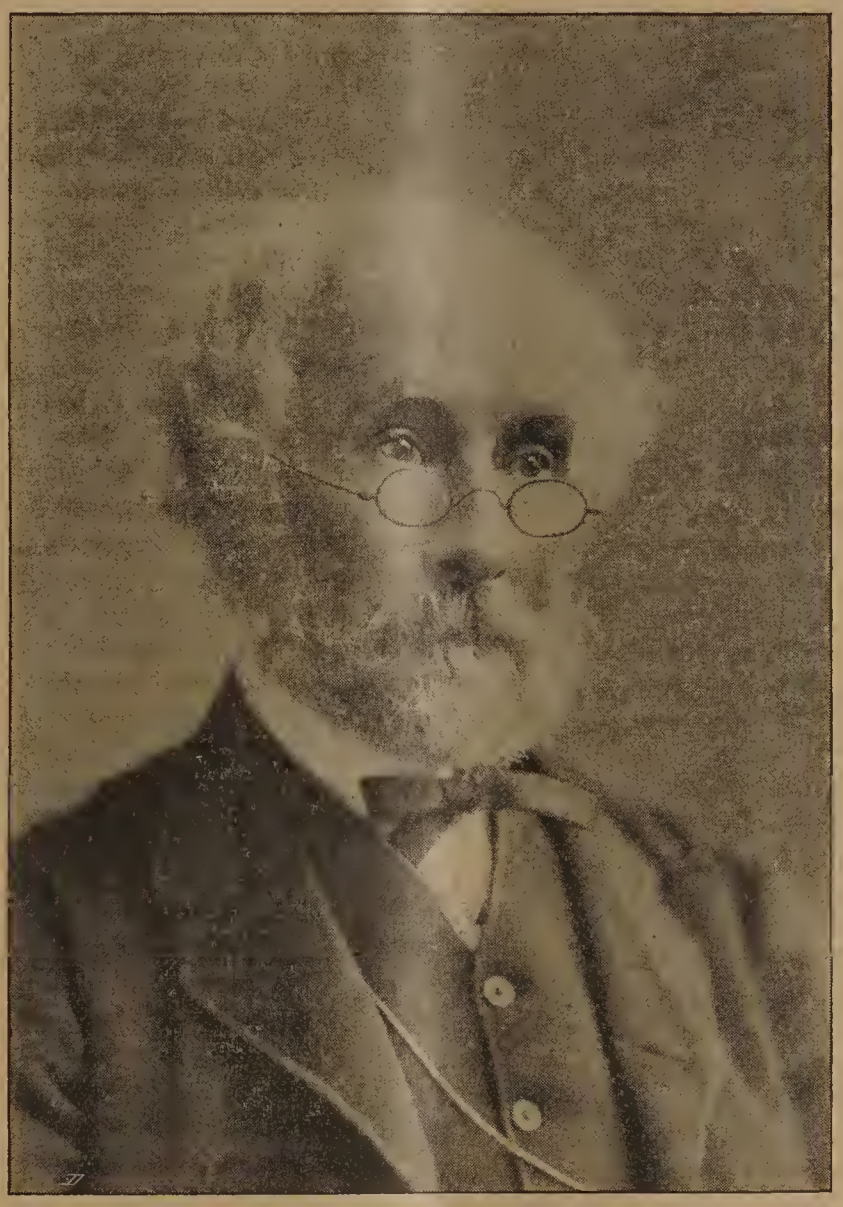
Sir John Lubbock has his hands pretty full just now. In addition to his Shop (Early Closing) Bill, which regularly appears on the paper every Wednesday, only to be as regularly deferred, he has now burdened himself with two brand new Bills, having for their object the amendment of the Companies Acts. Thus, there are now four Bills before Parliament dealing with incorporated abuses, viz., the official Bill of the House of Lords, which is undergoing interminable investigation at the hands of a select committee; the unprinted measure of Mr. Faithfull Begg; and the two proposals of the versatile Baronet. Sir John's object is to repeal Section 25 of the Companies Act, 1867, which deals with the issue of shares, and to remove doubts caused by recent decisions, whether shares honestly issued and taken up as fully or partly paid are, in fact, fully or partly paid in the manner intended. This little matter was before the Departmental Committee of the Board of Trade in 1895, and the report of that Committee recommended the repeal of the section above alluded to, and, in fact, the House of Lords Bill of the present Session embodies the same recommendation. But remedial legislation as to Companies is long, and Sir John Lubbock thinks it well to hasten it, if possible. He hopes to get a second reading on April 20. We hope so too, but are not sanguine.

Adulteration.—Major Rasch called attention to a recent prosecution under the Food and Drugs Act in which it transpired that 40 grains of boracic acid had been added to each gallon of milk in certain imported samples of milk. Mr. T. W. Russell for the President of the Local Government Board sheltered himself under the plea that no decision had yet been given in the case referred to, and that no statement was therefore possible. The gallant member will take the matter up again later on, and will have the assistance of Mr. Flynn and other members who are becoming impressed with the desirability of an alteration of the adulteration law.

BARNARD S. PROCTOR—AN APPRECIATION

NEVER a robust man and always a hard worker and a deep thinker, Mr. Proctor has yielded to the advice of friends and physicians and given up the active engagements of business life. His reputation in pharmacy is world wide, and his place in pharmaceutical history is assured, but for his comtemporaries, and especially for friends and neighbours, there is always the charm that comes from knowing a man who is original, yet tolerant, and whose kindness of heart is as patent as his greatness of mind.

Every one who knows him will wish for him a sunny eventide to his busy life, and vigour enough to give from time to time some literary embodiment of his thought on subjects past or present. He came of a pharmaceutical stock, his forefathers having conducted the business since 1768, when it was established by John Proctor, who came from Dundee to Tyneside. Mr. Proctor's grandfather, though engaging somewhat in the general business of chemist and druggist, was also an apothecary. In a most interesting address to students published in the *Pharmaceutical Journal* [3], vol. xxii., p. 319, Mr. Proctor expressed his indebtedness to his mother for his early training, and this was by far the best he ever had, for the schools to which he was sent were not of a character to equip a youth for the kind of work with which his life has been occupied. In his boyhood his delight was in scientific reading, thought, and experiment, and stories are told of him, as a seven-year-old student in physics, making observations on the effect of the length of a pendulum's cord as he swung his improvised apparatus down the staircase opening, the space in which more boisterous boys are wont to study the law of falling bodies, either human or promiscuous.



BARNARD S. PROCTOR.

As soon as he arrived at business he eagerly entered the avenues of study which radiate from pharmacy and never find a circumference. His associates in study were Mr. Joseph Wilson Swan—whose life researches were rewarded by the discovery of the incandescent electric lamp and others in dry plate photography, and the carbon process of photographic printing, each of these ramifying into many useful and lucrative finds, and gaining for him his F.R.S.—and Mr. John Pattinson, F.I.C., the eminent analyst of the north of England. Each pursuing his own course of study, this triumvirate frequently met to discuss their study and research, and so help each other forward.

In April 1853, shortly after attaining his majority, Mr. Proctor presented himself in London for the Minor examination. In those early days candidates who had declared an intention of so doing were allowed to present themselves for the Minor and then go on for the Major at the same meeting of examiners. Mr. Proctor's modesty had led him to offer himself for the Minor only. One of his examiners was the late Mr. Peter Squire. This keen judge of men soon found his examinee to be specially well up, and asked why he had not elected to take both examinations, and suggested to his colleagues that this should still be allowed. Mr. Proctor, having come up for the Minor, went away with the Major and an honorary certificate as well.

As a writer and an investigator few have contributed more than he has done, and the first paper we find published by him is in the volume of the *Pharmaceutical Journal* for 1862, on "Hyoscyamus." Senna, colocynth, rhubarb, bismuth, tannin, and perhaps more than any, opium, are among the drugs whose nature and whose preparations he has studied, and almost every volume of the Journal has since contained something emanating from his pen, and the result of most thorough and complete work. His literary style has a quaint humour about it, which is characteristic and, indeed, unique. Those who are not familiar with it will find a perusal of some papers distinctly interesting. His philosophic bent is shown in articles on weights and measures, read at the first Pharmaceutical Conferences, and his presidential address to the Newcastle section of the Society of Chemical Industry (*P. J.*, [3], vol. xiii., pages 484, 507, and 525), and in his addresses to students, at Bloomsbury Square, [3], vol. vii., page 303, and in the discussion of the phenomena of solution. His humour comes out in his "Unclean Spirits and the Natural Orders of Men," [2], vol. iv., p. 154, and in the much-questioned paper on "Pharmaceutical Remuneration in Relation to Pharmaceutical Progress" (*P. J.*, [3], xii., 219), offered to, and declined by the Conference at York. Of this paper hardly yet can full discussion take place, but the censors thereof must have possessed less sense of the humorous than modern Caledonians, and what was regarded as the most heretical of his opinions has often recently been preached by the reputedly orthodox.

His seats on the Board of Examiners and on the Council of the Pharmaceutical Society were each occupied for too short a time to permit of extended usefulness. But the weight of his influence has been felt in every movement of the Society, and that, too, through the entire country. But it is most amongst north country pharmacists that he is loved and his advice followed. The University of Durham College of Medicine in 1869 appointed him Lecturer on Pharmacy, and to that appointment we owe the

production of his well-known volume 'Lectures on Pharmacy,' which has done so much to add to his reputation and to the scientific practice of pharmacy among the middle-aged pharmacists of to-day. This work, which has passed through three editions, was, when produced, markedly ahead of the times, and has given an incentive and a model for many others in this and other lands. The lectureship was not a post which brought much financial gain, and the University of Durham authorities sought to show their appreciation by the bestowment of an honorary M.A. This was declined by Mr. Proctor, as he did not think an Arts degree suitable for himself, and as the University did not then confer degrees in science the matter dropped. Locally he has, in addition to the Chemical Society of Newcastle, identified himself with the Literary and Philosophical Society, whose splendid library has long been the envy of many larger cities; as a member of committee for many years he has done much service. He was also President of the local Incorporated Trade Protection Society. The executive of the British Pharmaceutical Conference has often pressed the acceptance of the presidency upon him, but he has felt himself unequal to the strain of its social functions.

Mr. Proctor married Miss Gray, a niece of Michael Faraday, and with just pride their sons, Mr. Charles Faraday Proctor and Mr. Harold Faraday Proctor, M.I.E.E., have been named after their illustrious relative. He is now about to take up his residence in the quiet little town of Bradford-on-Avon. Here, it may be hoped, that his love of Nature and of art may bring to him many pleasant hours, and the milder climate bring with it the capacity for enjoying his lovely surroundings.

REVIEWS AND NOTICES OF BOOKS.

Radiography and the "X" Rays in Practice and Theory, with constructional and manipulatory details. By S. R. Bottone. Pp. 176, with 47 illustrations. Price 3*s*. London: Whittaker and Co., 1898.

Nothing less practical than this excellent little book could have been expected from Mr. Bottone, who, it is almost needless to say, has very properly dealt with his subject from the point of view of an electrician. For if there is one thing certain about the X-rays more than another it would appear to be that they are electric waves. Lucidity and accuracy have been the objects aimed at in treating the subject, and most of the statements made have been verified by personal experiment, whilst where that was not possible the source of the statement or the name of the original experimenter has been given. Finally, considerable prominence has been given to constructional details and measurements, with the view of enabling students to make the apparatus described.

Beginning with effects rather than causes, the author first treats briefly of the action of light, electricity, etc., on certain salts of silver, thus leading up to an explanation of contact pictures. The effects of a partial vacuum on electrical discharges are then explained, and so we come to the details of the construction of Crookes' tubes, whilst the induction coil naturally comes in next for its share of attention, general instructions being given such as will enable anyone gifted with a fair amount of perseverance and a little mechanical skill to construct a coil suitable for X-ray work. The manner in which this is done is simply admirable.

And so the reader is gradually initiated into all the mysteries of the subject in an equally practical manner. The choice of the source of current, and of high vacuum tubes, the use of the Wimshurst and Holtz machines, and the preparation of fluorescent screens are all dealt with at length, whilst there are two especially valuable chapers at the end of the book, the first on general manipulatory details, and the other on theoretical considerations. Excellent illustrations and a comprehensive index conclude the handiest and most practical book on the subject that has yet been produced.

"Introduction to the Study of Organic Chemistry," by John Wade, B.Sc. (Lond.). Pp. xvi. + 460. Price 7*s*. 6*d*. London: Swan, Sonnenschein and Co., Ltd., Paternoster Square. 1897.

Modern investigations have rendered it possible to systematise to such an extent that organic chemistry becomes beautiful in its simplicity, and the student is now led from one group of compounds to another by such easy steps that it becomes possible in a comparatively short time to acquire a knowledge of fundamental principles sufficient to enable one to marshal the apparently inexhaustible number of carbon compounds into an array easy of comprehension. Mr. Wade has realised the importance of treating the subject at the commencement in an objective rather than a subjective manner, and commences with a number of well-known substances whose nature and properties are familiar to the beginner, using these to typify and explain the relationships and reactions of the chief groups of organic compounds. This removes the difficulty felt by students in realising the nature of a reaction when the explanation offered refers to some substance with which they are not familiar. The author, moreover, has extended this subjective treatment to such things as the determination of physical constants, stereoisomerism, hydrolysis, homology, molecular weights, etc. These are explained by reference to actual substances under discussion, as the necessity for dealing with them arises, in place of devoting a few preliminary chapters of a general character to their elucidation.

In an appendix divided into sections corresponding with the chapters in the body of the book the author gives brief details for the practical performance of experiments referred to. This includes a large number of reactions, and should be very useful, since the author states that they are based upon results obtained in dealing with students. The wisdom of thus separating the practical work from the subject-matter is, however, questionable since the student is more likely to perform the experiment if the practical details are given at the place where he is reading the facts and principles which the experiment is intended to inculcate.

A commendable feature of the book is the inclusion in brackets after the name of each important substance or general reaction of the name of the investigator to whom its discovery was due and the year of publication. Mr. Wade is very strong on the use of charts showing the genetic relationship of the members of the various groups of compounds. One of these is introduced at the end of each chapter, and provides a condensed bird's-eye view of the preceding matter, albeit, somewhat difficult of comprehension to the tyro.

The book is clearly written and the statements accurate. It is also nearly free from typographical errors, and may be recommended to pharmaceutical students who do not wish to confine their reading to the examination syllabus. Most of the synthetic remedies used to any extent in medicine are noticed and their preparation described. The chapter on the carbohydrates is well written though perhaps rather condensed, and the same remark applies perhaps with more force, from a pharmaceutical point of view, to the chapters on alkaloids. Seeing the large number of students of organic chemistry interested in medicine and pharmacy, we would suggest that there is ample room for a text-book dealing more in detail with such bodies as alkaloids, essential oils, etc., which, moreover, in many instances possess considerable commercial importance.

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THE CHEMIST AND THE STATE.

For the past thirty years the principle has been legally upheld in Great Britain that the dispensing and distribution of poisons involves the necessity of a professional qualification, and as recently urged in these pages, the experience of that long tale of years has fully justified the application of the principle referred to. It appears necessary, however, at the present time to point out that this position was forced upon chemists and druggists and was never altogether sought by them. When the Pharmaceutical Society was established in 1841, by the leading chemists and druggists of that day, it was with the main object of introducing an efficient system of education and examination for future members of the body engaged in the practice of pharmacy. Eleven years later that object received partial approval by the Legislature, but neither education nor examination was rendered compulsory in the case of those who desired to enter the craft. Subsequently, as time wore on, public attention was especially directed to the danger arising from the free sale of poisons, and to provide against the incompetence of many who dispensed and sold poisons, a Bill was drafted in 1865 to extend the principle of professional qualification to all chemists and druggists. The framers of that Bill wished to avoid making it a Poison Bill, being impressed with the difficulties attending the satisfactory settlement of the questions involved in that part of the subject; but in so far as the Bill proposed to prevent any but examined men from keeping open shop for dispensing prescriptions, it aimed at restricting the dispensing of poisons by any but qualified persons, and would to some extent have restricted the sale of poisons. When, however, the Bill came under consideration in the House of Commons, it was supplemented by another promoted by the United Society of Chemists and Druggists, and eventually, the Select Committee to which the two Bills were referred finding considerable difficulty in making conflicting interests agree, legislation on pharmacy was incontinently blocked for that session of Parliament.

No further steps of importance were taken until 1868, when another Bill was drafted by the Council of the Pharmaceutical Society, and, to meet the tendency of public opinion, clauses relating to the sale of poisons found a place in it. But it was specifically provided that those clauses should not interfere with the business of duly qualified medical practitioners or veterinary surgeons, nor with the making or dealing in patent medicines, nor with the business of wholesale dealers, nor with the retailing of poisons for use in manufactures or photography. To put the matter briefly, the greatest care was taken by the Council to avoid any interference with professions or trades in the conduct of which the unfettered use of poisons might appear to be advisable. With slight modification of the exemption clause, the Bill was introduced in due course, but on the proposition of Mr. Lowe, the words exempting the retailing of poisons for use in manufactures or photography were struck out, and ultimately the Bill was passed as it now stands. That is to say, though the Pharmaceutical Society was willing to assent to a much greater measure of free trade in poisons than is now permitted, Parliament would have none of it. The Bill, as modified, became law, and a schedule of the substances most commonly used at that time for criminal or suicidal purposes became part of the Act of 1868. Power was reserved to the Council of the Pharmaceutical Society to recommend additions to that Schedule from time to time, but the exercise of that power has always been strictly supervised by the Privy Council, so that as a matter of fact that body may be regarded as the really responsible authority in deciding what shall or shall not be deemed to be a poison within the meaning of the Act.

It now becomes necessary to consider that the conditions prevailing in the arts, manufactures, and other departments of human activity are very different from those that existed in 1868. The increased use of toxic substances as disinfectants, in photography, and for other purposes, consequent on the enormous development of manufacturing industries could not be foreseen at that time, and though British laws are usually sufficiently elastic to meet the varying requirements of periods subsequent to the dates at which they are recorded on the Statute book, there has been a growing sense of dissatisfaction of late years at the alleged tendency of the provisions of the Pharmacy Act, 1868, to operate in restraint of trade. Some such feeling indeed has apparently influenced the Privy Council on the occasions when the consent of that authority to schedule carbolic acid, mineral acids, etc., has been withheld, and to meet the feeling so expressed, a Bill was actually drafted by the Pharmaceutical Council in 1883, which recognised that it might be desirable to have a "Schedule of Poisonous Articles," the free sale of which should be permitted, so long as each package was distinctly labelled with the name of the poisonous article contained therein, the word "poisonous," and the name and address of the seller. That Bill was not proceeded with, and the suggestion that a third part of the Poison Schedule might be desirable has since been allowed to lie dormant. Possibly, however, it may be revived in the Bill which the Privy Council is about to bring before Parliament, and in that event it will be necessary for chemists and druggists to reconsider their position in all seriousness. It may be that they will need to be prepared for certain sacrifices in the way of accepting increased restrictions of the practice of pharmacy. But however that may be, and whatever modification of the existing law may commend itself to the present Government, there should be no question as to the necessity of the dispensing and sale of poisons for medicinal purposes being restricted to a class of persons who have been specially educated and examined, to the end that the public may enjoy such security as a professional qualification can alone ensure.

ANNOTATIONS.

The Streatham, Balham, and Tooting Chemists' Association held a thoroughly representative meeting on Monday last, when the relations existing between medical men and chemists were discussed, as well as the questions of recommending and supplying secret proprietary remedies. Mr. John Ingham, of Upper Tooting, formally moved that it should be considered against the best interests of the medical profession and beneath the personal dignity of practitioners, either to recommend secret proprietary medicines or to give testimonials for them. Moreover, as no one is so ready to censure or condemn medical men for so doing, as the average chemist and druggist, Mr. Ingham urged that it logically follows that it is also against the best interests of pharmacy, and lowering to the self-respect of pharmacists, that they should lend themselves to the encouragement and extension of the trade in such articles by readiness to stock and sell practically all nostrums that are foisted on the public—even when many of them are self-condemned by their flagrant and impertinent advertisements, as arrant quackery. He suggested, therefore, that steps should be taken by the Association to try to reduce the evil, and in so doing attempt to bring about a better relationship between the pharmacists and medical men of the district, with regard to prescribing and dispensing generally.

But Mr. Ingham's Proposition found no seconder, though it was received with a good deal of interest and elicited much discussion. The general feeling expressed was that the pharmacist's best policy is to supply everything that the public demands of him, and, further, that it is quite Utopian to anticipate that any attempt to improve the present unsatisfactory relationship between so many medical men and pharmacists, would be productive of any beneficial result. It was alleged that, year by year, there is an increasing tendency on the part of prescribers to supply not only medicines to their patients, but also many sundries. Even Mr. Ingham, we understood, agreed with that statement, and though he was firmly of opinion that a better state of things might be brought about, his motion perforce fell to the ground for want of support. The position of the meeting appears to have been that though reform in the direction indicated is badly needed, it is absolutely useless to attempt to do anything in the matter, and a policy of hopeless inactivity must therefore be allowed to prevail. Whether that is because the chemists of the district are not prepared to yield anything on their side is not clear; all that is certain is that they neither see nor believe that there is any way out of the tangle in which they are involved.

Reverting to the Proposed Resolution, it is perfectly obvious that, whilst the meeting declined to accept it, the first part of it contains nothing incompatible with the views expressed during the discussion. It is not for the pharmacist to say definitely that a certain article shall not be sold, but he may do much to discourage the sale of undesirable articles by declining to stock them to any extent. And most certainly, if he be wise, he will never expose such things for sale, even though he does stock them. As for the rest, the relations existing between medical men and pharmacists will never be modified by passing resolutions at meetings. Whether or not the medical man shall cease to dispense is for him mainly a question of convenience. If his business requirements appear to necessitate the continuance of the practice of supplying patients with medicine as well as advice, the custom is not likely to die out so far as he is concerned, unless its persistence becomes a positive inconvenience. Let the pharmacist show him how he may avoid such inconvenience, by placing improved facilities in his way for prescribing without causing the patient to incur too great expenditure, and the medical practitioner will doubtless lose no time in taking advantage of the opportunity thus afforded him. But it must be a matter of give and take; the pharmacist cannot expect to receive everything and concede nothing.

Opposition to the Pharmacy Bill is not yet at an end, and it is regrettable to find that a member of the Pharmaceutical Society, who happens to be a pharmaceutical chemist, should have so far forgotten what was due to his position as not only to stir up external opposition to the Bill in a questionable manner, but also to congratulate himself upon having done so in the pages of a trade journal which, apparently, was ignorant of his claims to distinction in that respect, and, therefore, not prepared to advertise them. Let us be clearly understood in this matter. Fair and open opposition to the Bill on the part of existing members of the Society would be not only justifiable, but might, from certain points of view, be nothing but what was right. Such opposition was initiated at Manchester, but explanation of the actual position sufficed to avert that danger. In the other instance, however, opposition by an interested person who, by virtue of his seat in the House of Commons, is able to render his opposition effective, is claimed by a Scottish member of the Society to have been instigated by himself. As a pharmaceutical chemist, he objected to the proposal to admit chemists and druggists as members of the Society, but instead of openly expressing that objection, according to his own account, he approached the Member for Camlachie and induced him to oppose the Bill on what, so far as the real objector was concerned, are nothing but side issues. The transaction is not a creditable one, and, if it actually took place, ought to be talked about as little as possible by the person chiefly concerned.

Mr. Chaplin is to receive a deputation at the offices of the Local Government Board on Monday next, April 4, in connection with the proposed amendment of the Sale of Food and Drugs Acts. It is not stated in the daily Press, where this fact is announced, what class or classes of the community will be represented by this deputation, nor is it clear what good can be effected by this method of procedure, but presumably a certain amount of formalities of this and kindred character will be essential before anything is done to reform the adulteration laws.

Milk Made in France is the latest subject of criticism by the ultra-patriotic Press, a new danger to British industry having been discovered through the medium of a consular report on the trade and agriculture of Cherbourg and district. For not only is Norman milk competing with the British product, but, according to this account, it is competing unfairly. Thus, it is stated that a French dairyman near Lyons had for some time been "experimenting in antiseptics for the sterilisation of milk." This statement is somewhat mixed, but its meaning is fairly clear. To proceed, we are told that, ultimately, the dairyman's labours were rewarded by the discovery of a new and very effective though harmless antiseptic—a non-poisonous, wild herb common to the country. It was noticed that the milk of cows which had eaten of this herb did not acidify as rapidly as other milk, and the dairyman accordingly proceeded to experiment "with the antiseptic plant, in the form of a highly-condensed tincture." Needless to say,

the results were extraordinary. "One drop of the tincture added to one quart of milk stopped all fermentation for over six days," whilst excellent butter was made from the cream that subsequently rose, and kept better than any other.

The Saddest Part of the Tale, and one which reveals a marvellous lack of enterprise on the part of mere Britishers, is that when the discoverer of this valuable secret (*sic*) came to London, in the hope of selling his idea, no one would take it up. Perhaps, however, the reason may not be far to seek if, as unkindly suggested, the wonderful antiseptic tincture prepared from a non-poisonous, wild herb is nothing more nor less than a solution of formic aldehyde. But, in that case, it would hardly appear worth while to take shares in the company about to be formed in London to work the business of the Cherbourg firm which did purchase the secret. The Consular Report, from which we glean the above particulars, gravely proceeds to give full details regarding all that it is proposed the new company shall do, and we are warned that Normandy milk treated, of course, with the wonderful antiseptic tincture, may be expected shortly to drive away British milk from London and the provincial towns. If the presence of the marvellous antiseptic be objected to in England, as it probably would be, by the public authorities, the new firm is prepared to rush the market with milk sterilised *à la* Pasteur. On one essential point, and one only, the Report is silent; that is the question who is going to drink the Pasteurised milk. But on this point, probably, the imagination of H.M. Consul at Cherbourg, or that of his informant, failed him. Anyhow, it is interesting to find such pretty romances within the covers of Blue Books.

The Photographic Supplement, which should be inserted in every copy of this week's Journal, speaks for itself, but we cannot refrain from pointing out what an important factor the photographic trade has become in the business of the chemist and druggist. Congratulations have poured in on all sides, in response to our announcement that the Photographic Supplement would appear this week, many of the writers of letters received explaining what an importance the photographic branch of their business has assumed, whilst numerous others who are interested in the art as amateurs express their sense of satisfaction that special arrangements are being made to meet their requirements. So far as can be judged, the novel experiment is a great success, and hopes may therefore be entertained of a repetition at some not far distant date.

Photo-Micrography is a subject that is assuming such importance at the present day, and it suggests itself as such a suitable outlet for the pharmacist's surplus energy, that it has been thought desirable to arrange for a series of illustrated articles showing the most recent advances in the subject. The author of the articles—Edmund J. Spitta, L.R.C.P., M.R.C.S.—is a recognised authority on photo-micrography, and he has produced some most excellent results, many of which we hope to be able to reproduce. In order to present the illustrations in the most satisfactory manner possible, the blocks have been printed in the form of a separate plate, and that will be found inserted in the Photographic Supplement published this week.

The Proctor Testimonial was formally presented on Wednesday last, and though Mr. Proctor was not present to receive it, the proceedings appear to have passed off most satisfactorily. The distinguished recipient of the good-wishes of so many of his fellow craftsmen is, we are glad to state, somewhat better, though not yet able to be out of doors. All our readers will join with us in wishing that he may soon be restored to perfect health.

SIMPLE METRIC CONVERSION TABLES.*

The following abbreviated tables will be found to contain all the equivalents that are usually required for photographic purposes:

Conversion of Grains and Ounces to Grammes, and of Grains per Fluid Ounce to Grammes per 100 Millilitres.

	Grains to Grammes (Gm.)	Ounces to Grammes. (Gm.)	Grains to the Ounce = Grammes to 100 Ml. or C.c.
1	0·06479	28·350	0·228
2	0·12958	56·699	0·456
3	0·19437	85·049	0·684
4	0·25916	113·398	0 912
5	0·32395	141·748	0·140
6	0·38874	170·097	1·368
7	0·45353	198·447	1·597
8	0·51832	226·796	1·825
9	0·58311	255·146	2·053

Explanation of Table.—The first column represents the number of grains or ounces, as the case may be. Thus: 4 grains = 0·25916 Gm., and 4 ounces = 113·398 Gm. The fourth column shows how many grammes to 100 millimetres (Ml.) or cubic centimetres (C.c.) are equivalent to a given number of grains to 1 fluid ounce, thus: 4 grains to 1 fl. oz. = 0·912 Gm. to 100 Ml. or C.c.

Conversion of Minims, Drachms, and Fluid Ounces to Millilitres (Ml.) or Cubic Centimetres (C.c.), and Conversion of Pints to Litres.

	Minims to Ml. or C.c.	Drachms to Ml. or C.c.	Ounces to Ml. or C.c.	Pints to Litres.
1	0·05916	3·552	28·412	0·568
2	0·11832	7·103	56·825	1·136
3	0·17748	10·655	85·237	1·705
4	0·23664	14·206	113·649	2·273
5	0·29580	17·758	142·065	2·841
6	0·35496	21·309	170·474	3·409
7	0·41412	24·860	198·886	3·977
8	0·47328	28·412	227·298	4·545
9	0·53244	31·964	255·711	5·111

Explanation of Table.—The first column represents the number of minims, drachms, fluid ounces, or pints. Thus: 4 minims = 0·23664 Ml. or C.c.; 4 drachms = 14·206 Ml. or C.c.; 4 fl. oz. = 113·649 Ml. or C.c.; and 4 pts. = 2·273 litres.

Conversion of Inches to Micra and Millimetres, of Feet to Centimetres, and of Yards to Metres.

	Inches to Micra (μ)	Inches to Millimetres (Mm).	Feet to Centimetres (Cm.).	Yards to Metres (M.)
1	25399 9	25 4	30·5	0·9
2	50799 9	50·8	60·9	1·8
3	76199·9	76·2	91 4	2·7
4	101599·9	101·6	121·9	3·6
5	126999 9	127·0	152·4	4·6
6	152399·9	152·4	182·9	5·5
7	177799·9	177·8	213·4	6·4
8	203199·8	203·2	243 8	7·3
9	228599·8	228·6	274·3	8·2

Explanation of Table.—The first column represents the number of inches, feet, or yards as the case may be. Thus: 4 in. = 101599 9μ or 101·6 Mm., 4 ft. = 121·9 Cm., 4 yds. = 3·6 M.

Simple Conversion Rule.—When it is desired to convert a formula stated in terms of grains and fluid ounces, into terms of grammes and millilitres or cubic centimetres, regard the grains as grammes and represent each fluid ounce as 440 millilitres (cubic centimetres); the product obtained will then be approximately fifteen and a half times that of the original formula. Or, as the number of grains in the ounce, or of fluid-grains in the fluid ounce, is practically identical with the number of grammes or millilitres (cubic centimetres) resulting when we multiply by 15·432 the number of grains or fluid-grains in a gramme or millilitre (cubic centimetre) respectively, a formula stated in terms of grains and fluid-grains may be expressed in terms of grammes and millilitres, without any calculation being required.

* For more extended tables see the *Pharmaceutical Journal* for February 26, and March 5 and 12. Those tables, with additions, will shortly be re-published in sheet form, for use in the laboratory or dispensary (see advertisement).

Pharmaceutical Transactions.

MIDLAND PHARMACEUTICAL ASSOCIATION.

A meeting of the Midland Pharmaceutical Association was held at Mason University College, Birmingham, on March 24, when Professor Percy Frankland, Ph.D., B.Sc., F.R.S., read a long and interesting paper on

The Bacterial Purification of Water.

In the course of his remarks Professor Frankland said that as a constant reader of the *Pharmaceutical Journal* he had often been impressed with the very wide range of subjects which appeared to be enclosed by the horizon of the pharmacist; in fact, he thought it would be difficult to find any other periodical devoted to the interests of a single profession in which such a great variety of topics were reviewed and discussed. He believed he was right, therefore, in drawing the conclusion that the modern pharmacist in an age of unprecedented specialisation had succeeded in retaining that catholicity of interests which in the past had led to so many brilliant men of science being recruited from the world of pharmacy. Bearing that circumstance in mind, he felt that in addressing a pharmaceutical audience he need offer no apology for having selected a subject which was in some respects very foreign to the interests of the Association of which they were members. About thirteen years ago the chemical examination of water, which had reached its present state of development already more than a decade previously, was supplemented by the introduction of new methods, the virtue of which consisted in their power to reveal the invisible living particles present in all ordinary waters, and to actually estimate the number and ascertain the nature of such living particles, micro-organisms, or bacteria as they commonly called them. Like most other reforms, the new or bacteriological examination of water was at first viewed with much suspicion and disfavour; indeed, it had required many years of hard fighting on the part of its first champions to secure for it that position and respect which it now enjoyed as one of the most valuable weapons of precision at their disposal for combating the subtle germs of water-borne disease. But so great had been the progress in every department of bacteriology during the last twelve years that those who would at the outset have gladly crushed that new science had been obliged to lay aside their attitude of scornful derision, whilst not a few had actually been drawn as zealous converts into its irresistible vortex. A glance at the table of the multiplication of bacteria from one in 0 hours to 280,000,000,000,000 in forty-eight hours conveyed some idea of the fabulous powers of reproduction and rapid multiplication with which some bacteria were endowed. The form and appearance of those minute living particles, which it was the province of bacteriology to study and expose, could only be ascertained by means of the most powerful microscopes. As viewed on the diagram he showed, in their isolated condition, those bacteria looked harmless and insignificant enough, but they presented a far more menacing appearance when seen engaged in their nefarious work, attacking in their millions the vital tissues of their victims, in which they elaborated those poisons which caused disease and death. Of the many bacteria associated with disease they were only that evening concerned with two—the spirullum of Asiatic cholera and the bacillus of typhoid fever, for those were the diseases which had been conclusively proved to be capable of being distributed by drinking water. How the specific bacteria of those two diseases gained access to water was sufficiently obvious when they bore in mind that the drainage from human habitations in which those diseases happened to be prevalent might contain them, and that therefore, all waters exposed to sewage contamination must *primâ facie* be regarded as suspicious. They might conveniently divide the purification processes into two great classes: (1) natural processes; (2) artificial. One of the most striking and remarkable examples of water undergoing natural purification was to be found in the visible improvement which took place in a river during its flow. Now that they recognised in the presence of certain bacteria the great danger connected with water pollution it was obviously of the greatest importance to ascertain how bacterial life was affected by the self-purification of river water. Some years ago he studied the question on the River Dee, in Scotland. The investigation he conducted showed the number of micro-organisms in the water he took at seven different points to vary between 88 and 3780, and was particularly interesting, as the amount of polluting material gaining access at the several points was so small in comparison with the great volume of the stream itself that it was found impossible by chemical analysis to detect any material alteration in the composition of the water of the river, even immediately below each of those sources of contamination. By means of the bacteriological examination, however, each source of pollution was found to have produced an unmistakable although transitory effect on the water of the stream. If they inquired into the mechanism by which that most remarkable disappearance of bacteria in running water was effected, they found that a number of factors must be taken into consideration, and that whilst those factors did not necessarily all come into play at one and the same time, or in every water course, yet, according to present knowledge, they must be held responsible for the bacterial improvement which such running waters underwent during their natural flow. One of the factors to which, perhaps on account of its novelty, great prominence had recently been given in that connection was the remarkable destructive effect which the sun's rays had been found to exert on bacterial life. After referring to the investigations of Downes and Blunt, Momont, Dr. Palermo, and Dr. Geisler, the Professor proceeded to say those present were primarily concerned with the removal of bacteria from water, and the question naturally arose whether that bactericidal action of the solar rays took place when bacteria were immersed in water exposed to sunshine. In that connection he recited the results of experiments he made on anthrax in water for the Royal Society Water Research Committee ('Proceedings Royal Society,' p. 53, 1893). Experiments had also been made to ascertain the precise depth in water at which any bactericidal effect was still exerted by the solar rays. Thus, whilst a photographic plate was still found to be affected by the sun at a depth of 553 feet beneath the surface of the Lake of Geneva, all bactericidal effect was found to disappear at a depth of even ten feet below the surface of clear lake water, whilst with turbid water the range of solar rays was much more limited. Whilst due credit must be given to insolation for what it could actually accomplish, it was obvious that its powers were restricted within comparatively narrow limits, especially in a climate like that of England, in which it frequently happened that for days together, and even weeks at a time, no sunshine was recorded at all. One of the most important natural processes of water purification came into play when water was allowed to remain at comparative rest in the large basins of lakes, or in the still and deep reaches of rivers. Not only did waters under those circumstances become comparatively clear and bright by the subsidence of mechanically suspended particles, but if the storage be sufficiently prolonged, a very considerable reduction in the amount of dissolved organic matter might also take place. That purification of water by sedimentation was largely taken advantage of in the practice of water-engineering; for not only were a number of large communities, like those of Glasgow, Manchester, and Liverpool, supplied with water from lakes, natural or artificial, of great size, but smaller reservoirs were frequently constructed in which more or less turbid waters were permitted to deposit the greater part of their suspended particles before being supplied to the consumer. The question naturally arose as to whether the subsidence of suspended matter was confined to those grosser particles visible to the eye, and giving rise to the appearance of turbidity, or whether the minutest living particles or bacteria shared in that gravitation process also. The answer to that question was furnished by the results of some experiments which he made at the London Waterworks a number of years ago. Samples were collected of the Thames water coming directly from Hampton; secondly, after having passed through one storage reservoir only, and, thirdly, after having passed through two storage reservoirs, and the number of bacteria obtained from 1 C.c. of water were respectively: (1) 1437; (2) 318; (3) 177. Another series of similar experiments was carried out at the Stoke Newington works of the New River Company. At those works the water of the River Lea, mixed with a certain proportion of well-water, was brought along an artificial cutting and was made to pass through two large reservoirs before going on to the filter beds. The number of bacteria obtained from 1 C.c. of water were: (1) cutting above reservoir, 677; (2) outlet of first reservoir, 560; (3) outlet of second reservoir, 183. He had obtained similar results in studying the process of sedimentation in natural lakes. The value of that purification by subsidence was being daily more appreciated, and it should, if possible, be almost invariably resorted to as a prelimi-

nary to other methods of purification. After dealing with the question of temperature he said that by far the most perfect, and on the whole most important, of the natural processes concerned in the bacterial purification of water was filtration through porous strata. The great efficiency of that process was perhaps best illustrated by a bacteriological examination of the water obtained by pumping from deep wells sunk into porous strata like the chalk and new red sandstone formations. Such an examination generally revealed the fact that in those waters bacterial life was almost wholly absent. In the chalk wells of the Kent Water Company he had on many occasions found less than ten microbes in one cubic centimetre. Turning to bacterial purification of water by artificial processes, he said it might be interesting to inquire as to how the bacteria might vary at different depths of one and the same water-basin. Perhaps the most instructive experiments in that direction were those of Karlinski, who examined the water of a lake in Herzegovina with the following results:—Number of bacteria in 1 C.c. at surface of lake, 4000; depth of 5 metres, 1000, 10 metres; 600, 12 to 16 metres, 200—300; bottom (on stirring up mud), 6000. The process of filtration through sand was the most important supplementary purification to which water could be subjected on the large scale. Suitably contrived experiments had demonstrated the factors on which the efficiency of sand filtration depended. The Professor gave many results of experiments bearing on the point, and said that the selection of the finest sand, consistent with obtaining the necessary daily volume of water by means of the available filtering area, was a matter which deserved the most careful attention of waterworks engineers. The influence of frost on the bacterial efficiency of sand filtration had shown a marked increase in the number of bacteria present in the water. Clark's process of purification by treatment with lime was described, and pathogenic and non-pathogenic bacteria in water were next dealt with. Following the results of investigations as to the comparative vitality of typhoid bacillus in Thames, Loch Katrine, and deep well water, the Professor said they clearly showed that typhoid bacilli gaining access to naturally pure water, and especially subterreanean water, would be far more likely to do mischief than if they found their way into naturally impure water exposed to surface influences. It was, moreover, a matter of experience that nearly all the well-defined outbreaks of typhoid had arisen through the contamination of well and spring waters, whilst it had more rarely been found possible to attach the blame of a widely-spread epidemic of typhoid to a contaminated river water. As practical illustration of the value attending the bacterial purification of water, he drew their attention to the great object lesson, one of the most striking in the annals of sanitary science, which was given at Hamburg in the case of the great cholera epidemic of some seven years ago. That, like the recent epidemic of typhoid at Maidstone, was surely sufficient to convince even the most apathetic that the dangers attending the use of contaminated drinking water were not the mere creation of the overwrought imaginations of scientific men and hygienic enthusiasts, but that they were very real dangers indeed, of which everyone should be cognisant, and which it was criminal negligence for public authorities having the health of communities committed to their charge to overlook. No less convincingly did those bitter experiences demonstrate the practical benefits to be derived by the adoption of those methods of bacterial purification the value of which had been ascertained in the laboratory and by patient research.—The interest in the paper was greatly heightened by a numerous series of diagrams illustrating the results of the experiments.

EDINBURGH CHEMISTS', ASSISTANTS', AND APPRENTICES' ASSOCIATION.

The ninth meeting of the twentieth session was held in the Pharmaceutical Society's House, 36, York Place, Edinburgh, on Friday, March 25, 1898, at 9.15 p.m., Mr. George Sinclair, President, in the chair. An address was given by Mr. Peter Boa on

Pharmaceutical Reading.

He entered a plea for more extended reading. He had observed a tendency for young men to read only within the barest limits necessary for passing the Minor. He had further observed a tendency after examination not to read at all in the sphere of pharmaceutical literature. That, he thought, was a great mistake. The art of pharmacy was very old, and in the old books were to be found the bases of our present-day procedure. The old books were of higher literary excellence than the modern ones, *e.g.*, 'Pharmacologia,' Pereira's, Neligan's, and Christison's 'Materia Medica.' In the old days one man produced only one book, and on it staked his reputation. Now it was number rather than quality that seemed to be the aim of authors. A run through some of the old books gave an insight into the origin and evolution of many of the formulæ at present in use. Old names, too, that were still in use among the people were learned, and this was useful for business purposes. In materia medica a broader grasp of the subject than was got by regard to the present Minor examination was desirable. As the subject was "got up" at present it was seldom really understood. Some regard to the meaning of specific names, for instance, affords information, and leads to enlightened apprehension of the subject. Fundamental knowledge was preferable to mere memorised information. A wider range of pharmaceutical reading would be found a source of both pleasure and profit, and a sure means of attaining greater professional success in the practice of pharmacy. —Mr. Hill replied to some queries regarding the sale of poisons.—An interesting discussion followed, and on the motion of the Chairman, a vote of thanks was awarded to Messrs. Boa and Hill, and the meeting closed.

GLASGOW AND WEST OF SCOTLAND PHARMACEUTICAL ASSOCIATION.

At the fortnightly meeting held on Tuesday evening, the 22nd curt., Mr. Thomas Dunlop read a

Note on the Dispensing of Antipyrine with Spt. Aeth. Nit.,

which was a criticism of a communication on the same subject by Professor Caspari, which appeared in a recent issue of the *Pharmaceutical Review* (see *P. J.*, *ante* p. 91). The prescription referred to contained as ingredients, antipyrine, spt. aeth. nit., liq. ammon. acet., aqua chlorof., etc. Mr. Dunlop said: The professor disproved the conclusion that aq. chlorof. prevents incompatibility, and then pointed out that if the spt. aeth. nit. be exactly neutralised with a bicarbonate the decomposition of the antipyrine is retarded "only for a time," whilst an alkaline solution does not develop the green colour "even after standing for several days." Guided by this observation he inferred that the correspondent who brought the matter forward "in all probability used a solution of ammonium acetate which was decidedly alkaline in his final experiment," and, acting on this assumption, Professor Caspari did so with satisfactory results. But he did not—as his paper shows—try the effect of a neutral solution of ammonium acetate, and to that extent his conclusion is fallacious. In proof of this I made three experiments. Fifteen grains of antipyrine were dissolved in three drachms of water. This was placed in three test tubes. To one I added 1 drachm of liq. amm. acet., containing 40 min. of spt. aeth. nit.; to another 5 grains of potassium acetate dissolved in 1 drachm of water and containing 40 min. spt. aeth. nit.; to the third, 5 grains of sodium acetate dissolved in 1 drachm of water and containing 40 min. of spt. aeth. nit. These are the relative proportions of antipyrine and spt. aeth. nit. in the prescription. The neutrality of the acetates was confirmed. The liq. amm. acet. gave an acid reaction on the addition of 1 drop of diluted acetic acid to 1 drachm of the liquor. In 48 hours there was a faint development of the green coloration in the tube to which the sodium acetate had been added, but now, at the end of a week, no change has taken place in the other two tubes, whilst the coloration in the sodium acetate tube has not increased since the third day, and is so insignificant that it can only be seen in daylight. Probably more of the acetate would make it inhibitory too. Years ago, before the days of antipyrine, I observed that acetates prevented the incompatible action of spt. aeth. nit. with iodides and bromides, and by inference I expected they would act similarly in the case of antipyrine, and in this I have not been mistaken. But to secure this result the acetate must be mixed with either of the incompatible substances. The acetates in these cases seem to act similarly to the sodium acetate in the old formula for making syr. ferri phosph. The mineral acid displaces the organic acid, which is without decomposing effect. To act on Professor Caspari's suggestion is, therefore, only necessary in the absence of an acetate. I have here the test solutions, and also, for comparison, one with antipyrine and spt. aeth. nit. only, which, since it was mixed, has produced a fine crop of tufted feathery crystals of isonitroso-antipyrine. —An interesting discussion followed.—Mr. David Watson (secretary) pointed out that there was no official formula for ung. bis-

muth. oleat. in any of the publications such as Squire's, and so there was great doubt in dispensing a prescription written in that fashion as to what a medical man actually meant, adding that he would like to see some official, or rather unofficial, formula for it. His custom was to dispense prescriptions containing 20 per cent. of oleate of bismuth when no definite quantity was mentioned, and after consultation with a number of medical men various opinions were expressed as to what was meant. Some maintained it meant pure oleate when dispensed with some other base, others that it meant 50 per cent., and others again did not refer to any definite quantity. He would like some definite ointment of oleate of bismuth to be prepared so that uniformity could be maintained.—Mr. Dunlop said he had always dispensed according to the original prescription of Professor McCall Anderson, which contained 10 per cent. In Glasgow that was the prescription that was meant as a rule by medical men, because they came through Professor McCall Anderson's classes.—The President said he had taken the opinion of the medical men on the matter. Some of them said 5 per cent., and others 20 per cent. It was unfortunate there was no official recognition of these oleates, and he was not sure whether they would be recognised in the new B.P. As a matter of fact, medical men did not know themselves the strength of the various preparations which they prescribed.—The President gave notice of a motion for the annual meeting to the effect that they hold their meetings monthly after this, stating as his reason for so doing that he believed it would result in a better attendance.—Mr. Currie also intimated his resignation.—The opposition of Mr. Alexander Cross, M.P., to the new Pharmacy Bill has not taken the members of the Association by surprise, as his firm, which carries on the business of seed merchants, chemical manufacturers, importers of guano, nitrate of soda, oil-cakes, etc., in Glasgow, was prosecuted a few years ago at the instance of the Pharmaceutical Society. The Glasgow deputation, which was in London last week in connection with the Bill, had previously waited upon Mr. Cross, and while they failed to remove his objection altogether, they succeeded, it seems, in getting him to modify his views in regard to the measure. The deputation had some reason to believe that Mr. Cross would not offer any serious opposition to the progress of the Bill.—Mr. Laing submitted the following prescription :—

℞ Quin. Bisulph. ..... ℥ss.
Ungt. Hydrarg. Oleat..... ℥ss.
Ungt. Zinci Oleat..... ℥ss.
M. ft. Ungt. Oleates to be neutral.

When prepared with white petroleum jelly a blue colour was developed in a comparatively short time; when prepared with yellow petroleum jelly this did not take place. Mr. Laing said he should like to know what caused this blue coloration.—Mr. Watson asked if the white jelly was free from sulphur.—Mr. Dunlop thought it might be due to some acid used in bleaching the white jelly.

NEWCASTLE-UPON-TYNE AND DISTRICT CHEMISTS' ASSOCIATION.

On Wednesday night, the first annual dinner of this Association was held in the Hotel Métropole in that city, and advantage was taken of the occasion to make a

Presentation to Mr. Barnard Simpson Proctor,

who has just recently retired from business as a chemist in Newcastle, with a handsome carved timepiece and a cheque subscribed by his chemist and druggist friends in the district. The interesting proceedings were presided over by Mr. T. Maltby Clague (President of the Association), who presented each of the guests with an excellent photograph of Mr. Proctor. The vice-chairs were occupied by Mr. A. E. Owen, Mr. C. Ridley, and Mr. J. D. Rose (Jarrow). There were also present Alderman John Harrison (Sunderland), Mr. T. Simpson (Newcastle), Councillor R. L. Dunford (Newcastle), Mr. T. Simpson (Newcastle), Mr. R. H. Bell (Sunderland), Dr. Horsfield (Newcastle), Mr. E. W. Penman (Jarrow), Mr. L. Williamson, Mr. J. L. Wilkinson, Mr. W. Kerse, Mr. F. Gilderdale, F.C.S., and Mr. J. Tinline (Newcastle), Mr. S. Richardson (Stockton-on-Tees), Mr. A. T. Maxwell, Mr. J. Scott-Dickson, Mr. J. J. Dakers, Mr. J. R. Jones, and Mr. J. Dakers (Newcastle), Mr. John Gibson, jun. (Hexham), Mr. Jas. Whittle (Morpeth), Mr. R. Wright (Newcastle), Mr. R. Cubey (Blaydon), Mr. W. Pescod and Mr. Geo. Duncan (Newcastle), Mr. R. Brand, Mr. E. Gibbon, and Mr. R. Moncrieff (Wallsend), Mr. P. Bell, Mr. J. Graham, Mr. F. R. Dudderidge, Mr. E. Dean, Mr. A. Napier, Mr. W. Atkins, and Mr. G. F. Merson, F.C.S., Secretary (Newcastle). Mr. Proctor was represented by Councillor R. L. Dunford.

Mr. A. E. Owen (Vice-President) gave the toast of

The Pharmaceutical Society,

and in doing so said he was glad to see a member of the Council present, namely, Alderman Harrison, of Sunderland. He was glad they still had good men to look after the interests of the trade.

Mr. Dudderidge responded to the toast, which was enthusiastically received. He admitted that the Society had made mistakes in the past, but if the Bill to which Mr. Owen had referred was passed through Parliament it would remedy, he believed, to a great extent, the errors of the past. There had been a great and a justifiable outcry on the part of a large and influential section of the trade that the Society had not been representative of the trade. The Bill at present before the House of Commons, which had unfortunately been blocked, would do a great deal to remove that ground of complaint. If the Bill passed they would all have a right to become members of the Society and to have a share in its Council. He trusted they would all embrace the opportunity and become members of the Society and that they would support it. Then, if further legislation was needed, and he thought most of them were agreed that it was, the Society could go to Parliament feeling that they had at their back the whole body of chemists and druggists in the country.

Mr. R. H. Bell (Secretary of the Sunderland Association) proposed

The Newcastle-on-Tyne and Kindred Associations.

He believed the present Bill would be shelved, but was sure that if chemists would only help themselves they would not need the help of anybody else, and he appealed to the members of the Association to back up their leaders.

Mr. Kerse, in responding, said he trusted the trade would become thoroughly united. He hoped that soon instead of their having between forty and fifty members in the local Association they would have over 100. With the number of retailers in Newcastle and district they ought to have a strong association. Together with Sunderland they ought to have an association which would have some weight with members of Parliament, and induce them to support the Bill before the House of Commons.

Mr. Merson (Secretary of the Newcastle Association) also replied. Speaking of the futile attempts which had been made during the past fifteen or twenty years to carry on associations of chemists in Newcastle, he was of opinion that they had hitherto gone on too scientific lines. He thought their monthly meetings might be more of a social character. Their aim was to get the members to know each other in a friendly way.

The Presentation.

Alderman John Harrison then made the presentation. He spoke with a deep sense of personal feeling because he had known Mr. Proctor for many years, and had been indebted to him for many acts of kindness. He had sought Mr. Proctor's advice on many occasions, and had always received it. The occasion was a painful one in this respect, that they felt that, as members of a great craft, they were parting, as it were, with one who had played a very conspicuous part in that craft for nearly half a century. Mr. Proctor passed his qualifying examination on April 19, 1853, or nearly forty-five years ago. Four years later he became a member of the Pharmaceutical Society, and remained a member of it to the present. In its early days he was two years a member of the Council of the Society. Alderman Harrison spoke of the difficulties involved in a journey from Newcastle to London in those days, and proceeded to say that Mr. Proctor found what some of them even found nowadays, that it was a serious drain upon their time and energy to attend the business of the Society in London. Mr. Proctor had also filled another important position in connection with the Society—a position of almost greater importance than that already referred to. He was for some years an examiner of that body, and in that capacity he no doubt made not a few enemies. He also made a very great number of friends. In that national sphere of work as a member of the Board of Examiners, and as a member of the Council, Mr. Proctor had fulfilled honourable, arduous, and responsible positions. He (Alderman Harrison) did not know that if they went through the pages of the *Pharmaceutical Journal* and the Conference 'Year-Book' they would find any other man had played a more important part in those two great works than Mr. Proctor. Advancing years seemed to have in no

way diminished his energies. Having pointed out that the two journals mentioned did not exhaust Mr. Proctor's contributions, Alderman Harrison went on to say that the two leading traits of Mr. Proctor's character were his high sense of duty, and his determination to excel. They saw his sense of duty very clearly marked in his career. He (Alderman Harrison) had turned up a *Pharmaceutical Journal* the other day in which there was reported an address delivered by Mr. Proctor in 1876, at the opening of the School of Pharmacy in London. In that address Mr. Proctor explained that, as a boy, he had no taste for chemistry. His tastes were rather in the direction of mechanics and physics, but he was induced to enter his father's trade. "I never ceased," he said, "to endeavour to make the best of the position to which I was bound by circumstances which had more weight with me than my personal inclinations." His sense of duty led him into his father's pharmacy and kept him there during his apprenticeship. After his apprenticeship was completed he went to Bloomsbury Square and afterwards came down to Newcastle. He realised his early aspirations. He became one of the leading pharmaceutists not only in England but throughout the whole of the world where English pharmacy was known. With regard to his determination to excel, Mr. Proctor, in an address to pharmaceutical students on October 4, 1876, said: "The first and most important thing was that I began my apprenticeship with the intention of making myself as well acquainted with my business as any man in Newcastle, and commenced from the first to pick up information wherever I had an opportunity." He (Alderman Harrison) believed Mr. Proctor fulfilled that particular function. Again, if they took the trouble to read the preface to his well-known work on pharmacy, they would find how he explained the way in which he became to be appointed lecturer upon pharmacy in this great city. He said: "I have retained throughout the feeling that I am by nature a student rather than a teacher, and the fact will be found to have left its mark upon my work." Attempts had been made to form associations in connection with the trade, but without success. That applied to Newcastle as well as other places, and at the time of the passing of the Pharmacy Act there was great alarm amongst some people as to whether the apprentices would be sufficiently well trained to pass the Minor examination. There were at that time efforts made in almost every large town of England, as well as of Scotland, to form local schools of pharmacy so that the young men might be taught the science of their business whilst remaining at home. Mr. Proctor was asked to take up the work, and he consented to do so. He said, "The post was one which I did not seek to obtain nor feel at liberty to decline. It was my duty to do what I could for the general good, and as the department of pharmacy had been allotted to me, it remained only for me to do my best to fill it to the satisfaction of the students who might hear me and to the credit of the College, which had been the first to institute a lectureship in pharmacy." There, again, they saw his strong determination to excel and to do his duty. And right nobly and well had he done his duty. His private character was perhaps better known to many present than to him (Ald. Harrison). Though an eminently scientific man and a man of very high attainments, he was a man of extraordinary modesty—a man whom anybody could approach. He was always ready to give advice and assistance. The time had come when Mr. Proctor must take leave of the active sphere of work in which he had been engaged, and it was a matter of deep regret that his health, even at his advanced age, had compelled such retirement. But if Mr. Proctor felt that his powers were no longer equal to the duties he was called upon to discharge, he had done the wisest and best thing. They hoped he might live many years in comfort, quietude, and peace. But they did not wish him to leave them without some tangible mark of their esteem, and some token of the deep obligations under which he had laid them all. They deplored his absence that night, but he had doubtless taken the right step.

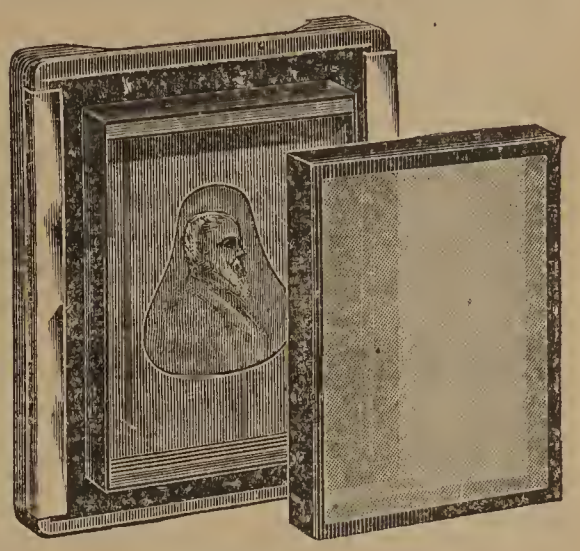
> "Husband out life's taper at the close,
> And save the flame from wasting by repose."

—Mr. Thos. Simpson supplemented Alderman Harrison's remarks, and Councillor Dunford, in acknowledging the gifts for Mr. Proctor, said he could not find words to thank those present. Mr. Proctor had retired, after a long and arduous life—a life not devoted to self-seeking, but to self-sacrifice. He was always desirous that the knowledge he possessed himself should be given to others, and was ever eager to benefit those in the same trade as himself. His works had been of immense service to other writers. Nothing could have pleased him more than to find that the work he had done had been appreciated. He (Mr. Dunford) would have great pleasure in conveying to Mr. Proctor the good wishes to which expression had been given that evening.

NOVEL APPLIANCES.

AN ADJUSTABLE VIGNETTER.

The Patent Vignetter, constructed by Salmon and Son, 169, Hampstead Road, N.W., may be used with any ordinary printing frame and in no way interferes with its use when vignettes are not required. It effects a great saving of time, being attached or detached immediately. It remains secure in any position, being clipped by aluminium slides, allowing of adjustment up and down or sideways, and by means of metallic grooves the vignetting cards (not serrated) can be placed nearer or farther from negative and at an angle or immediately changed for another card of different size opening, producing a vignetted print of the greatest excellence. It will vignette any part of negative, viz.: carte-de-visite bust from three-quarter length cabinet. Unpicturesque surroundings of groups, etc., may be vignetted out, as the cards can be cut to any shape. The prices, including aluminium slides, and 12 vignetting cards (six with openings of different sizes, and six for cutting as desired), are for ¼-plate, 2s.; ½-plate, 2s. 6d.; 1·1 plate, 3s. 6d.

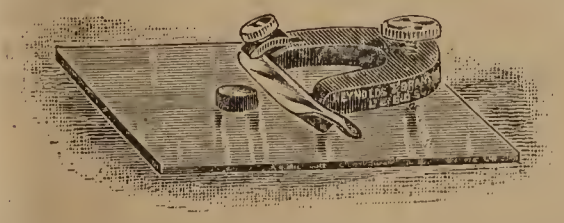


A NEW CLINICAL THERMOMETER.

Messrs. Maw, Son and Thompson, of London, send a specimen of a new patent clinical thermometer which they are putting upon the market. Hitherto the great disadvantage of all forms of thermometers has been the difficulty experienced in shaking down the index after use, but in this new form that difficulty is entirely obviated. The efficiency of the instrument is proved by comparing it with one of the old forms of clinicals by forcing the mercury in each up to 105, then holding the two together side by side in one hand and shaking them in the ordinary way. After one gentle shake of the hand the mercury in the patent instrument goes down about twice the distance it does in the other. This new principle is adapted to all forms of clinical thermometers, whether "½ minute," "1 minute," ordinary or lenticular, etc., and the difference between the price of the new and old forms is only 8s. per dozen.

A STUDENT'S MICROTOME.

Microtomes, properly so-called, are usually somewhat complicated appliances, and also expensive, but the instrument made by Messrs. Reynolds & Branson, of Leeds, and used at the Leeds Medical School is simplicity itself. As will be gathered from the illustration, the instrument is arranged to slide on a glass plate, the substance to be cut being embedded and fixed on that plate. Sections of any degree of thickness may then be cut by simply raising or lowering the screw. The microtome is so arranged that any razor may be clamped to it, and it will be found extremely useful to students in physiology, botany, etc. The price of the microtome, with glass plate, is only 3s. 9d., postage 6d. extra, and suitable razors are supplied at 1s. and 2s. each. No better value has ever been offered for the money.



MEDICAL JOTTINGS.

In the ordinary course the next session of the General Medical Council would not take place till next May, but two events have occurred which have rendered it necessary to summon the Council to meet for special business next Tuesday, the 5th inst. The death of Sir Richard Quain, the President, has made it necessary to appoint his successor, and as the Midwives Bill Committee of the Council has formulated a very large number of amendments to the Bill, which is down for the second reading in the House of Commons on May 11, it has been considered advisable that a plenary session of the Council should be held before that date for their consideration.

A Curious Difficulty has arisen in connection with this special meeting of the Council, which was not timed to meet according to its own standing orders till May. Power to summon a special meeting resides, according to the Medical Act, in the President, either on his own initiative or on the requisition to him of eight members of the Council. The difficulty has been solved by the Senior Treasurer, Sir Dyce Duckworth, who has risen to the occasion and summoned this special meeting on his own responsibility.

Both the *Lancet* and *British Medical Journal* indicate Sir William Turner as the most likely member to succeed to the presidential chair; but the disadvantage is that he resides in Edinburgh, where for many years past he has been Professor of Surgery at the University. During Sir Richard Quain's illness Sir William presided at the Council and conducted the business with fairness and success, and he no doubt would make a most efficient and courteous President. Mr. Bryant, who is well known to have acted on many occasions as Sir Richard Quain's lieutenant, has an excellent grip of the Council's business, and would be a very satisfactory choice to most.

The Question why Medical Prescriptions should be written in Latin has recently been discussed in an evening paper, but, according to the *British Medical Journal*, but little help thereby has been afforded towards its solution. Our contemporary points out that to some minds it might seem well if the point were settled as to whether prescriptions are written in Latin, though it may be admitted that they are written in no other tongue, and that the language, however it may be classed amongst the families of human speech, is at the worst less of a linguistic outrage than law Latin. At any rate, its barbarism is less apparent because it is veiled by the decent obscurity of abbreviations and symbols intelligent only to adepts. The fact is (continues our contemporary), we in this conservative country stick to Latin as being almost the only relic of our ancient reputation for classic learning, and now that science has replaced mystery we could well afford to discard this last vestige of pedantry.

Sir Thomas Smith, Bart., has retired from his post as one of the Surgeons to St. Bartholomew's Hospital, in consequence of the age regulations, and it is understood the vacancy will be filled by the appointment of Mr. Walsham, the Senior Assistant Surgeon.

The Death of Dr. Charles West, at the advanced age of 81, removes from the medical profession one who some years ago was a very prominent figure in it. He graduated at the University of Berlin in 1837, and became a member of the Royal College of Physicians in 1842. Seven years later, in conjunction with the late Bence Jones, he founded the Hospital for Sick Children in Great Ormond Street. Dr. West's name is known to the whole medical world by his writings on children's diseases, a department of medicine in which he was a pioneer and for a long time the leader.

The will has been proved of the late Mr. Ernest Hart, of Fairlawn, Totteridge, and formerly of 38, Wimpole Street, the editor of the *British Medical Journal*. The executors are his widow, Mrs. Alice Marion Hart (daughter of Mr. Alexander Rowland, of Hatton Garden); Mr. Hyam, solicitor, of Finsbury Pavement; and Sir Ernest Clarke, of 13, Hanover Square. Mr. Hart bequeathed to the trustees of the British Museum the signet-ring of Anemophet, King of Thebes, and he appointed the trust fund of the settlement made on his first marriage to his sisters. He left his residuary estate to Mrs. Hart. The testator's personal estate has been valued at £12,114 18*s.* 11*d.*

CANADIAN LETTER.

(*From our Special Correspondent.*)

I observe that in your issue of March 5, Messrs. Evans, Sons and Co. take exception to my remarks regarding the dissolution of the Wholesale Druggists' Association of Canada, and they venture the remark that "Your correspondent has been misinformed when he says that the retailers are not greatly exercised over the matter." If Messrs. Evans, Sons and Co. would read my statement carefully they will see that the words "prospects" and not "matter" was used, and also that I gave reasons for my assertions. I fear the word "misinformed" is more applicable to Messrs. Evans, Sons and Co. than to your correspondent. At the risk of prolixity in a matter which may not be of great interest to your readers, I will take space to correct Messrs. Evans Sons and Co. on the statement made by them—"Our firm joined the Wholesale Association at the earnest solicitation of many retailers." The writer of that most certainly is not informed on the subject with which he deals. The retailers were not in any manner concerned in the wholesale organisation, nor in soliciting any firm to join it. The formation of the Association was entirely among the wholesalers. The Retail Association did solicit and secure the signature of the individual wholesale firms to an agreement not to supply cutters with goods. Messrs. Evans, Sons and Co. signed that agreement, and, as I understand, still consider themselves bound by its conditions, notwithstanding the dissolution of the Wholesale Association. An impression might be conveyed by the disbanding of this organisation that the fight against cutters in this country had been abandoned. Such an impression would be erroneous, as the more powerful organisation of the retailers has yet to be reckoned with. As intimated in my previous letter, the Council of the Ontario College of Pharmacy has taken the matter up and organised a fifth standing committee, the duty of which shall be "the looking after the commercial interests of its members." The College being a wealthy body and the Committee having an assured income its work will be more permanent and systematic than could be that of any organisation depending on voluntary contributions for its maintaining. This Committee proposes completing the organisation begun by the Ontario Society of Retail Druggists, making use of district associations for the purpose. This Union is, then, to be used as a lever for compelling patent medicine proprietors to surround their goods with such safeguard as will prevent their being used as a means of destruction against the pharmacists. While efforts are being put forth on these lines to benefit pharmacy generally, there are forces at work quietly which promise to be no inconsiderable factor in the final solution of the cut-rate problem. The individual pharmacists, finding that the manufacturers were utterly unreliable so far as concerns putting forth an effort to protect their goods, have turned upon erstwhile friend and ally and are rapidly placing themselves in a position independent of the nostrum vendor. The superior education imparted through the medium of our thoroughly equipped College of Pharmacy is the means by which the end is being attained. Students are going forth from this school prepared for the fray. They are putting their attainments to practical use by supplying the needs of customers without recourse to ready-made medicines. Co-operative manufacturing is another factor in a situation which is hastening the downfall of the patent medicines. There is in the province of Ontario one very successful concern of this kind, organised some five years ago when cutting first began. The business established in the cities of Toronto and Hamilton has extended until the goods are now handled by pharmacists throughout the Dominion, from Montreal to Vancouver, B.C. The sale of these goods is confined exclusively to the pharmacists, to whom they are furnished at a price which permits of a good profit to the retailer, and also allows a dividend of 8 per cent. per annum on the capital employed. The formulæ of all preparations supplied by this organisation are furnished to the pharmacist handling the goods if so desired. Quite recently another institution has been established on slightly different lines, but yet co-operative in principle. This enters into direct competition with patent medicines by advertising its goods to the public through the daily Press, a course not pursued by the first-mentioned company. My information is to the effect that the prospects of this Company for success are good. To sum up, then, the cut-rate situation in Canada is this: Cutting exists in some dozen or so cities and towns, and in all cases emanates from

departmental stores or groceries and not from the ranks of the pharmacists. Its effect has been a reduction in the margin of profit on business done, and not a decrease in the number of pharmacists. The reduction in profit has been met by a corresponding curtailing of expenses; consequently the practice has borne more heavily on assistants than principals. The means put forth to counteract the evil are—organisation, individual effort to supply the requirements of customers without the aid of patent medicines, and co-operative manufacturing. Results so far (a knowledge of these has been acquired by conversations with a large number of proprietors)—the demoralisation of the patent medicine business equal to that experienced by the retail druggists, the fostering of a spirit of independence and commercial enterprise in pharmacists which but a few years ago was foreign to them, and also teaching, one might say forcing, them to make practical application of the knowledge acquired during the years of their pharmaceutical training and the lessons learned in their college course.

While the problem forced upon us by the cut-rate practice has occupied much of the time and thought of those who take an interest in the general welfare, it has by no means absorbed all their energy and attention. During the session of 1896-7 the Legislature of the province of Ontario, at the instance of the licensed liquor vendors and temperance people combined, allowed the following stupid amendment to be added to the Licence Act:—

(1) Nothing in this Act contained shall prevent chemists and druggists, duly registered as such under and by virtue of the Pharmacy Act, from keeping liquors for sale for strictly medicinal purposes, or from selling liquors for strictly medicinal purposes in packages of not more than six ounces at any one time, or from selling for strictly medicinal purposes any mixture containing liquors mixed with any other drug or medicine in packages of not more than one pint at any one time, but in either case only under a *bonâ-fide* prescription of such liquor or mixture duly signed by a legally qualified medical practitioner. Comment on this appears superfluous. The proper officer was on hand in the person of a superofficious licence inspector to supply the correct staging for this farce-comedy, and one of our leading pharmacists had to answer a charge of violating the licence law by selling a bottle of patent medicine. The magistrate before whom the charge was tried was a sensible person, and seeing the unreasonableness and injustice of the proceedings recommended the matter back to the Department of Justice to have the charge withdrawn. The matter thus brought to the attention of the Government, redress was speedily promised, notwithstanding which it required most strenuous efforts on the part of those having the case in charge to secure the repeal of this obnoxious clause, and the enactment of sensible regulations governing such matters. Our labours were, however, finally crowned with a fair measure of success, and the law, as it now stands, is more satisfactory than at any previous time. Pharmacists are permitted to sell quantities of not more than one gallon of pure alcohol at a time, all preparations of the B.P. or other standard pharmaceutical authorities, and also all patent or proprietary medicines in the original and unbroken packages which contain only sufficient alcohol to hold the medicinal constituents thereof in solution, or to prevent fermentation. Six ounces of spirits may also be sold in cases of emergency, without special licence or medical certificate.

OBITUARY.

Wilkes.—On March 6, David Wilkes, Pharmaceutical Chemist, Bredon. Aged 77. Mr. Wilkes. who had been a member of the Pharmaceutical Society since 1858, formerly carried on a chemist's business in Bredon for many years, but retired from business about five years ago.

Brookes.—On March 7, Alfred Fincher Brookes, Chemist and Druggist, Birkenhead. Aged 34.

Kersey.—On March 21, Joshua E. Kersey, Chemist and Druggist, Plaistow. Aged 70.

Williams.—On March 22, Walter Williams, Pharmaceutical Chemist, Hereford. Aged 80. Mr. Williams had been a member of the Pharmaceutical Society since 1844, and was local secretary for Hereford for many years. He retired in 1895.

Blood.—On March 23, Charles Blood, Chemist and Druggist, late of Formby. Aged 53. Mr. Blood was with Messrs. John Thompson and Co., of Hanover Street, Liverpool, and was down in the Register as of Waterloo.

LETTERS TO THE EDITOR.

The British Pharmacopœia.

Sir,—I would like to call attention to the advantage of having copies of the B.P. interleaved with blank paper. The student preparing for examination and the chemist in business would soon find the value of such a book after they had begun to use it. When preparing for the Major examination five years ago, I took the trouble to interleave my B.P. with foreign notepaper. The result was by no means elegant, but the volume has been exceedingly useful and handy. If the authorities would issue an edition with blank leaves, I think it would be appreciated. If not, I shall have to spoil the appearance of my new B.P.

March 24, 1898. Quidam (129/13).

*** If an interleaved copy is ordered from the publishers or through a bookseller, there ought to be no difficulty in procuring it. [Ed., *P. J.*]

The New Pharmacy Bill.

Sir,—It will scarcely be expected that the factious opposition of one unsupported M.P. will frustate the intentions of the Pharmaceutical Society, particularly as it seems animus was the motive. Mr. Cross was prosecuted and very leniently dealt with by the Glasgow magistrates, but he seems not to have forgiven the Pharmaceutical Society or the law which he is bound to support. There exists, however, a strong feeling in Glasgow on the subject amongst the leading chemists; probably Mr. Cross will be remembered on the occasion of another election.

March 26, 1898. R. G. Mumbray.

Millionaires in Pharmacy.

Sir,—In an editorial note in the Journal of March 19 I see you refer to the late Mr. Lea, of Worcester, as being one of those extremely rare persons who could trace his wealth directly to pharmacy. You appear to think it matter for congratulation that there should now and then be found a "millionaire pharmacist." I venture to point out that the late Mr. Lea evidently felt no special interest or indebtedness to pharmacy or pharmacists, as, although he was evidently a benevolent man, leaving large sums to local charities, the claims of our Benevolent and Widow and Orphan Funds seem to have been entirely overlooked. Is it that our system of representation in the provinces is at fault? As "millionaires in pharmacy" are so very scarce, surely they should be looked after.

March 29, 1898. Lazarus (129/23.)

A Disclaimer.

Sir,—A person signing himself J. Islop, 72, Albany Mansions, Albert Bridge Road, S.W., has been, and is extensively circulating orders amongst chemists, and as some of my customers have executed such orders thinking that they were for myself or some relation, I think it is due to the firm of Messrs. Warrick Brothers, whom I represent, that I should disclaim any connection with the individual in question.

7, Portpool Lane, E.C., March 30, 1898. Charles C. Islop.

ANSWERS TO QUERIES.

Seltzogenes.—You had better apply to the manufacturer, M. E. Thessier, 9, Rue Castex, Paris, who no doubt will afford you the information required. [*Reply to* Assistant.—7/28.]

Cows Aborting.—This appears to be a case for a veterinary surgeon, not for a chemist. We have no information on the subject.—[*Reply to* Agricultural.—7/13.]

Practical Botany.—If you mean for field work, use Holmes' 'Botanical Notebook' (Christy, 3*s.*), and Hayward's 'Botanist's Pocket-Book' (Bell, 4*s.* 6*d*). [*Reply to* W. H. W.—7/23.]

Photographic Journal.—The best weekly paper is the *Photographic News*, edited by a pharmacist and published at 9, Cecil Court, Charing Cross, London, W.C., on Friday, price 1*d.* [*Reply to* S. H.—7/17.]

Colour for Iodic Hydrarg. Solution.—Probably one of the colours which already contain iodine in combination, such as iodeosin, will answer your purpose. [*Reply to* E. M.—7/31.]

Anti-Halation Backing.—We shall be pleased to report on it if you will forward a sample. [*Reply to* J. J.—8,7.]

Handbook.—As you will see, arrangements are already in progress for such a book as you suggest. [*Reply to* W. J.—8/8.]

Antikamnia.—It is alleged to contain about 70 per cent. of acetanilide, 10 per cent. of caffeine, and 20 per cent. of sodium bicarbonate, but there is reason to believe that its composition is not constant. [*Reply to* Spes Infracta.—8/2.]

Second-Hand Apparatus. — The prices obtainable depend largely upon the demand for the particular articles, and we believe they usually range from half to two-thirds the original retail prices. [*Reply to* C. S. A.—8/6.]

Treatment of Baldness.—No, we do not think your ointment would be of much good. The treatment of Brocq with resorcin and quinine is more likely to be useful. See *Pharmaceutical Journal* [4], iii., 215. [*Reply to* J. C.—7/18.]

Retail Prices.—It is usual to permit customers to use dark-room free of cost; a fair charge to strangers who do not purchase anything would be 1*s*. See the article in this week's Supplement. If you will specify the solutions we shall be glad to suggest suitable retail prices. [*Reply to* G. and S.—8/3.]

Camera.—You do not state as to what price you are prepared to pay, but considering that you want to use the camera for photo-micrography, we should advise you to see Houghton's extra long extension Sanderson camera; at any rate, you must not have very conical bellows. [*Reply to* T. K.—8/1.]

Minor Examination.—Read the special article on the subject in the "Students' Number" of the Journal, published September 11 last. The regulations do not specify where the necessary experience is to be gained, but you must put in three full years altogether. [*Reply to* Medical.—7/30.]

Dead-Black for Camera.—Water, 500 C.c.; borax, 15 Gm.; shellac, 30 Gm.; glycerin, 15 Gm. Boil till dissolved, filter, and add aniline black, 60 Gm. Or, get some drop-black ground in turpentine, add to it a few drops of japanner's gold-size (just sufficient to prevent the paint rubbing off when dry), and thin with turpentine to the required consistency. In either case, apply with a soft brush. [*Reply to* H. H. M.—7/27.]

Neutral Liquid Soap.—Your quickest way to prepare this will be to saponify a little oleic acid with a solution of caustic potash in methylated spirit, using only the exact quantity or a little less of the alkali than is required for saponification. You can readily determine exactly the amount of alkali required by first titrating a known quantity (say 5 C.c.) of the acid in methylated spirit, with normal alkali. You cannot well add lanoline to a fluid preparation unless it be an emulsion. Lanoline is very difficult to saponify. Remember that all soap becomes alkaline in the presence of water by hydrolysis. [*Reply to* Posa.—7/32.]

Crystoleums.—The old method of preparing these was to print on albuminised paper and stick them on to the glass and then remove the paper with sand-paper, but a very much better method is to use the 'Novitas' Stripping P. O. P. (Otto Schölzig, 31, Binfield Road, Clapham, S.W.). This is printed, toned, fixed, and washed as usual, and then the glass coated with gum, water, and the print rubbed into contact, and then after drying soaked in tepid water, when the paper may be entirely removed, leaving nothing but the thin film of gelatin bearing the image. Ordinary photographs may be coloured with either oil or water colours, for the former they should be sized with gelatin first, for the latter rubbed over with ox-gall, 60 grains; alcohol, 2½ ounces; distilled water, 7½ ounces; allowed to dry, and then painted. The best method of colouring them, however, is by the Radiotint process, which consists of three solutions, red, yellowish-green, and blue. This is practically the Chassagne process of photography in natural colours, and the results are very good. The materials may be obtained from 48, Brook Street, Hanover Square, London, W. [*Reply to* Crystoleum.—7/19.]

London Agent.—We will make inquiries for you, but why not advertise the fact that you require a London agent for your yachting photos? [*Reply to* B.—8/10.]

Sachet Powder.—Powdered orris root, 16 ounces; otto of rose, 20 minims; oil of neroli, 20 minims; oil of sweet orange, 2 minims; coumarin, 10 grains; vanillin, 5 grains; musc Bauer, 2 grains; civet, 2 grs.; oil of pimento, 3 mins. [*Reply to* East Anglia.—7/8.]

Mounting Glazed P.O.P.—You can cover the back of the print whilst it is on the glass with the dextrine mountant given elsewhere. Strip the print when dry and then just damp your mount and squeegee the print down. [*Reply to* Amateur.—8/14.]

To Prevent Water Freezing.—Probably 10 or 15 per cent. of glycerin will answer your purpose, but the actual amount will depend upon the temperature to which the pipes are exposed, and in a lesser degree on the calibre of pipes. Crude brown glycerin should be used. [*Reply to* A. H. T.—7/16.]

Laudanum.—The name is synonymous with tincture of opium throughout the whole of the United Kingdom, and it is doubtless regarded as such wherever the British Pharmacopœia is taken as a standard and guide, that is to say, throughout the British Empire. [*Reply to* Apprentice.—7/25.]

Minor Exam.—It is held that you must be of the full age of twenty-one years on the fifteenth day of the month preceding that in which the examination is held. In other words, you must be of full age at the time you pay the examination fee to the Registrar. [*Reply to* Apprentice.—7/25.]

Hydroquinone Developer.—You will find good formulæ for hydroquinone in this week's Photographic Supplement. As a rule, two 8-oz. bottles are sold for 2*s*. Gold toning solutions generally about 8 ozs. for 1*s*.; this naturally depends upon the strength of the gold. [*Reply to* H. E. C.—8/13.]

Composition of Tablets.—These consist mainly of bismuth carbonate, with pepsin and a trace of "capsicine." We could not detect morphine in the amount of material sent; even if it were present the quantity would be too minute to isolate from such a small specimen. [*Reply to* Indigestion.—7,9.]

Laundry Spermaceti Shirt Liquid.—Spermaceti, 1 oz.; mucilage of acacia, 1½ fl. oz.; borax, 1 oz.; glycerin, 1 oz.; tincture of quillaia, 1 oz.; warm water, 16 fl. ozs. Dissolve borax and glycerin in the warm water and add the mucilage. Melt the spermaceti, triturate it in a hot mortar first with the quillaia tincture, then gradually add the warm aqueous mixture. Stir until cold. Use 1 part of the liquid to every 8 parts of hot starch. [*Reply to* H. H.—7/27.]

Ammoniated Solution of Phenol for Detection of Copper.—Probably the reagent should be freshly prepared. It is quite probable that both your solution of ammonia and your phenol contain an infinitesimal trace of metallic impurity, or afterwards dissolve the same from the glass of the bottle. Having had occasion to use solution of ammonia sensibly free from metals (Fe and Pb) we have had considerable difficulty in obtaining it before now. From the gradual development of the colour we should suspect the glass of the bottle. [*Reply to* J. C. F.—7/1.]

Manufacture of Acetylene.—The necessary apparatus for the manufacture of acetylene gas on a commercial sale for illuminating purposes consists of a generator and a gas holder. Your best plan would be to see the price lists of the Fowler Acetylene Gas Company, 298, Marsh Lane, Bootle; Thorn and Hoddle, New Tothill Street, London; the Acetylene Light and Power Company, Cheapside, London, and make your choice. A great deal depends upon the number of lights you require, how far the gas has to be carried, and so forth, but you state nothing about those points. —[*Reply to* J. D.—8/4.]

COMMUNICATIONS, LETTERS, etc., have been received from Messrs. Addison, Allenby, Beken, Blythe, Branson, Brown, Clague, Cocker, Cruickshank, Davies, Fraser, Green, Greenwood, Horsfield, Ingham, Ireson, Johnson, Jones, Knaggs, Knight, McAllister, McKinnon, Mumbray, Newsholme, Pickard, Pratt, Reynolds, Ridlington, Smith, Thursfield, Wallace, Widgery Young.

The British Pharmacopœia, 1898.

AT no time since the appearance of the British Pharmacopœia in 1864 has so much interest been taken in the national medicine-book as now in anticipation of the issue of the new edition. There are three paramount reasons why pharmacists should feel a deeper interest than usual in the forthcoming volume. Excepting the Addendum of 1890, this is the first time that they have been asked as a body to co-operate officially with the General Medical Council. It has been generally understood that an attempt was being made to express the formulæ in the metric system of weights and measures. And there have been good grounds for believing that the new edition would be an Imperial British Pharmacopœia. The labour which has been expended upon it justifies us in entertaining great hopes of its scientific and literary accuracy, and of its usefulness. Committees the world round have debated upon it and made their recommendations. Through the Colonial Office the General Medical Council received reports and recommendations from the Bahamas, Barbados, Bermuda, British Honduras, Cape of Good Hope, Ceylon, Cyprus, Hong Kong, India, Jamaica, Malta, Natal, Queensland, St. Helena, Sierra Leone, South Australia, Canada, New South Wales, Tasmania, Victoria, Western Australia, Zululand. In Great Britain and Ireland help has been rendered by the Royal Colleges of Physicians of London, Edinburgh, and Ireland, by the Royal Colleges of Surgeons of Edinburgh and Ireland, by the Universities of Oxford, Cambridge, Durham, Edinburgh, Glasgow, Aberdeen, and Dublin, by the Victoria University and several other medical corporations. The Therapeutic Committee of the British Medical Association and the Committee of the Pharmaceutical Society assisted in the work of elimination by the distribution of lists of drugs and galenical preparations to medical men and pharmacists, with the view of obtaining statistics as to the frequency with which the articles are used. Over 5600 of these lists were returned to, and analysed by, the Therapeutic Committee, and the Pharmaceutical Committee had to deal with about 230. The more immediate work of digesting, assimilating, and forming into a coherent whole the great mass of statistical and scientific work has devolved upon the Committee of the Medical Council, over which Sir Richard Quain presided, and to which Dr. Nestor Tirard has acted as an enthusiastic and indefatigable Secretary. The editing has been done by Dr. John Attfield, to whom the Council expresses its indebtedness for his scientific and literary services. The Committee has received "assistance of great value" from the Committee of the Pharmaceutical Society. Notwithstanding the experience with the Pharmacopœia of 1864, which Sir Richard Quain* considers "cannot be read as favouring the appointment of special experts in the construction of the Pharmacopœia, inasmuch as the Committee which prepared this issue (1864) was largely composed of eminent experts," the present Committee of the Medical Council ventured to appoint, and have had the assistance of, expert referees:—In chemistry, Drs. Thorpe, Tilden, and Emerson Reynolds; in botany, Dr. W. T. Thiselton-Dyer and Mr. E. M. Holmes; in pharmacology and therapeutics, Drs. T. Lauder Brunton, Walter G. Smith, and Ralph Stockman. It is impossible to estimate, even approximately, the number of persons who have directly, to a greater or less extent, contributed to the compilation of the British Pharmacopœia of 1898. They would form not an inconsiderable army. Will the result justify the labour? In order that our readers may have an early opportunity of judging, we hasten to put before them the changes which appear to us to be the most noteworthy. We are pleased to have the opportunity of so doing. At present we refrain from criticism, not because we think that the work is by any means perfect, but because some of the changes appear to us to be so momentous as to demand some practical and experimental examination before being either commended or condemned. If within the next few months the body of criticism from pharmacists is not commensurate with the expectations they have cherished, we shall feel some little surprise.

* *Pharmaceutical Journal* [3], xxv., 1129.

Eliminations and Additions.

These naturally first claim attention. There have been added seventy-nine drugs and preparations, and 189 have been deleted. Among the additions we note particularly

Bismuthi Salicylas	Liquor Thyroidei
Cocaina	Morphinæ Tartras
Codeinæ Phosphas	Naphthol
Hyoscinæ Hydrobromidum	Salol
Hyoscyaminæ Sulphas	

The omissions are remarkable because of the large number of galenical preparations which they include. The Cataplasm ata Enemata, Essentiæ, Vapores and Suppositoria cum Sapone are abolished completely; the list also enumerates 4 Confectiones, 10 Decocta, 3 Emplastra, 17 Extracta, 7 Infusa, 15 Liquores, 3 Pilulæ, 3 Syrupi, 11 Tincturæ, 7 Unguenta, and 3 Vina. Copious lists of alterations of names and formulæ are given as heretofore.

Imperialism

stands for something large, imposing, if not awe-inspiring. The new Pharmacopœia contains 535 pages, of which 91 are absorbed by the index, while the 1885 edition had 536 and 34 devoted to the index. Imperialism is not, therefore, manifest in increase of bulk. It is not apparent in the body of the work at all; but by careful search we have discovered a hint of it in the table of contents, a few explanatory words in the preface, and one and one-fifth pages—we wish to ascribe due importance to it—on details in an appendix—"Alternative preparations sanctioned for use in India and the Colonies." Permission is given to make the official ointments of such proportions of indurated lard, suet, and beeswax as shall be desirable in the differnt countries, providing always that the proper proportion of active ingredient is maintained. In tropical countries Aquæ may be prepared by triturating essential oils with calcium phosphate and water. The liquid extracts may be prepared with an increase of alcohol when required for their better preservation, as may also Syrupus Rhœados. In India and the Colonies more or less white beeswax may be substituted in suppositories for an equivalent quantity of oil of theobroma, according to the prevailing temperatures. In no instance is permission given to supplant one drug by another. The only approach to such a thing is that it is permitted to use dried lemon peel when fresh lemon peel is unobtainable in India and the Colonies. It is intimated that the Council intends to deal more fully with the trans-oceanic part of the Imperial Pharmacopœia in an Addendum.

Nomenclature.

In a considerable number of cases the names of drugs and preparations have been altered; but only a few chemicals have been so treated, and then always in the direction of greater accuracy. For instance, Æther Purificatus, Ferri Arsenas, and Sodi Arsenas are substituted for the present official names. Alkaloidal Hydrochlorates are converted into Hydrochlorides, and Hydrates into Hydroxides. The English names for chemical substances are brought as far as possible into accord with chemical science; therefore, they are not always translations of the Latin titles. Acidum Carbolicum is rendered into English as Phenol, and Hydrargyri Iodidum Rubrum as Mercuric Iodide. Aloin is made declinable in the form of Aloinum, so also is Kaolinum. Benzol, Salol, and Thymol are therefore, we presume, to take the genitive termination—"is." Some of the names of drugs are extended by having the morphological designation appended, thus:—Ipecacuanha is changed to Ipecacuanhæ Radix. There is one curious instance of the reverse of this procedure in the case of Lini Semina which now appears as Linum. It will be interesting to learn what reasons can be given for adopting this singularly inept variant. The adjective Fortior is uniformly displaced by Fortis. A device which will commend itself to all who have to use the volume frequently has been adopted in the monographs whereby it is possible at once to distinguish between official medicines, official reagents and commercial articles; the names being printed with capital letters (Chloral Hydrate), in italics (*solution of silver nitrate*), or in ordinary Roman characters (benzene) respectively. As far as we can see without attempting to make an accurate calculation, there appears to be no very large increase in the use of synonyms. Those that have been inserted are for the most part useful and informing. Laudanum is still a synonym for Tincture of Opium; but we do not observe, as we were led to expect, Scotch Paregoric under Ammoniated Tincture of Opium. Lac sulphuris is at last doomed, for Milk of Sulphur appears as a synonym for Precipitated Sulphur.

Weights and Measures.

In addition to the imperial system of weights and measures, which calls for no comment, the metric system has been introduced throughout the Pharmacopœia. General satisfaction will be felt that "proportional parts" have been entirely abolished; but whether equal satisfaction will be felt in the mode of setting forth the metric equivalents remains to be seen. All the quantitative tests are described in terms of the metric system alone. The plan adopted for setting forth the proportions of ingredients in preparations is, we fear, a trap for the unwary. We do not apologise for insisting that pharmacists should at once see to it that every person upon their establishment thoroughly comprehends what is the intention of the Pharmacopœia. The explanation of the preface appears to us to need amplification before the matter is quite clear. In order to do that, in some measure, we quote the formula for Ammoniated Tincture of Opium:—

	Imperial.	Metric.
Tincture of Opium	3 fl. ounces	150 cubic centimetres.
Benzoic Acid	180 grains	20·6 grammes.
Oil of Anise	1 fluid drachm	6·25 cubic centimetres.
Solution of Ammonia	4 fl. ounces	200 cubic centimetres.
Alcohol (90 per cent.).....	a sufficient quantity.	

"Dissolve the Oil of Anise and the Benzoic Acid in 12 fluid ounces (or 600 cubic centimetres) of the Alcohol; add the Tincture of Opium and the Solution of Ammonia; mix well; filter; add enough of the Alcohol to form 1 pint (or 1000 cubic centimetres) of the Tincture."

The metric weights and measures, it must be observed, are not the equivalents of the imperial ones. There are two distinct formulæ placed in juxtaposition, yielding different quantities of the preparation—in the one case a pint, in the other case 1000 cubic centimetres.

In every formula it is absolutely necessary that the imperial quantities or the metric quantities should be adhered to throughout. Wherever, in directions for manufacturing, the metric quantities in the brackets are preceded by "or," as in the above formula, it is intended to mark the fact that the quantities are not equivalent to those of the antecedent imperial weights or measures. The descriptions of crude drugs in which measurements and weights are given have the approximate metric equivalents to the imperial units placed in brackets, thus Black Mustard Seeds are said to be "about one twenty-fifth of an inch (one millimetre) in diameter, and one-fiftieth of a grain (one and a third milligramme) in weight." In all such instances the "or" is omitted. Without wishing to appear as alarmists, there appear to us to be such dreadful possibilities in the intermixture of the two systems which has been adopted that we should inscribe over every formula, "All imperial or all metric." There are two things which we think it will trouble even pharmacists to accomplish satisfactorily. One is, to measure to the hundredth part of a cubic centimetre as required by the formula we have quoted above, and the other one is to measure 6·035 fluid ounces as given in the formula for Acidum Hydrochloricum Dilutum. If the latter quantity is expressed in this manner only to indicate the amount of variation between the two formulæ we think it might advantageously have been expressed in minims.

At last uniformity has been attained in the alkaloidal liquors and other allied ones; they are of a strength of 1 grain in 110 minims and 1 gramme in 100 cubic centimetres.

We notice a reference to metric capacity units as defined at 4° C. and metric measures graduated at 60° F., which might be understood as suggesting that a litre at the one temperature differs from the litre at the other temperature, and is perhaps indicative of some misconception of the practice commonly followed by chemists in volumetric analysis.

Drugs.

From the paragraphs describing crude drugs the botanical and zoological synonyms have been deleted. The botanical nomenclature follows that of the 'Index Kewensis,' except in a very few instances. This has necessitated some changes which may appear to old pharmacy students to be almost revolutionary, Cusparia Bark being ascribed to *Cusparia febrifuga*, DC., and Ipecacuanha Root to *Psychotria ipecacuanha*, Stokes. As in the last edition, references are still made to works containing type illustrations of the official plants. As far as possible those references are to books which are readily accessible, and for that reason frequent recourse is had to Bentley and Trimen's 'Medicinal Plants.' Of course, good illustrations of some plants are not to be found within easy reach; when that is the case the references are to botanical periodicals and the rarer botanical works. Araroba and fresh Orange Peel appear to be the only two crude drugs with new headings, although it cannot be said that they are newly introduced into the Pharmacopœia. Liquorice Root is now only official in the peeled state. We observe that great care has been taken to exclude the Carthagena Ipecacuanha. That action is characteristic, as far as we can see, of the attitude of the revisers towards botanical and chemical research in its relation to the Pharmacopœia. They have exercised considerable caution in not placing the official seal upon articles which have not been thoroughly investigated; whether the same care has been bestowed upon the descriptions, tests, and processes of manufacture, as upon the selection of medicaments, remains to be seen.

The "characters and tests" of the drugs have been well revised, albeit in many paragraphs there is a solid substratum

of the 1885 edition. For our own part we should have preferred to see them entirely re-written, and so have avoided the present patchwork impression. The descriptions have gained in exactness, and the metric equivalents of the measurements are given in brackets, as already intimated. In many instances tests have, we think, been advantageously introduced, as in Aloes (for Natal aloes), the umbelliferone test in Ammoniacum (for Asafetida and Galbanum), in Balsam of Peru (for Copaiba, resins, fatty oils, gurjun balsam, ethylic alcohol), and in Saffron (for nitrates). The object with which each test is applied is indicated in brackets; this improvement will commend itself not only to medical and pharmaceutical students, but also to those medical men and pharmacists whose knowledge of chemistry and materia medica has become somewhat rusty, and who have not the time to brighten it by reference to their misplaced text-books. Some of the drugs which are sold in powder form, such as Capsicum (6 per cent.), Caraway Fruit (8 per cent.), and Cloves (7 per cent.), have a maximum limit of ash. The histological notes which are sparsely scattered over the "characters" may, in a few cases, prove to be useful; but in others we fail to see what purpose they can serve, they are so very meagre, as, for instance, Calumba Root—"the vessels are arranged in narrow radially elongated groups. The parenchymatous tissue is largely developed." This is quite true as far as it goes, but it leaves so much unsaid as to be comparatively valueless.

Buchu leaves are to be obtained from *Barosma betulina* only; this is no doubt in great measure the result of the work of our contributor, Mr. C. J. S. Thompson. India-rubber has displaced gutta percha in the manufacture of mustard paper. Despite the researches of Burck, of which we published a copious extract in 1892 (*P. J.* [3], xxii., 817), we observe that Peruvian and Bolivian coca leaves are both ascribed to *Erythroxylum coca*, Lam. Savanilla rhatany is no longer official, being supplanted by the Para variety (*Krameria argentea*). The inevitable organotherapy has succeeded in establishing itself officially in the form of Thyroideum Siccum (Dry Thyroid), a powder produced by drying the minced glands at 32°·2 to 37°·8 C., removing all fat with petroleum spirit, and drying the residue.

Chemicals.

We anticipate that the actual battle of the critics will be waged around the chemicals. As already stated, the English names are brought, on the whole, into line with text-book chemistry, but the familiar Latin names have been retained because of a disposition not to worry the prescriber too much by change. The paragraphs dealing with the processes of manufacture are very considerably condensed, and are so framed as to leave the particular process optional. A good example of this improvement is chloroform; instead of an elaborate formula which it was doubtful if a single manufacturer adhered to, there is the simple permissive statement:—it "may be prepared by heating a mixture of chlorinated lime, slaked lime, ethylic alcohol, and distilled water." Wholesale and retail pharmacists will welcome this relief. There is no indication, however, of any relaxation of the standards of purity. The criteria of purity have simply been shifted from the processes of manufacture to the products themselves. That should act as a direct incentive to manufacturing genius. Of course, there is a danger lest the standards of purity which have been adopted should be too high or too low. The recognition tests, and the tests for all common impurities, instead of being repeated in the various paragraphs, are consigned to an Appendix, with the result that a great amount of space is saved. A delightful feeling of simplicity and satisfaction suffuses us upon reading (see p. 139) that a substance gives "no characteristic reaction with the tests for lead, copper, arsenium, iron, calcium, potassium, sodium, ammonium, chlorides, or sulphates." What could excel that for conciseness and—purity? The meaning, the extent and the content, of "about" have been fairly well discussed, but to very little purpose. Are we to have a ten years' discussion upon the negative "no" with the prospect of learning that it contains a "positive element"? The preface states "that the appended list of tests is not exhaustive, having only been constructed to meet official requirements. Nor are manipulative details set forth at length, either as regards the preparation of a substance for testing, or as regards the selection or application of the tests, the pharmacist being assumed to possess full knowledge on these and all similar points." The reason of every test given in the text is indicated in precisely the same manner as in the paragraphs dealing with drugs. The solubility of substances—not only in water but in other liquids that are likely to be used as solvents—is treated with a due regard to the requirements of the medical practitioner and the pharmacist. Wherever useful for the purposes of identification or as standards of purity melting points are inserted. Quantitative tests are uniformly expressed in relation to one gramme of the substance.

In carrying out the volumetric determinations, the pharmacist will have to rely in most cases upon his own judgment in the choice of indicators. Some help, however, is offered to him in the explanatory notes—which are more general and extensive than those in the 1885 edition—found in the Appendix dealing with volumetric estimations (*sic*). The lists setting forth under each volumetric solution the articles for the analysis of which the solutions were to be used have been dispensed with. Analysts will do well to notice that the equivalence of every standard solution is altered; this, of course, is a necessary consequence to the adoption of the best authenticated values of atomic weights. In place of the standard solution of oxalic acid a normal standard solution of sulphuric acid has been adopted, and this is a questionable change. To return to the official chemicals the formulæ are given in the first paragraph instead of as subheadings, and in the case of organic substances, wherever possible, constitutional have been substituted for empirical formulæ. Among the new chemicals now included in the Pharmacopœia are—

Benzol. (In Appendix, 1885.)	Morphinæ Tartras.
Bismuthi Salicylas.	Naphthol (β-Naphthol).
Cocaina.	Paraffinum Liquidum.
Codeinæ Phosphas.	Physostigminæ Sulphas.
Hyoscinæ Hydrobromidum.	QuininæHydrochloridumAcidum
Hyoscyaminæ Sulphas.	Terebenum.

Among others there are omitted—

Beberinæ Sulphas.	Hydrargyri Persulphas.
Bismuthi Citras.	Morphinæ Sulphas.
Bismuthi et Ammonii Citras.	Physostigmina.
Bismuthum.	Plumbi Nitras.
Bismuthum Purificatum.	Potassii Cyanidum.
Cupri Nitras.	Potassii Ferrocyanidum.
Ferri Peroxidum Hydratum.	Sodii Nitras.
Ferri Sulphas Granulata.	Sodii Valerianas.

Thermometric Memoranda.

It is in connection with this branch of the Pharmacopœia that we may most appropriately draw attention to a new appendix—"Thermometric Memoranda." In it details are given for the taking of melting and boiling points, together with a formula for applying the correction for the emergent mercurial column. The appendix dealing with articles employed in chemical testing has undergone considerable enlargement because there is included in it all chemicals used for the purpose, and

not as heretofore, simply those that are extra-official. This step has been rendered necessary by the typographic differentiation to which we have already referred. The test solutions have also greatly increased in number. Appendix III. deals with reactions of "substances mentioned in the text of the Pharmacopœia." The substances alluded to are only acids and inorganic bases. Notwithstanding the remarks in the preface about "the skill and judgment of workers who are assumed to be duly trained," it appears to us that the information which is given in this section is expressed in such general terms and deals with such elementary facts that this knowledge, as well as the requisite skill and judgment, might have been placed to the credit of the "duly trained" worker. If it was intended to be useful to the student, the average pharmacist, and the medical man, the manner of presentation should have been much more precise and thorough.

Standardisation.

Although at an early stage in the revision of the Pharmacopœia we believe it was intended to apply the principle of alkaloidal standardisation on a much more extended scale than in the previous edition, we see now that further consideration of the matter has greatly curtailed the proposed extension. To the exact and scientific mind the idea of standardisation is at first sight captivating and desirable, but when it is remembered that in only a few instances is it known to be certain that the alkaloidal content of the drug is in direct and constant ratio to its therapeutic activity, it is clear that the application of the principle is not less dependent upon the state of medical knowledge than upon the state of chemical knowledge. This view of the question has evidently prevailed with the revisers, for we find that certain preparations of Belladonna and Ipecacuanha are the only additional ones which are required to contain a definite proportion of alkaloids. In the case of Belladonna a liquid extract standardised to contain 0·75 per cent. of total alkaloids is to be used, in accordance with Cripps' suggestion, for the preparation of an Alcoholic Extract, the Liniment, the Ointment, the Plaster, and the Tincture. The Acetum Ipecacuanhæ and Vinum Ipecacuanhæ are also to be prepared from a liquid extract containing from 2·0 to 2·25 per cent. of total alkaloids. The assay processes for Cinchona Bark and Opium are practically the same as those adopted in 1885 that for Opium being now supplemented by a check titration with decinormal sulphuric acid. Instead of relying, as before, upon assayed Opium for the production of Tincture of Opium of proper morphine strength, it is directed that the Tincture be prepared by a process involving standardisation. A very important improvement has been made in connection with the preparations of Nux Vomica. The standardised extract, which it has been shown again and again, gradually but constantly increases in alkaloida strength, is displaced by a standardised liquid extract which it should be possible to keep under conditions that should ensure a fairly constant strength. It is particularly to be noted that this extract is to contain one and a half per cent. of strychnine, not of total alkaloids. From it the solid Extract (5 per cent. of strychnine) and the Tincture (0·25 per cent. of strychnine) are to be prepared. The strychnine assay is to be accomplished by the potassium ferrocyanide process of Dunstan and Short.

The valuation of Pepsin is directed to be conducted upon the same lines as those laid down in the United States Pharmacopœia, artificial digestion being prolonged for six hours. Accordingly, the numerical standard is 2500 instead of 100. There is a rather serious omission from the details of the process, namely, that the intervals between the times of agitation are not specified, but are left to the discretion of the operator. This should be rectified, because it has been shown by several investigators that the agitation is one of the important conditions influencing the solution of the albumin.

Alcohol and Alcoholic Menstrua.

In connection with alcoholic liquids there has been introduced a nomenclature which is in a large degree artificial, and, therefore, calculated to confuse those who are not careful to thoroughly master it. The official recognition of the researches of Farr and Wright has necessitated the adoption of alcohol of several degrees of dilution for the preparation of tinctures. Six different strengths are official, namely, Absolute Alcohol, Alcohol (90 per cent.), Alcohol (70 per cent.), Alcohol (60 per cent.), Alcohol (45 per cent.), and Alcohol (20 per cent.). The second of these has taken the place of rectified spirit, and, in fact, bears the name Spiritus Rectificatus. Proof spirit is no longer recognised; seeing that this is the pivot of our fiscal arrangements it is to be regretted that a formula for it is not included with the other formulæ for diluted alcohol. The following table will, perhaps, assist to the better understanding of the terms employed in the Pharmacopœia.

Ethyl Hydroxide	C_2H_5OH.
Absolute Alcohol (Alcohol Absolutum) ..	Ethyl Hydroxide with not more than 1 per cent. by volume of water.
Alcohol (90 per cent.) (Spiritus Rectificatus) ..	Ethyl Hydroxide 90 volumes, and Water 10 volumes.
Alcohol (70 per cent.) ..	Ethyl Hydroxide ..... 70 volumes. Water ..... 30 volumes.
Alcohol (60 per cent.) ..	Ethyl Hydroxide ..... 60 volumes. Water ..... 40 volumes.
Alcohol (45 per cent.) ..	Ethyl Hydroxide ..... 45 volumes. Water ..... 55 volumes.
Alcohol (20 per cent.) ..	Ethyl Hydroxide ..... 20 volumes. Water ..... 80 volumes.
Ethylic Alcohol	Applied to alcoholic liquids of varying strengths.

Dosage.

When doses were introduced into the Pharmacopœia for the first time in 1867, the Committee stated that "These doses are indicated in compliance with a generally expressed wish. They are not authoritatively enjoined by the Council." The disclaimer is repeated in the new edition. But the very fact of the inclusion of doses in the medicine-book published "by authority" is itself an injunction which the pharmacist cannot neglect and the medical student must regard. Anything, therefore, which tends to simplify the subject cannot fail to be appreciated by both these classes. From their point of view a very successful effort has been made to arrange the doses of galenical preparations in sections. Considering that this effort has been effected by altering the strengths of a number of preparations, it is doubtful if manufacturers will, at first, welcome it. Having regard to the welfare of the latter class of pharmacists and all those who still continue to make their own galenicals, we propose to indicate as speedily as possible, week by week, such changes as have been made in the strength of these preparations. In this way we hope to render some little assistance in the prevention of financial loss. The most striking instance of the unification of doses is in the tinctures, which, with the exception of Tincture of Iodine, are divided into two sections—the one having a dose of from 5 to 15 minims and the other of from half to 1 fluid drachm. The Decoctions have a dose of from half to 2 fluid ounces. In the Mixtures the greater number have a dose of from half to 1 fluid ounce, and the Pills, with five exceptions, appear with a dose of from 4 to 8 grains, this being a reduction as compared with the last edition, in which from 5 to 10 grains as a dose appeared as the rule. A great improvement in the dosage of the Extracts is apparent, the majority of them having a dose of either from a quarter to 1 grain, from 2 to 8 grains, or from 5 to 15 grains. All the Syrups have a dose from a half to 1 fluid drachm, with five exceptions, in which the maximum reaches 2 fluid drachms. The practice of giving two doses for certain drugs when used for different purposes is con-

tinued; an extension of the idea has been applied to some other drugs and preparations in the direction of stating doses for a single administration and for repeated administration.

Index.

The Index will, no doubt, awaken feelings of pleasure in those gentlemen who cannot fail to perceive in it a very close imitation of their own plan and arrangement. It is evidently intended to be an epitome of the Pharmacopœia for the use of prescribers. The scheme is an ambitious one. It can, perhaps, be justified upon the ground that the prescriber usually only needs to know the dose or the strength of the particular preparation he has in mind, and further, that he is, by tabulating these particulars, relieved from the necessity for further reference to the mono graphs. But we think it can only be so justified when the scheme has been fully and adequately carried out. The Index consists of four columns, with the headings "Name," "Page," "Dose," "Strength." A reference in the preface implying that the lists of the preparations into which official articles entered, which lists in the last edition followed the individual paragraphs, had been substantially incorporated in the Index, has caused us to scrutinise the items somewhat narrowly. This reference and the statement at the beginning to the Index to the effect that every important preparation of a drug would be found under the English name of the drug naturally led us to expect a material increase in the number of items. Instead, however, we find upon making a reckoning, based upon the average number of items upon several pages, that the number of items is less than in the 1885 edition. The decrease is due to some extent to the omission of synonyms from the present Index, but it should be, we think, considerably overbalanced by the cross references which ought to have appeared. Upon turning to the English names of the drugs we first obtain a clue to the principle upon which the selection of the "important preparations" has been made. They are those in which the active component is set forth in the name, and, with a very few insignificant exceptions, only those. To illustrate what we mean let us take Pilula Galbani Composita (Syn.-Compound Pill of Asafetida), in which there are three equally important ingredients:—Asafetida, Galbanum, and Myrrh. Turning up Myrrh in the Index, there is no mention to be found of this pill, and, therefore, no indication that this drug enters into its composition. Besides the separate formulæ there is nothing now to indicate that Myrrh is an ingredient in Compound Decoction of Aloes, Compound Mixture of Iron, Compound Pill of Galbanum, and Compound Rhubarb pills. In fact the Index, in respect of the number of items and their arrangement, remains to all intents and purposes the same as in the 1885 edition, notwithstanding the statements at the beginning of it and in the preface. As we have said before, we are not now concerned with criticism, but we feel that it is our duty to warn pharmacists lest they should be misled by a paragraph implying that information previously given in one place is now to be found in another. The Index does not accord with its pretensions. It is stated that the strengths of the chief preparations are given in the fourth column. But, of the Ointments not 50 per cent. have the strengths set forth in the Index, whilst only about 25 per cent. of Tinctures, about 33 per cent. of the Spirits, only one each of the Confections, Decoctions, Glycerins, and Plasters, and none of the Infusions, have their strengths recorded there. The scheme of the Index is most excellent, but it has been carried out in such an inefficient manner as to be no improvement upon the previous edition in the matter of items, and so as to be of very little value in the tabulation of the strengths of preparations.

PHARMACEUTICAL SOCIETY.

MEETING OF THE COUNCIL.

WEDNESDAY, APRIL 6, 1898.

Present:

Mr. Walter Hills, President.

Mr. C. T. W. Newsholme, Vice-President.

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

The minutes of the last meeting were read and confirmed.

The Late Sir Richard Quain.

The President said the Society had lost since last month one of its most distinguished honorary members by the death of Sir Richard Quain, President of the General Medical Council. Notices of his distinguished career had appeared in the lay and medical press, and it was not necessary to allude to it at any length, but he should like to recall the fact that Sir Richard Quain had been on the list of honorary members of the Society for the last thirty years. The last occasion when he was present amongst them was three or four years ago at the inaugural meeting of the School, when he expressed the great interest he took in the work of the Society. One of the subjects in which he was most deeply interested was the Pharmacopœia. In 1867 he was Secretary of the Pharmacopœia Committee of the General Medical Council, and in 1885, and again in the compilation of the Pharmacopœia which was about to appear, he was Chairman of the Committee. He might say, by way of parenthesis, that he believed the new Pharmacopœia would be on view at the General Medical Council in a few days, either this week or next. Sir Richard Quain did not live to see the publication of that book, but he was deeply interested in its preparation, and up to the very last, even when confined to his bed, he took the keenest interest in the matters which came under the consideration of the General Medical Council. He had had the opportunity of seeing a great many of Sir Richard Quain's prescriptions, and he scarcely ever ordered anything not in the Pharmacopœia. He felt that the Pharmacopœia should contain what was usually sufficient for the needs of the physician and the patient. He had a great objection to ready-made physic, as he had stated himself. He was a distinguished physician, well-known in the social life of London, and was a man of considerable intellectual power, and they must all feel that the list of honorary members was the poorer by his death. He must add that he was the lifelong friend of his (the President's) late uncle, and attended him during his last illness with the greatest care and kindness.

Mr. John Mackey.

The President also regretted to announce the decease of Mr. John Mackey, of Grange Road, Bermondsey, who joined the Society in 1842, and for many years took an active interest in its work. He served as auditor in 1867, and was well known to many members. He died at the ripe age of 84. They would all sympathise with the families both of Sir Richard Quain and of Mr. Mackey.

Election of Members.

Pharmaceutical Chemists.

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

Blakeley, Leonard; Boston.
Burgin, Mark Frederick; Eastbourne.
Cross, Edward Robert; Scarborough.
Shorrock, Mary; Darwen.
Widgery, Ernest; Weston-super-Mare.

Election of Associates in Business.

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

Minor.

Anderson, David; Aberdeen.
Barratt, Herbert; Sheffield.
Barton, Francis; Egremont.
Brawn, Harry Samuel; Bedford.
Butterfield, Joseph William; Darwen.
Clarke, Andrew; W. Kensington.
Cook, Samborne; Nottingham.
Corfe, John Martin; Dover.
Cumming, John; Crewe.
Cummings, William; Dundee.
Desmond, Dennis William A.; Londo
Ewell, Richard Michael; Dover.

Eyre, Sidney, Jun. ; Sheffield.
Fearnley, Fairfax ; Leeds.
Fechtner, Arthur Louis W. ; Hull.
Field, Reeve Holyoake ; Sheffield.
Garbutt, Charles H. ; Newcastle-on-Tyne
Harrison, George William ; Reading.
Hooper, Richard J. ; South Tottenham.
Ingle, George ; Northampton.
Jackson, Joseph Gilbert ; Sheffield.
Jarvis, Samuel Horace ; Sileby.
Jewell, Harry, Southampton.
Jones, John James ; Buxton.
Kemp, William ; Inverness.
Lancaster, Bernard ; Sheffield.
Leach, Albert Henry ; Darwen.
Lewis, Albert Wheatcroft ; Newport.
Littlefield, Robert Dexter ; Hove.
Macdonald, Robert ; Inverness.
Moulson, James Ogilvie ; Bradford.
Newbould, John M. W. ; Bradford.
Nidd, John Henry ; Manchester.
Noble, John G. B. ; Newcastle-on-Tyne.
Parker, George Brook ; Bradford.
Raine, James Arthur ; Darwen.
Ramsay, William Christopher ; Dundee.
Ratcliffe, Samuel ; Southport.
Roberts, Edward Orchard ; Manchester.
Slater, Thomas Sutcliffe ; Manchester.
Smith, John Thomas ; Canterbury.
Standing, William, Darwen.
Terry, Ernest Wayte ; Manchester.
Theckston, James ; New Brighton.
Tiley, Arthur Percival ; Burslem.
Tottle, S. Harpham ; Liscard.
Troup, Alexander Stephen ; Monifieth.
Tute, James Scott ; Tunbridge Wells.
Watts, Herbert ; Sheffield.

Modified.

Corbyn, Joseph Hartwell ; Stradbroke.
Dibble, John William ; Bristol.

ELECTION OF ASSOCIATES.

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

Allan, Wm. Fleming ; Airdrie.
Bowker, James Skinner ; Radcliffe.
Charnley, Arthur Walker ; Blackburn.
Davis, Charles ; Riverhead.
Ellis, Bernard ; Sheffield.
England, Reginald Arthur ; London.
Fawcett, Harry Rowalnd ; Retford.
Foster, Ernest Upsall ; Horncastle.
France, John Richard ; Huddersfield.
Henderson, Alex. K. ; Kirkcudbright.
Jack, William ; Arbroath.
King, Arthur Edward ; Norwich.
Mackie, Alexander ; Fraserburgh.
Marlor, Thomas ; Oldham.
Maxwell, Arthur Thomas ; Gateshead.
Milne, Hamilton ; Dysart.
Newton, John ; Heckington.
Parsons, Harold James ; Exeter.
Ross, Alexander Hovels ; Kirriemuir.
Smallwood, Frederick W. ; Chester.
Steer, James Herbert ; Sheffield.
Sturt, Clifford Henry ; Oakengates.
White, Thomas William ; Stirling.

ELECTION OF STUDENTS.

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

Baylis, Arthur Edward ; Redditch.
Biffin, Frank ; Brighton.
Batlin, James Franklin ; Liverpool.
Dance, Gilbert Abel ; Cardiff.
Derbyshire, Charles H. ; Middlewich.
English, Robert Coulson ; Pickering.
Gray, George William ; Darlington.
Heslop, C. W. B. ; Newcastle-on-Tyne.
Hewlett, S. A. ; Weston-super-Mare.
Leal, Albert ; Solihull.
Revill, Douglas Charles ; Romford.
Reynolds, Herbert J. ; Plymouth.
Ryder, Arthur William ; Elworth
Talbot, Philip ; Bolton.
Turnbull, Edward ; London.
Weston, Walter ; Todmorden.
Williams, William Robert ; Bangor.

RESTORATIONS TO THE REGISTER.

The names of the following persons, who have severally made the required declarations and paid a fine of one guinea, were restored to the Register of Chemists and Druggists :—

Edward Williams, 146, Walker Street, Hull.
Henry Rutter Baker, 65, Leverton Street, Kentish Town, N.W.

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

NOMINATIONS FOR COUNCIL.

The Secretary reported that he had received seventeen nominations to fill the fourteen vacant seats on the Council, and that the following sixteen nominees had declared their willingness to accept office if elected :—

ALLEN, CHARLES BOWEN, 20, High Road, Kilburn, N.W.
ATKINS, SAMUEL RALPH, Market Place, Salisbury.
BATESON, THOMAS, 23, Stricklandgate, Kendal.
CAMPKIN, ALOERNON SIDNEY, 11, Rose Crescent, Cambridge.
CORDER, OCTAVIUS, 31, London Street, Norwich.
CROSS, WILLIAM GOWEN, 70, Mardol, Shrewsbury.
GIBBONS, WALTER, 41, Market Street, Manchester.
GROSE, NICHOLAS MALE, 8, Temple Street, Swansea.
HILLS, WALTER, 225, Oxford Street, W.
JOHNSTON, JOHN, 45, Union Street, Aberdeen.
MARTINDALE, WILLIAM, 10, New Cavendish Street, W.
NEWSHOLME, G. T. WILKINSON, 27, High Street, Sheffield.
SAVORY, ARTHUR LEDSAM, 143, New Bond Street, W.
STORRAR, DAVID, 228, High Street, Kirkcaldy.
SYMES, CHARLES, 14, Hardman Street, Liverpool.
WARREN, WILLIAM, 24, Russell Street, Covent Garden, W.C.

The following nominee had not expressed his willingness to accept office :—

DRUCE, GEORGE CLARIDGE, 118, High Street, Oxford.

NOMINATION OF AUDITORS.

The Secretary reported that he had received the following five nominations to fill the office of auditor, and that all the nominees had expressed their willingness to accept office if elected :—

BUTT, EDWARD NORTHWAY, 77, Hamilton Terrace, N.W.
LESCHER, FRANK HARWOOD, 60, Bartholomew Close, E.C.
STACEY, SAMUEL LLOYD, 22, Great St. Helens, E.C.
UMNEY, CHARLES, 50, Southwark Street, S.E.
YATES, FRANCIS, "Aysgarth," Surbiton.

GOVERNMENT VISITOR'S REPORT.

The SECRETARY read the report of the Government Visitor on the examinations in London.

"Report on the Examinations held by the London Board of Examiners of the Pharmaceutical Society of Great Britain during the year ending March 31, 1898.

"To the Lords of the Council.

"My Lords,—I have the honour to report for your information that during the year ending March 31, 1898, I attended twelve examinations of the London Board of Examiners of the Pharmaceutical Society of Great Britain held during the months of April, July, October, and January.

FIRST OR PRELIMINARY EXAMINATION.

	Numbers.	Percentages.
Candidates examined	1414	—
,, who passed	677	47·9
,, failed	737	52·1
Failed in Latin	554	39·2
,, ,, English	502	35·5
,, ,, Arithmetic	610	43·1
,, ,, all subjects	311	2·0

"The proportion of failures is not materially different from that of the preceding year. The failures in English are, however, increased, whilst the failures in Arithmetic, on which I specially commented a year ago, are appreciably diminished.

"Happily this imperfect examination will shortly be abolished, and examinations of a more searching character substituted this change ; which ought to secure a better educated class of students, appears to be a change entirely for the good of the calling of chemist and druggist.

MINOR OR QUALIFYING EXAMINATION.

	Numbers.	Percentages.
Candidates examined	913	—
,, who passed	288	31·5
,, ,, failed	625	68·5
Failed in Chemistry	323	35·4
,, ,, Materia Medica	27	3·0
,, ,, Botany	66	7·2
,, ,, Prescriptions	35	3·8
,, ,, Pharmacy and Dispensing	160	17·5
,, ,, obtaining aggregate number of marks for a pass	118	12·9

"The number of candidates who presented themselves was largely in excess of those in the preceding year, whilst the percentage of those who passed was a little decreased. It is obvious that where the percentage of rejections is so high many candidates present themselves again and again. Not a few faces of examinees are familar to the examiners.

"This points to the obvious fact that the preparation of candidates is as a rule inadequate to meet the requirements of the examiners, and to the general insufficiency of pharmaceutical training. The necessity of the chemist and druggist receiving something more than the knowledge attainable in a chemist's shop is year by year becoming better recognised.

MAJOR EXAMINATION.

	Numbers.	Percentages.
Candidates examined	84	—
,, who passed	50	59·5
,, ,, failed	34	40·5
Failed in Chemistry	15	17·9
,, ,, Physics	7	8·3
,, ,, Materia Medica	5	6·0
,, ,, Botany	9	10·7
,, ,, obtaining aggregate number of marks for a pass	14	16·7

"The number of candidates who presented themselves for this higher examination shows a regrettable and notable diminution, but of those who did present themselves a much larger percentage passed. The higher title of pharmaceutical chemist, which the passing of this examination confers, and the superior status which it affords, does not appear to attract as many aspirants as might be wished.

"The standard of the Minor and Major examinations has been well maintained, and great care has been taken to admit to the Register only those who are reasonably equipped for the safe practice of pharmacy.

"(Signed) THOS. STEVENSON.

"*March 8, 1898.*"

Report of the Finance Committee.

The Secretary read the report of this Committee, which was of the usual character, and recommended sundry accounts for payment.

The President, in moving the adoption of the report, said there was nothing special to call attention to, but referred to the fact that ten guineas had been received from Mr. Nathaniel Smith (a Founder), of Cheltenham, as a donation to the Benevolent Fund, for which they were very grateful; twenty-five guineas had been received from the Chemists' Ball. He also had the gratification of announcing, as showing the interest in the Benevolent Fund which was taken by their friends throughout the country, that they had received the sum of £1 13s., which had been collected at a smoking concert held by the Liverpool Pharmaceutical Society at Liverpool, and forwarded as a donation to the Benevolent Fund.

Report of the Benevolent Fund Committee.

The report of this Committee included a recommendation of grants to the amount of £98 in the following cases:—

A pharmaceutical chemist (70) who has had two previous grants. (Oxford.)

The widow (58) of a chemist and druggist member who has had three previous grants. This case was deferred last month. (Felixstowe.)

The widow (63) of a registered chemist and druggist who, previous to his death in 1891, had two grants from the Fund, and she herself has had three previous grants. She is unable to do anything from bad health. (London.)

A member (78) since 1855 to the present time, and a subscriber to the Fund for more than 20 years. This case was deferred last month. (London.)

The widow (54) of a member She is a hopeless invalid, and has had many previous grants. (Harrogate.

The widow (44) of an associate who died in December last in a lunatic asylum, leaving her with four children. (Forest Gate.)

The widow (43) of a registered chemist and druggist who died in 1888. She has had previous grants, and the object of the present grant is to aid in the education of her boy, aged 14 (London.)

One case was deferred for further information, and one was not entertained.

The Vice-President, in moving the adoption of the report and recommendations, said he had not much to say about the cases which came before the Committee. One was that of an old gentleman who had been in business a great many years, and, of course, any grant which could be made was not sufficient to keep such a man in a position as he ought to occupy. The case was deferred from the previous month, and the Secretary had made inquiries and exerted himself very much in the interest of this old gentleman, and had also been the means of getting some of his friends to come forward and assist, so that with the help rendered by the Fund he would at least have enough to live upon.

The report and recommendations were unanimously adopted.

Library, Museum, School, and House Committee.

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

	Attendance.	Total.	Highest.	Lowest.	Average.
February	Day	432	27	5	18
	Evening	155	18	3	8

Circulation of Books.	Total.	Town.	Country.	Carriage paid.
February	179	101	78	19s. 8d.

Several donations had been received (*Ph. J.*, March 12, p. 263), and the Committee had directed that the usual letters of thanks be sent to the respective donors.

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

For the Library in London:—
Chaney, Our Weights and Measures.
Dragendorff, Die Heilpflanzen der verschiedenen Völker und Zeiten.
Poulsen, Botanical Micro-Chemistry.
Zimmermann, Botanical Microtechnique.

For the Library in Edinburgh:—
Supplement to German Pharmacopœia.
Newth, Inorganic Chemistry.

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

	Attendance.	Total	Highest.	Lowest.	Average
February	Day	641	44	12	26
	Evening	76	11	1	3

Several donations had been received (*Ph. J.*, March 19, p. 287), and the Committee directed that the usual letters of thanks be sent to the respective donors.

The President, in moving its adoption, said the report covered a great amount of detail, but there was nothing to which he need particularly refer.

The Financial Statement for 1897.

The President laid on the table the financial statement for the year 1897, together with the Auditor's report.

Report of the General Purposes Committee.

The portion of the report of this Committee containing the reports of the professors on the School examinations in March was read, and in accordance with those reports, the Committee recommended the following awards:—

Prize Awards.

Botany.

Silver Medal ..... Harold E. Matthews.
Certificates of Honour (equal)..... Pierre E. Felix Perrédès. / Frederick A. Upsher Smith.

Chemistry and Physics.

Silver Medal ..... Harold E. Matthews.
Certificate of Honour ..... Tom Farrow.
Do. Do. ..... William B. Nelson.

Practical Chemistry.

Silver Medal ..... Harold M. Morgan.
Certificate of Honour ..... Frederick A Upsher Smith.
Do. Do. (equal) Edgar M. Chapman. / Harold E. Matthews.

Materia Medica.

Silver Medal ..... Harold E. Matthews.
Certificates of Honour (equal)..... Edgar M. Chapman. / Pierre E. Felix Perrédès.

The President moved the adoption of the above recommendations, which was at once agreed to.

Dispensers in Prisons.

The President said he had been in communication during the last two months with the Home Office in respect to the position of dispensers in H.M. prisons, and he was glad to say that the representations which had been made to the authorities had been productive of some good. A number of small reforms had been conceded by the Department, and it was gratifying to him to find that the officials were sympathetic and disposed to treat in a fitting manner the qualified dispenser holding the Minor certificate. At the Home Office at least there was no disposition to belittle the Minor qualification. It was to be hoped that the Local Government Board might yet be brought into a similar condition of mind with regard to Poor Law dispensers.

Correspondence.

The President announced that a letter had been received from the North-East Lancashire Chemists' Association, Blackburn, enclosing a resolution that had been passed unanimously in favour of the Pharmacy Acts Amendment Bill.

The Pharmacy Acts Amendment Bill.

The President said the members of Council were aware of the present position of the Bill, and he had nothing special to report with regard to it. It was down for the committee stage on the 19th inst., and there were still certain amendments on the paper, though he was hopeful that in the meantime all opposition would be withdrawn. He would ask the Secretary to read a letter which had been received from the Secretary of the Manchester District Pharmaceutical Defence Committee.

Manchester, March 9, 1898.

To the President of the Pharmaceutical Society.

Dear Sir,—In reply to your appeal to all chemists for their loyal support to you in the promotion of the Pharmacy Acts Amendment Bill, we beg to inform you that our Defence Committee has again very fully considered the matter, and we have been instructed to communicate with and tell you the result of our deliberations.

Let it be clearly understood that we, equally with the promoters of the Bill, are most anxious that "chemists and druggists" should have representation on the Council, and this purely as a matter of justice. In the first place, we feared that by removing one of the inducements to pass the "Major" a detrimental effect would be produced in pharmaceutical education, which, in our opinion, is already of too low a standard. However, taking into consideration the fact that very shortly the "Preliminary" will have a desirable though slight advance in its standard, and having received the assurance that an advance will be made in the other examinations, we feel that our objections on this score may be removed.

In the second place, as we fear the general adoption of that misleading title "Member of the Pharmaceutical Society," we cannot see our way to conscientiously waive our objections on this point, and would have liked to have seen the Bill amended so as to meet our views. However, as the Bill as a whole has been introduced with a view of so consolidating the body of chemists that the Council may in the near future, with greater power, approach Parliament on the question of certain most desirable reforms, we have determined to loyally remove all obstacles that we have placed in the way by withdrawing our opposition entirely.

The following resolution was adopted :—

"That in consequence of the appeal made to us by the President of the Pharmaceutical Society, and with assurances which we have received not only from the official press, but from the utterances (public and otherwise) of prominent supporters of the Bill, that the true title and qualification of 'Pharmaceutical Chemist' will in the future be duly safeguarded, it is hereby resolved to withdraw our opposition to the said Bill."

In conclusion, having withdrawn our opposition and thus shown our loyalty to the Society, we trust that those who are not already members will join in such numbers as will prove the accuracy of the statements made by local secretaries and others, who have asserted that there is a great demand for this reform.

We are, dear Mr. President,
Yours faithfully,
Walter Gibbons, Chairman.
F. Pilkington Sargeant, Hon. Sec.

Manchester and District Pharmaceutical Defence Committee.

Legal Matters.

The Council subsequently went into Committee as usnal to consider the portion of the report of the General Purposes Committee dealing with legal matters. On resuming, the report and recommendations were received and adopted, and special resolutions were passed authorising the Registrar to take proceedings against the persons named therein.

MAJOR EXAMINATION QUESTIONS.*

April 1 and 2, 1898.

CHEMISTRY.

1. The equivalent of a certain metal is 46·66, and its specific heat ·04479. Calculate its atomic weight.
2. What experimental evidence is there to show that the molecule of hydrogen contains at least two atoms?
3. Excess of a readily oxidisable substance is slowly added to an aqueous solution of potassium permanganate containing (*a*) sulphuric acid, (*b*) potassium hydrate. Describe the changes which the permanganate undergoes in each case.
4. From what raw materials may ordinary window glass be manufactured? Indicate briefly a method for its qualitative analysis.
5. Describe the visible changes, if any, which occur when each of the following substances is strongly heated in the air, and express the chemical changes, if any, by equations:—Copper nitrate, potassium nitrate, ferrous sulphate, ammonium sulphate, oxalic acid, potassium ferrocyanide.
6. Contrast the acetic with the lactic fermentation. How would you prove the presence of lactic acid in presence of acetic acid?
7. Starting from glycerin, how may trichlorhydrin be prepared?
8. Given a mixture of aniline (b. p. 183°) and phenol (b. p. 183°), containing about 10 per cent. of nitrobenzene (b. p. 205°), how would you separate the three compounds and prepare from each a crystalline derivative?
9. What would be the result of treating each of the following substances with (*a*) cold, (*b*) hot concentrated aqueous potash:—Aldehyde, benzaldehyde, resorcin(ol), acetamide, ethyl nitrite, acetyl chloride?

PHYSICS.

1. What is meant by the "diffusion of gases"? Describe generally the methods employed for its investigation.
2. How would you proceed in order to determine the specific heat of a given metal?
3. Describe the uses of the process of distillation, illustrating your answer by some distillation that you have yourself carried out.
4. Explain the term plane of polarisation of light.
5. Describe some of the methods at present in use for artificial illumination, explaining the principles on which they depend.
6. If the spectrum obtained from one source of light be continuous, and that from another source discontinuous, what conclusions may be drawn as to the two sources of light respectively?
7. Describe and explain the construction of some instruments used for measuring electric currents.
8. Under what conditions do electric currents attract or repel one another? Describe experiments illustrating the facts.
9. The earth is often spoken of as a magnet, state what this means, and describe the apparatus employed for investigating the magnetic condition of the earth.

BOTANY AND MATERIA MEDICA (A).

BOTANY.

1. Give an account of the structure, mode of origin, and function of cork. What is bark?
2. Write a concise description, with diagrams, of the structure of a dorsiventral leaf. Point out the functions of the several tissues and show how the leaf as a whole illustrates the principle of the physiological division of labour.
3. Write a *brief* description of the external characters of the following:—An Oak leaf, the leaf of a Bracken fern, the stem of *Equisetum*, and the flowers of a Willow.

MATERIA MEDICA.

1. What official drugs are obtained from plants of the natural order Umbelliferæ? Name and state the average proportion of the principal constituents present in them.
2. How would you prepare (*a*) hydrochlorate of morphine from opium, (*b*) cocaine from coca leaves?

* The time allowed for each of the four papers given to each candidate was three hours. It was not permitted to attempt more than six questions in chemistry or physics. The (A) and (B) papers in botany and materia medica were given to alternate sets of candidates.

BOTANY AND MATERIA MEDICA (B).

BOTANY.

1. Describe carefully the manner of origin of a lateral root, and give an account of its histological structure. What do you understand by an adventitious root?
2. Mention three plants characteristic of each of the following situations:—Seashore, fresh-water ditches and ponds, woods, and sunny meadows. What general differences in structure, external and internal, are there between plants from these several situations?
3. Compare and contrast the organs of absorption and assimilation in the following plants:—*Marchantia*, *Fucus*, *Funaria*, and *Viscum*.

MATERIA MEDICA.

1. What plants belonging to the natural order Compositæ yield official products? State the average proportion of active constituents present in each.
2. How would you determine the proportion of quinine present in a given sample of cinchona bark? Give your reasons for each separate stage in the operation.

PRACTICAL BOTANY AND MATERIA MEDICA (A).

BOTANY.

1. Make a transverse and a longitudinal section of A.
   Draw your preparations, giving explanatory sketches of the structures shown in the sections. To what group of plants does the specimen belong?
2. What is B? Make a careful dissection of it, and draw your dissection. Isolate the embryo, and leave it for examination in a watch-glass.
3. Refer C to its natural order, giving reasons for your reference.

MATERIA MEDICA.

1. Prepare transverse and longitudinal sections of the root provided. Leave your slides for inspection with descriptive sketches pointing out the histological characteristics of the drug. Name any cell-contents present which you may recognise.
2. Identify and report upon the quality of "The Powder."

PRACTICAL BOTANY AND MATERIA MEDICA (B).

BOTANY.

1. Make a transverse section of A, and give a drawing with explanatory references to the features shown in the section. Determine the organ, giving reason for your determination.
2. Give a description of the external morphological features presented by B. Refer the plants C and D to their natural orders, giving reasons for your reference.

MATERIA MEDICA.

1. Prepare transverse and longitudinal sections of the root provided. Leave your slides for inspection with descriptive sketches pointing out the histological characteristics of the drug. Name any cell-contents present which you may recognise.
2. Identify and report upon the quality of "The Powder."

DENTAL NOTES.

A Filling for Roots.

Brubacher recommends an antiseptic composed of iodoform powder, 2; salol, 2; cacao butter, 5. In this form it can be easily packed into devious cavities.

Formaldehyde and Geranium Oil as a Dental Disinfectant.

A solution of formaldehyde, 40 parts, and oil of geranium, 20 parts, in alcohol 80 per cent., so as to produce 100 parts, is recommended by De Marion and André for use in dental easier, for producing perfect asepsis. The authors state that the preparation has given better results than any other disinfectants that they have used. The solution is stated to keep well even when no special precautions are taken with it.—*Monde Dentaire*, xi., 414.

Thymol in Odontalgia.

Hartmann finds thymol preferable to arsenic to obtund the nerve in dental caries. The decayed tooth is simply packed with a plug of cotton wool on which a little powdered thymol has been sprinkled. This does not irritate the mucous surface, and is easily removed by rinsing the mouth. It is non-toxic, and does not at first increase the pain.—*Progrès Dentaire*, xxiv., 224.

Gargle for Fetid Breath.

Dieterich recommends the following as a deodorant gargle:—Saccharin, 0·50; salicylic acid and salol, of each 0·20; vanillin, 0·10; rectified spirit, 100. Half a teaspoonful in half a tumblerful of tepid water as a gargle five or six times a day.—*Odontologie* [2], v., 306.

Concentrated Dentifrice.

Thymol, 50 centigrammes; tincture of krameria, tincture of myrrh, of each 5 grammes; alcohol (90 per cent.), 80 grammes distilled water, 20 grammes; oil of peppermint, 10 drops.—*Odontologie* [2], v., 405.

Table of Thermometric Equivalents

According to the Centigrade, Fahrenheit, and Réaumur Scales.

C.°	F.°	R.°	C.°	F.°	R.°	C.°	F.°	R.°	C.°	F.°	R.°
—40	—40	—32	—22	—7.6	—17.6	—4.4444	24	—3.5556	12.7778	55	10.2222
—39.4444	—39	—31.5556	—21.6667	—7	—17.3333	—4	24.8	—3 2	13	55.4	10.4
—39	—38.2	—31.2	—21.25	—6.25	—17	—3.8889	25	—3.1111	13 3333	56	10.6667
—38.8889	—38	—31.1111	—21.1111	—6	—16.8889	—3.75	25.25	—3	13 75	56.75	11
—38.75	—37.75	—31	—21	—5.8	—16 8	—3.3333	26	—2.6667	13.8889	57	11.1111
—38.3333	—37	—30.6667	—20.5556	—5	—16.4444	—3	26.6	—2.4	14	57.2	11.2
—38	—36.4	—30.4	—20	—4	—16	—2.7778	27	—2.2222	14.4444	58	11.5556
—37.7778	—36	—30.2222				—2.5	27.5	—2	15	59	12
—37.5	—35.5	30				—2.2222	28	—1.7778			
—37.2222	—35	—29.7778	—19.4444	—3	—15 5556	—2	28.4	—1.6			
—37	—34.6	—29.6	—19	—2 2	—15.2	—1.6667	29	—1.3333			
—36.6667	—34	—29.3333	—18.8889	—2	—15.1111	—1.25	29.75	—1	15.5556	60	12.4444
—36.25	—33.25	—29	—18.75	—1.75	—15	—1.1111	30	—0.8889	16	60.8	12.8
—36.1111	—33	—28.8889	—18.3333	—1	—14.6667	—1	30.2	—0.8	16.1111	61	12.8889
—36	—32.8	—28 8	—18	—0.4	—14.4	—0.5556	31	—0.4444	16 25	61.25	13
—35.5556	—32	—28.4444	—17.7778	0	—14.2222	0	32	—0	16.6667	62	13.3333
—35	—31	—28	—17.5	0·5	—14				17	62.6	13.6
			—17.2222	1	—13.7778				17.2222	63	13.7778
—34.4444	—30	—27.5556	—17	1.4	—13.6	0·5	32 9	0.4	17.5	63.5	14
—34	—29.2	—27.2	—16.6667	2	—13.3333	0 5556	33	0.4444	17.7778	64	14.2222
—33.8889	—29	—27.1111	—16.25	2.75	—13	0.125	17.125	0.5	18	64.4	14.4
—33.75	—28.75	—27	—16.1111	3	—12.8889	1	33.8	0.8	18.3333	65	14.6667
—33.3333	—28	—26.667	—16	3.2	—12.8	1.1111	34	0.8889	18.75	65.75	15
—33	—27.4	—26.4	—15.5556	4	—12.4444	1·25	34 25	1	18.8889	66	15.1111
—32.7778	—27	—26 2222	—15	5	—12	1.6667	35	1.3333	19	66.2	15.2
—32.5	—26.5	—26				2	35.6	1.6	19.4444	67	15.5556
—32.2222	—26	—25.7778				2.2222	36	1.7778	20	68	16
—32	—25.6	—25 6	—14.4444	6	—11.5556	2·5	36.5	2			
—31.6667	—25	—25.3333	—14	6.8	—11.2	2.7778	37	2.2222	20.5556	69	16.4444
—31.25	—24.25	—25	—13 8889	7	—11.1111	3	37.4	2.4	21	69.8	16.8
—31.1111	—24	—24.8889	—13.75	7.25	—11	3.3333	38	2.6667	21.1111	70	16.8889
—31	—23.8	—24 8	—13.3333	8	—10.6667	3.75	38.75	3	21.25	70 25	17
—30.5556	—23	—24.4444	—13	8 6	—10.4	3.8889	39	3.1111	21.6667	71	17.3333
—30	—22	—24	—12.7778	9	—10 2222	4	39.2	3.2	22	71.6	17.6
			—12.5	9.5	—10	4.4444	40	3 5556	22.2222	72	17.7778
			—12.2222	10	— 9.7778	5	41	4	22.5	72.5	18
—29.4444	—21	—23.5556	—12	10.4	— 9.6				22.7778	73	18.2222
—29	—20.2	—23.2	—11.6667	11	— 9.3333	5 5556	42	4.4444	23	73.4	18.4
—28.8889	—20	—23.1111	—11.25	11.75	— 9	6	42.8	4 8	23.3333	74	18.6667
—28.75	—19.75	—23	—11.1111	12	— 8.8889	6.1111	43	4.8889	23.75	74.75	19
—28.3333	—19	—22.6667	—11	12.2	— 8.8	6.25	43.25	5	23·8889	75	19.1111
—28	—18.4	—22.4	—10.5556	13	— 8.4444	6.6667	44	5.3333	24	75.2	19.2
—27.7778	—18	—22.2222	—10	14	— 8	7	44.6	5.6	24.4444	76	19.5556
—27.5	—17.5	—22				7.2222	45	5.7778	25	77	20
—27.2222	—17	—21.7778				7.5	45.5	6			
—27	—16.6	—21.6				7.7778	46	6.2222			
—26.6667	—16	—21.3333				8	46.4	6 4			
—26.25	—15.25	—21	—9 4444	15	—7.5556	8.3333	47	6.6667	25.5556	78	20.4444
—26.1111	—15	—20.8889	—9	15.8	—7.2	8.75	47.75	7	26	78.8	20.8
—26	—14.8	—20.8	—8.8889	16	—7.1111	8 8889	48	7.1111	26.1111	79	20.8889
—25.5556	—14	—20.4444	—8.75	16.25	—7	9	48.2	7.2	26.25	79.25	21
—25	—13	—20	—8.3333	17	—6.6667	9.4444	49	7.5556	26.6667	80	21.3333
			—8	17.6	—6.4	10	50	8	27	80.6	21.6
			—7.7778	18	— 6.2222				27.2222	81	21.7778
—24.4444	—12	—19.5556	—7.5	18.5	—6				27 5	81.5	22
—24	—11.2	—19.2	—7.2222	19	—5.7778	10.5556	51	8.4444	27.7778	82	22.2222
—23.8889	—11	—19.1111	—7	19.4	—5.6	11	51.8	8.8	28	82.4	22.4
—23.75	—10.75	—19	—6.6667	20	—5.3333	11.1111	52	8.8889	28.3333	83	22.6667
—23.3333	—10	—18.6667	—6.25	20.75	—5	11.25	52.25	9	28.75	83 75	23
—23	—9.4	—18.4	—6.1111	21	—4.8889	11.6667	53	9.3333	28.8889	84	23.1111
—22.7778	—9	—18.2222	—6	21.2	—4.8	12	53.6	9.6	29	84.2	23.2
—22.5	—8.5	—18	—5.5556	22	—4 4444	12 2222	54	9.7778	29.4444	85	23.5556
—22.2222	—8	—17.7778	—5	23	—4	12.5	54.5	10	30	86	24

Table of Thermometric Equivalents

According to the Centigrade, Fahrenheit, and Réaumur Scales.

C.°	F.°	R.°
30.5556	87	24.4444
31	87.8	24.8
31.1111	88	24 8889
31.25	88.25	24
31.6667	89	25.3333
32	89.6	25 6
32.2222	90	25.7778
32.5	90.5	25
32.7778	91	26.2222
33	91.4	26.4
33.3333	92	26.6667
33.75	92.75	26
33.8889	93	27 1111
34	93.2	27.2
34.4444	94	27.5556
35	95	28
35.5556	96	28.4444
36	96.8	28.8
36.1111	97	28.8889
36.25	97.25	29
36.6667	98	29.3333
37	98.6	29.6
37.2222	99	29.7778
37.5	99.5	30
37.7778	100	30.2222
38	100.4	30.4
38.3333	101	30.6667
38.75	101.75	31
38.8889	102	31.1111
39	102.2	31 2
39.4444	103	31.5556
40	104	32
40.5556	105	32.4444
41	105.8	32.8
41.1111	106	32.8889
41.25	106.25	33
41.6667	107	33 3333
42	107.6	33.6
42.2222	108	33.7778
42.5	108.5	34
42.7778	109	34.2222
43	109.4	34.4
43.3333	110	34 6667
43.75	110.75	35
43.8889	111	35.1111
44	111.2	35.2
44.4444	112	35.5556
45	113	36
45.5556	114	36 4444
46	114.8	36 8
46.1111	115	36.8889
46 25	115.25	37
46.6667	116	37.3333
47	116.6	37.6
47.2222	117	37.7778
47.5	117.5	38
47.7778	118	38.2222
48	118.4	38.4
48.3333	119	38.6667
48.75	119.75	39
48.8889	120	39.1111
49	120.2	39.2
49.4444	121	39.5556
50	122	40
50.5556	123	40.4444
51	123 8	40.8
51.1111	124	40.8889
51.25	124.25	41
51.6667	125	41.3333
52	125.6	41.6
52.2222	126	41.7778
52 5	126.5	42
52.7778	127	42.2222
53	127.4	42.4
53.3333	128	42.6667
53.75	128.75	43
53.8889	129	43.1111
54	129.2	43.2
54.4444	130	43.5556
55	131	44
55.5556	132	44.4444
56	132.8	44 8
56.1111	133	44.8889
56 25	133.25	45
56.6667	134	45 3333
57	134.6	45.6
57.2222	135	45.7778
55.5	135.5	46
57.7778	136	46.2222
58	136.4	46.4
58.3333	137	46.6667
59.75	137.75	47
58.8889	138	47.1111
59	138.2	47.2
59.4444	139	47.5556
60	140	48
60.5556	141	48.4444
61	141.8	48.8
61.1111	142	48.8889
61.25	142.25	49
61.6667	143	49.3333
62	143.6	49.6
62.2222	144	49.7778
62.5	144.5	50
62.7778	145	50.2222
63	145.4	50 4
63.3333	146	50.6667
63.75	146.75	51
63.8889	147	51.1111
64	147.2	51.2
64.4444	148	51.5556
65	149	52
65.5556	150	52.4444
66	150.8	52.8
66.1111	151	52.8889
66.25	151.25	53
66.6667	152	53.3333
67	152.6	53.6
67.2222	153	53.7778
67 5	153.5	54
67.7778	154	54.2222
68	154.4	54.4
68.3333	155	54.6667
68.75	155.75	55
68.8889	156	55.1111
69	156 2	55.2
69.4444	157	55.5556
70	158	56
70.5556	159	56.4444
71	159.8	56.8
71.1111	160	56.8889
71.25	160.25	57
71.6667	161	57 3333
72	161.6	57.6
72.2222	162	57.7778
72.5	162.5	58
72.7778	163	58.2222
73	163.4	58.4
73.3333	164	58.6667
73.75	164.75	59
73.8889	165	59.1111
74	165.2	59.2
74.4444	166	59.5556
75	167	60
75.5556	168	60.4444
76	168.8	60.8
76 1111	169	60.8889
76.25	169.25	61
76·6667	170	61.3333
77	170.6	61.6
77.2222	171	61.7778
77.5	171.5	62
77.7778	172	62.2222
78	172.4	62 4
78.3333	173	62.6667
78.75	173.75	63
78.8889	174	63.1111
79	174.2	63.2
79.4444	175	63 5556
80	176	64
80.5556	177	64.4444
81	177.8	64 8
81.1111	178	64 8889
81.25	178.25	65
81.6667	179	65.3333
82	179.6	65.6
82.2222	180	65.7778
82.5	180.5	66
82.7778	181	66.2222
83	181.4	66.4
83.3333	182	66.6667
83 75	182.75	67
83.8889	183	67.1111
84	183.2	67.2
84.4444	184	67 5556
85	185	68
85.5556	186	68.4444
86	186.8	68.8
86.1111	187	68.8889
86 25	187.25	69
86.6667	188	69.3333
87	188.6	69.6
87.2222	189	69.7778
87.5	189.5	70
85.7778	190	70.2222
88	190.4	70.4
88.3333	191	70.7778
88.75	191.75	71
88.8889	192	71.1111
89	192 2	71.2
89.4444	193	71.5556
90	194	72
90.5556	195	72.4444
91	195.8	72.8
91.1111	196	72.8889
91 25	196.25	73
91.6667	197	73.3333
92	197.6	73.6
92 2222	198	73.7778
92.5	198.5	74
92.7778	199	74.2222
93	199.4	74.4
93 3333	200	74.7778
93.75	200.75	75
93.8889	201	75.1111
94	201 2	75.2
94.4444	202	75.5556
95	203	76
95.5556	204	76.4444
96	204.8	76.8
96.1111	205	76.8889
96 25	205.25	77
96.6667	206	77.3333
97	206.6	77 6
97.2222	207	77.7778
97.5	207.5	78
97.7778	208	78.2222
98	208.4	78.4
98.3333	209	78.7778
99.75	209.75	79
98.8889	210	79.1111
99	210.2	79.2
99.4444	211	79.5556
100	212	80

ROYAL INSTITUTION

On Friday, April 1, a lecture was delivered by Professor Dewar, F.R.S., on

Liquid Air as an Analytic Agent.

Professor Dewar, at the outset, called attention to the increased importance of the study of low temperatures. He had only that morning received a circular from the Society of Chemical Industry, New York, respecting the liquefaction of air on a commercial scale. The statement had been made that our American cousins purvey liquid air in milk-cans. The Professor's assistants, Mr. Lennox and Mr. Heath, were determined not to be beaten, and they had, therefore, prepared for his use that evening some two and a half gallons of liquid air. That was contained in a vessel cased in wood, and having the outward appearance of a common milk-can, and doubtless surrounded by a vacuum chamber, which Professor Dewar's researches have shown to be so efficient in hindering the conduction of heat. In order to demonstrate some of the properties of liquid air a portion was baled out by means of an ordinary measure as used by milkmen, and poured on a silver vessel heated to redness. The liquid remained apparently as quiescent at this high temperature as in cooler vessels, and maintained a spheroidal condition, just as would a drop of water on a red-hot plate. The temperature of the liquid air itself was about −210° C., or 63° in terms of absolute temperature; therefore the red-hot vessel was 10 or 12 times the absolute temperature of the liquid. Professor Dewar then proceeded to refer to various analytical operations in which liquid air is of service, dealing at length with the qualitative separation of mixtures of gases. Coal gas, a mixture of hydrogen, marsh gas, carbonic oxide, and various illuminating gases and impurities, might be placed in a vessel and surrounded by boiling liquid air. It was possible, in these circumstances, to condense all gases except carbonic oxide and hydrogen, and thus leave a mixture of these two gases.

Ultimately, however, the carbonic oxide might be condensed and hydrogen be left alone in the gaseous state. Similarly, any gas less easily condensed than air could be separated from a mixture of the same with air. Hydrogen present in air to the extent of one in a thousand is just detectable by this plan of work, but smaller quantities are missed, since traces dissolve in the liquid. In order to press this inquiry a little further, some natural gas known to contain a different constituent, like helium, suggested itself as being worthy of trial. Lord Rayleigh's analysis of the gas from the King's Well, at Bath, gave 1·2 part of helium per 1000 volumes, so that it seemed admirably adapted for such experiments. By the kind permission of the Corporation of Bath the lecturer had obtained an abundant supply of this gas. Professor Dewar next threw on the screen photographs of the old Roman Bath and the King's Well. Reference was made to a paper read before the Royal Society on December 19, 1833, by Dr. Daubeny, Professor of Chemistry at Oxford University, on the "Quantity and Quality of the Thermal Springs of the King's Well in the City of Bath." Dr. Daubeny's experiments extended over a month, and he estimated the volume of gas given off as from 80 to 530 cubic inches per minute (average 264). Professor Williamson, of University College, had also analysed this gas in 1865, and found a trace (0·2 per cent) of marsh gas.

Concerning his own published work the Professor said the sample of gas from the Bath Spring was treated exactly in the same way as the hydrogen mixtures. During liquefaction there was a marked difference in the appearance of the liquefied gases, for while the hydrogen and air gave a clear, transparent liquid, the product from the Bath gas was turbid, and a precipitate gradually formed which by transmitted light looked yellowish-brown. This experiment was repeated. The yellowish-brown precipitate is a solid body, probably of the petroleum series of compounds, and having a marked aromatic smell. It was probably this gas which Professor Williamson gave as marsh gas in his analysis. Further research will be made on this substance, indeed, a large quantity of gas has recently been collected for the purpose. Another peculiarity of the liquid nitrogen obtained from Bath gas is that, on examining it with a spectroscope, even through a thickness of two inches of liquid, no trace of the characteristic oxygen absorption spectrum could be obtained. In all other attempts to liquefy nitrogen on the large scale, oxygen can readily be detected in the liquid, by means of its absorption spectrum. Another phenomenon was also well shown. The gas from the King's Well could not be entirely condensed by refrigeration with liquid air boiling *in vacuo*. After the cooling had continued for some time, the gas ceased to flow into the condensing vessel, and the upper part of the vessel was occupied by a gas that would not undergo liquefaction or solution. The bulk of this gas was helium, an element long known to exist in the sun, but only recently discovered by Professor Ramsay in anything terrestrial. It is, therefore, possible to separate helium from other gases by liquefaction when it is only present to the extent of one part in one thousand. From this it would appear that helium is less soluble in liquid nitrogen than hydrogen in liquid air, and is of greater volatility than the constituents of the other gases which were condensed. If the sample of the uncondensed gas from the first liquefaction of the Bath gas were again treated in the same way, a much more concentrated specimen of helium could be obtained. Provided helium were wanted on a large scale, then a liquid air apparatus similar to that in use at the Royal Institution, transported to Bath and worked with the gas from the King's Well, could be made to yield a good supply, as the gas contains 12 parts in 10,000.

Argon, which is present in the proportion of 140 parts per 10,000, condenses with the nitrogen, but if the liquid be allowed to slowly boil away, a residuum may be obtained containing about 7 per cent. of argon. An interesting experiment was performed, showing that argon, when frozen, solidifies to a perfectly clear glass, and is only visible when passing to or from the gaseous condition.—The relation of atomic weight to X rays was next discussed, shadows from various liquefied gases being thrown on the screen. The influence of various bodies in assisting high vacuum as a non-conducting jacket to vessels used in experimenting at low temperatures was next demonstrated. Professor Dewar has shown that a good exhaustion reduces the influx of heat to one-fifth of what is conveyed when the annular space of such double-walled vessels is filled with air. If the interior walls are silvered, or excess of mercury vapour is allowed to remain, the influx of heat is diminished to one-sixth of the amount entering without the metallic coating. The total effect due to the high vacuum and silvering is to reduce the ingoing heat to one-thirtieth of the original amount, *i.e.*, roughly, to 3½ per cent. In the experiment performed on Friday three similar double-walled glass tubes were mounted on a common stem. Between the walls of one of the jackets was magnesia; in another finely-divided carbon was used; while the third was vacuous. Since all were mounted on the same stem, all were equally vacuous. These tubes were filled to the same level with liquid air, and the rate of evaporation noted. The liquid contained in the tube isolated by high vacuum alone lost volume much more rapidly than the other tubes. Without altering any other condition, the common stem was broken, so that air was simultaneously admitted into the jackets of the three tubes. The rate of evaporation was at once reversed, and was slowest in the tube jacketted with air alone.

ANALYTICAL NOTES.

Examination of Mace.—Solstein draws attention to a marked difference between Bombay and Banda mace in the amount of extractive soluble in ether yielded by the two varieties after being freed from fat with petroleum ether. The Bombay gives ten times as much ether-soluble extractive as the Banda variety. The weight from this latter kind should not exceed 5·5 per cent. By means of this test the admixture of 10 per cent. of Bombay mace may be detected, as this will bring the amount of ethereal extract up to 6 per cent.—*Pharm. Zeit.*, xlii., 531.

Detection of Para-Amidophenetol in Phenacetine.—Commercial phenacetine almost always contains more or less para-amidophenetol. To detect it a small portion of the sample is melted in a capsule with a little pure chloral hydrate. A brilliant violet colour will be formed if the impurity is present, and varies in intensity with the amount. Even the purest samples give a slight reaction.—*Journ. Pharm. d'Anvers*, liii., 357.

Test for Chloral Hydrate.—Hirschsohn gives the following test for the presence of alcoholate:—1 gramme of the sample is added to 1 C.c. of the nitric acid (1·38 specific gravity). The mixture should not turn yellow or give off yellow vapours in the space of ten minutes either at ordinary temperature or on warming.—*Pharm. Centralh.*, xxxviii., 238.

THE STUDENTS' PAGE.

EXPLANATORY NOTES ON THE B.P.

Tincturæ.—The tinctures constitute a large and important class of preparations. The reasons for their extensive employment in medicine are chiefly two; first, their permanence, owing to the preservative properties of alcohol, and secondly, the facility with which alcohol exhausts certain drugs, such as guaiacum, benzoin, Indian hemp, etc. Subsidiary reasons are to be found in the attractive appearance of tinctures, which can usually be filtered perfectly bright. For alcohol coagulates, and does not extract albuminous and gummy substances, and these form the chief obstacle to the clarification of preparations like the infusions and decoctions. Moreover, the medicinal actions of many carminative and tonic remedies like ginger, calumba, and cinchona is considered to be distinctly promoted by the association of their active principles with alcohol. Proof and rectified spirits are the two strengths of alcohol employed almost exclusively in the official formulæ. There is no doubt that many drugs are exhausted better by alcohol of other strengths than those at present ordered, and in some cases equally well and more economically by weaker alcohol than that of proof strength. In the forthcoming edition of the British Pharmacopœia changes in this direction will doubtless be found, based upon work which has been done mainly since the publication of the 1885 edition. The student will best obtain a useful comprehension of large groups of galenical preparations like the tinctures, by tabulating them for himself instead of merely scanning tables to be found in books. Arrange the members of such groups in tables based upon (*a*) their proportion of active ingredient; (*b*) the nature or strength of their menstruum; (*c*) the processes adopted in making them; and (*d*), lastly, their doses. By the time this is done the student will have acquired, without any effort of memory, a large amount of information of much more value than an ephemeral knowledge acquired by cramming methods. The tabulation will necessitate a critical consideration of each individual preparation, and this will bring into prominence many points easily overlooked. It is not necessary to commit to memory the strength of galenical preparations except in the case of the more potent ones, when such a knowledge acts as a useful check upon one's memory of the dose of the preparation. In the case of compound preparations it is never necessary to commit to memory the proportions of the subsidiary ingredients; for example, in tinctura camphoræ composita the proportion of opium only need be remembered.

Unguenta.—The official ointments may be roughly divided into two classes, those made with paraffins and those made with vegetable and animal fats. Soft and hard paraffin have the advantage of being very inert substances not chemically reacting with the materials mixed with them. Their slow absorption by the skin favours their employment in making ointments intended to have a local action on the skin, as opposed to ointments which have a general constitutional action, *e.g.*, ointment of mercury. The formulæ of the official ointments do not seem in many cases consistent with either of these guiding principles. The employment of a mixture of hard and soft paraffin is rather unsatisfactory owing to the tendency of the hard paraffin to crystallise out during the cooling of the mixture. If an ointment of this nature be rubbed in a mortar or on a slab until cold the product is lighter in colour than one obtained by gently stirring with a spatula in a pot during the cooling owing to the entanglement of air bubbles in the former case. Benzoated lard is better than plain prepared lard, because the benzoic acid and other aromatic bodies extracted from the benzoin prevent the development of the ferment-organisms to whose presence the rancid decomposition of animal and vegetable fats is due. The ointments with simple ointment or lard, when prepared in small quantities, are best made in the cold by incorporating the ingredients on a porcelain slab by means of a long flexible spatula. If large quantities be made, it is more expeditious to melt the fat and stir in the medicament. If this be a powder like boric acid or zinc oxide, it should be passed through a fine sieve just before stirring in. Great care should be taken not to overheat the fat when melting it. Always use a water-bath—never a naked flame; and in most cases it is preferable to heat the fat only a few degrees above its melting point. This shortens the subsequent period of cooling, and obviates the danger of damaging the medicament by heat or volatilisation.

Vapores.—The inhalations of the Pharmacopœia are not much used, preparations of this nature being usually prescribed specially to meet the requirements of each case. The official formulæ do not require much explanation. In *vapor chlori* only a small fraction of the total available chlorine, liberated by the carbonic acid of the air and added water, is utilised. Solution of potash is added to the hemlock juice in *vapor coninæ* to liberate the alkaloid which is volatile in the free state. In the natural juice it is combined with malic acid, and the salts of conine are not volatile at the temperature of boiling water. In *vapor olei pini sylvestris* the light carbonate of magnesium is used to disseminate the oil throughout the water in the inhaler.

Vina.—In ancient and mediæval pharmacy wines of various kind were largely used as menstrua for the preparation of medicines, probably owing to the fact that they formed in former times the most readily available alcoholic fluids. By virtue of the alcohol contained in them, products possessing activity and keeping properties could be obtained, the flavour of the wine serving also to mask to some extent the taste of the medicinal substance. The official wines of aloes, opium, and rhubarb are not much used. Sherry for medicinal purposes is required by the Pharmacopœia to contain about 17 per cent. of alcohol. This excludes the use of the lighter wine imported under the shilling duty on account of its containing only about 12 per cent. of alcohol, while the fortified wine is charged half-a-crown per gallon. A good deal of cheap so-called sherry does not originate from the juice of the grape, but is a concoction of flavoured spirit of Teutonic origin. *Vinum ferri* has been shown to be a very weak and variable preparation of iron. The solution of the small quantity of iron is probably due to the action of the free organic acids or acid salts contained in the wine. *Vinum ferri citratis* was introduced as an alternative preparation to *vinum ferri*, and has the advantage of containing a definite quantity of iron. It possesses also a pleasant flavour, but notwithstanding these recommendations it does not seem to have received the extended use it deserves. *Vinum ipecacuanhæ* is not very satisfactory, for although the acetic acid efficiently extracts the alkaloids of the root, these are injured by the subsequent prolonged evaporation to dry extract.

HOLIDAY BOTANY.

The Easter holidays will afford an excellent opportunity fo botanising on moor and mountain, wood and field, and to the observant eye many beautiful objects will be revealed. The scale-mosses will now be sending up their transparent glass-like fruit stalks everywhere on damp rocks and dripping banks, and are best studied at this time of year. The beautiful peristomes of many of the true mosses will be in fit condition for examination, and of others the male flowers nestling in the cup-like crown of leaves at the top of the stem will be in perfection. The *Nitella* and *Chara* are just beginning to show in pools in shady woods and in calcareous fields, their spring growth having already commenced. *Spirogyra* and other fresh-water algæ will be found in fruit in ditches and runlets, and on fallow fields *Vaucheria* will be found covered with fruit in green patches on the bare patches of soil in damp corners. Several rare and interesting plants are now in flower. The little moschatel (*Adoxa moschatellina*) is now flowering in damp woods, the *Chrysosplenium oppositifolium* on dripping banks or by streams, and are both worth examination. Of rare plants the *Anemone pulsatilla* should now be out on chalky hills, and the *Pulmonaria angustifolia* in the Isle of Wight and the New Forest, *Hutchinsia petræa* in the Derbyshire dales, *Thlaspi perfoliatum* in Oxfordshire and Gloucestershire, and the rare little grass *Mibora verna* will reward those who visit Anglesea. By the sea, especially near the mouth of rivers, the sea grass (*Zostera marina*) will already have its leaf tips covered with various interesting parasitic species of algæ, and on more exposed places the Laminarias will be found exhibiting the remarkable intercalary growth of those plants, and some of the Fuci will be found in fruit, and will well repay examination. Foraminifera may be looked for in the ripples left on sandy shores in the form of slender white lines, and diatoms in the shallow ditches and runlets by roadsides. Those who prefer more serious study will find work in plenty afforded at the Marine Biological stations at Plymouth and Malpas in Cumbrae.

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LONDON: SATURDAY, APRIL 9, 1898.

THE COUNCIL MEETING.

AFTER the reading of the minutes of the previous meeting, the PRESIDENT, referring to the death of Sir RICHARD QUAIN, said that the Society had lost one of its oldest and most distinguished honorary members, who had always taken great interest in the work of the Society, and had long been prominently connected with the revision of the British Pharmacopœia, from 1867, when he was Secretary to the Committee entrusted with that duty by the General Medical Council, down to the time of his death, when, as Chairman of the Committee, he was looking forward to the publication of the forthcoming Pharmacopœia. As a steadfast objector to the use of "ready-made physic," Sir RICHARD would be regretted by pharmacists no less than in other circles where he was conspicuous for his intellectual and social qualities. Reference was also made to the death of Mr. J. B. MACKEY at the age of eighty-four, who had been a member of the Society since 1842, and had served the office of Auditor.

The additions to the Society comprised 5 members, 74 associates, and 17 students.

The Secretary reported that out of seventeen nominations which had been received for the election of fourteen members of Council, sixteen of the nominees had signified their willingness to accept office if elected, the two new candidates being Mr. A. S. CAMPKIN, of Cambridge, and Mr. W. GIBBONS, of Manchester.

The Auditors nominated were the same as last year, and they are willing to accept office if elected.

The report of the Government Visitor to the examinations was read by the SECRETARY, and it showed that the proportion of failures to pass the Preliminary examination has not been materially different from that of previous years, thus confirming the belief that the provision for establishing a higher standard would be the means of securing pharmaceutical students of a better educated class than many of those now entering upon that position, and of effecting a reform beneficial to the public and to the interests of the calling. In regard to the general results of the qualifying examination, Dr. STEVENSON reports that the standard has been well maintained, and that care has been taken to admit to the Register only those who are reasonably equipped for the safe practice of pharmacy. Mention was, however, made of the manifestly deficient preparation of many candidates who present themselves again and again unsuccessfully. Such chronic incapacity to meet the requirements of the examiners is regarded by Dr. STEVENSON as evidence of the general insufficiency of pharmaceutical training. This experience has been continued so long that it has become a point of primary importance in regard to the material interests of the body, and on that account it should be an incentive to fresh endeavours to establish a better system of education. The same inference may be drawn from the fact that the number of candidates for the higher and voluntary qualification of pharmaceutical chemist shows a notable diminution, for though there has been a much larger percentage of successful candidates for the Major examination, the superior status does not appear to attract so many aspirants as might be wished.

The report of the Finance Committee was adopted without comment as being of the usual character. The PRESIDENT mentioned the receipt of ten guineas from Mr. NATHANIEL SMITH as a donation to the Benevolent Fund, and twenty-five guineas from the Chemists' Ball Committee through Mr. WARREN. As a further proof of the interest taken in the Benevolent Fund throughout the country the PRESIDENT also made the gratifying announcement that £1 13*s.* had been received as the amount of a collection made at a smoking concert held at Liverpool by the local students' association.

The report of the Benevolent Fund Committee recommending the payment of seven grants, amounting in all to ninety-eight pounds, was adopted on the motion of the Vice-President, who referred to the successful result of the Secretary's exertions in getting some friends of one of the candidates to supplement the assistance that has been rendered from the Benevolent Fund.

The report of the Library, Museum, School, and House Committee, though it dealt with a number of interesting details, contained nothing calling for particular comment and was adopted.

The PRESIDENT drew attention to the Society's Financial Statement which was laid upon the table together with the Auditor's report for the use of members of Council.

One part of the report of the General Purposes Committee gave the reports of the Professors on the School Prizes Examination in March, in accordance with which the Silver Medal in Botany was awarded to Mr. HAROLD E. MATTHEWS, and equal Certificates of Honour to Mr. P. E. F. PERRÉDÈS and Mr. F. A. UPSHER SMITH.

In Chemistry and Physics the Silver Medal was awarded to Mr. MATTHEWS, and Certificates of Honour to Mr. T. FARROW and Mr. W. B. NELSON.

In Practical Chemistry the Silver Medal was awarded to Mr. HAROLD M. MORGAN; a Certificate of Honour to Mr. UPSHER SMITH, and equal Certificates of Honour to Mr. E. M. CHAPMAN and Mr. MATTHEWS.

In Materia Medica the Silver Medal was awarded to Mr. MATTHEWS, and equal Certificates of Honour to Mr. CHAPMAN and Mr. PERRÉDÈS.

The PRESIDENT mentioned that he had been in communication with the authorities of the Home Office in reference to the position of dispensers in H.M. prisons, and he was glad to say that his representations had been productive of some good by leading to some reform and the expression of a sympathetic disposition on the part of the officials to treat qualified dispensers holding qualification under the Pharmacy Act in a fitting manner. He also expressed a hope that the Local Government Board might yet be induced to take a similar view in regard to Poor Law dispensers.

Among correspondence received during the past month, the President drew attention to a letter received from the North-East Lancashire Chemists' Association, enclosing a resolution in favour of the Pharmacy Acts Amendment Bill. In reference to the position of that Bill, he had nothing to add to what is known in regard to it, except that he was still hopeful all opposition would be withdrawn, and as showing progress in that direction a letter was read from the Secretary of the Manchester and District Pharmaceutical Defence Committee, in which the grounds on which opposition had been offered were explained, and it was stated that on reconsidering the subject and taking into account that the object of the measure is to consolidate the body of chemists, the members of the Committee had loyally determined to withdraw their opposition to the Bill, in the hope that the anticipated accession to the Society would be realised.

After the legal portion of the General Purposes Committee had been considered in committee, its recommendations were adopted, and special resolutions were passed authorising the Registrar to take proceedings in several cases of alleged infringement of the Pharmacy Acts.

COMPANY LAW.

It is gratifying to notice the action recently taken by the Council of the Pharmaceutical Society of Ireland in approaching the Board of Trade with a view to securing much needed amendment of the Companies Acts, as similar steps had already been taken by the Council of the British Society in conjunction with representatives of other corporate bodies. Though it was considered desirable at the time to regard the proceedings as private, no confidence is now being abused by stating that, in December, 1895, a conference was held at 17, Bloomsbury Square, London, for the purpose of discussing the then proposed amendment of the Companies Acts. The delegates attending that conference represented the British Medical Association, the British Dental Association, the Medical Defence Union, the Pharmaceutical Society of Great Britain, the Royal College of Veterinary Surgeons, and the Society of Apothecaries. As an outcome of the deliberations of the conference, a deputation was appointed to wait upon the President of the Board of Trade, with the object of calling attention to the anomalous condition of the present law, in regard to the incorporation of companies formed for the purpose of evading Acts of Parliament passed for the protection of the health of the public, and to urge the importance of inserting provisions in an amending Bill to prevent the incorporation of companies for the purpose of carrying on any profession or calling which it is unlawful for an individual to carry on without possessing a statutory qualification.

A clause was also agreed upon, which it was proposed should be inserted in the Companies Act Amendment Bill, with a view to remedying the anomalous condition of the law. The effect of that clause, when embodied in an Act of Parliament, would have been to prevent the registration of any company under any name or title that cannot be taken or used by a natural person unless that individual possesses some personal qualification. Moreover, any existing company assuming such a name or title would have been deemed to be carrying on business for an illegal purpose within the meaning of the Act, and consequently, subject to the same consequences in all respects as though the company was a natural person. That clause was duly submitted by the deputation which waited on Mr. Ritchie, in February, 1896, but when the Companies Acts Amendment Bill was subsequently introduced into the House of Lords, it was found to be practically identical with the original draft, and the not unnatural conclusion to draw from that circumstance seems to be that the persuasive eloquence of the members of the deputation had counted for as little as the courteous plausibility of the member of the Government who received them.

A further conference then took place, the original delegates being reinforced by the sub-committee of the Law and Parliamentary Committee of the Pharmaceutical Council, and it was then decided to draft a statement for presentation to Sir Courtenay Boyle, Parliamentary Secretary of the Board of Trade, setting forth the objects the members of the conference had in view, the grounds for urging the acceptance of their views, and the evils already created by the abuse of the privilege of incorporation. Such a statement had been suggested by Sir C. L. Peel, Clerk to the Privy Council, who had previously been approached in the matter. The statement was duly presented, but Sir Courtenay Boyle could not be moved from the position that the evils complained of could most properly be dealt with by medical, dental, veterinary, and pharmacy Bills, amending existing Acts. Attempts to influence the Lord President of the Council also signally failed, the law advisers of the Privy Council arguing that the Pharmaceutical Society was the body most interested in the question, and that, so far as that body was concerned, the matter had been definitely settled by the decision in the case of the Pharmaceutical Society *v.* London and Provincial Supply Association, Limited. The effect of that decision was to render every offender under the Act personally liable, and that view was held to be confirmed by the decision in the case of the Pharmaceutical Society *v.* Wheeldon. Such, at least, was the opinion of the law advisers of the Privy Council, who somewhat irrelevantly added that the Pharmaceutical Society had never enforced the regulations for the keeping, dispensing, and selling of poisons, which its representatives had pledged themselves to carry into effect.

It would be tedious to go into the details of all that has since been done in the matter. Suffice it to say that a further attempt to move the Privy Council met with no response beyond a hint that a joint Bill to amend the various professional Acts already referred to might be supported by the Government, if the bodies interested thought fit to leave the Companies Bill alone. Shortly afterwards the Select Committee of the House of Lords on the Companies Bill came into existence, and that body was approached in turn. Evidence was drafted for presentation to the Committee, but the Session of 1896 closed without any advance having been made. Re-appointed in 1897, the Select Committee was again approached, but the only reply to the appeal to be heard—sent after many months—was to the effect that the matter had been delayed owing to the illness of one of the House of Lords' clerks, and that the application would be submitted to the Committee at its next meeting. That meeting has not yet taken place, but as the Select Committee is continuing its labours this Session, there is hope that the efforts put forth during the past two and a half years may receive some recognition even yet.

ANNOTATIONS.

The New Pharmacopœia, a general review of which we publish this week, will be issued to the public in about three weeks from now. Meanwhile, copies will be open to inspection at the offices of the General Medical Council in London, Edinburgh, and Dublin, whilst readers of the *Pharmaceutical Journal* will be supplied by the Editor with detailed information concerning the new processes, formulæ, etc., in next week's issue, a copy of the book having been sent by the General Medical Council in advance of official publication by advertisement in the Gazettes. Naturally, the publication of the work will be followed by a flood of commentaries and students' text-books based thereon; and already Messrs. J. and A. Churchill announce the twelfth edition of Beasley's 'Pocket Formulary and Synopsis of the British and Foreign Pharmacopœias,' which is to be based on the new B.P. The editor of that edition will be Mr. J. Oldham Braithwaite, whose numerous friends will not need to be told that he is producing what is virtually an entirely new book, which should form an essential item on the shelves of every pharmacist and medical man in English-speaking countries. The same firm will also shortly publish a new work on 'Practical Pharmacy,' by Mr. E. W. Lucas, whilst their list of forthcoming publications also includes 'A Manual of Bacteriology,' by Dr. Hewlett, of the British Institute of Preventive Medicine, a former assistant of Professor Crookshank, of King's College, London.

Regulations for the Sale of Poisons, to be effective, must be properly carried out, and registered chemists ought to spare themselves no inconvenience in endeavouring to fulfil the requirements of Section 17 of the Pharmacy Act, 1868, to the utmost. From time to time it is suggested by coroners, ill-informed newspaper writers and others, that chemists have not done all that was necessary in certain instances, but such suggestions usually prove to be based on some misconception of what the law actually requires. Such a point is raised in connection with the regrettable death of the daughter of the late Karl Marx, who poisoned herself by swallowing prussic acid on Thursday of last week. The poison was obtained from a Sydenham chemist, on the strength of a written order, which he understood was sent by Dr. Aveling, the well-known writer and lecturer on scientific and socialistic subjects, whose card was also sent. The poison, which was said to be intended for a dog, was handed over the counter to the maidservant who brought the order, and according to the newspaper reports, the chemist also gave her the poison book in order that she might take it home and have it signed there. The deceased lady initialled the book and returned it in due course. Now, if the transaction occurred as stated in the newspaper reports, and as briefly summarised above, it seems clear that the provisions of Section 17 were not properly carried out. Since, however, the Coroner for the district is expected to take action in the matter, further comment is obviously undesirable at present.

Acetylene Gas Apparatus of various kinds is to be exhibited at the Imperial Institute, the Council of that institution having authorised the holding of an exhibition of such apparatus in the grounds of the Institute, at an early date. In order to ensure that no apparatus shall be admitted to the exhibition unless it is shown to fulfil the requisite conditions of safety, the Council of the Society of Arts has appointed a committee to decide upon those conditions and to lay down rules for the admission of apparatus. Full particulars will shortly be issued as to the regulations and rules laid down, and the following gentlemen have been appointed to act on the committee:—Major-General Sir Owen Tudor Burne (Chairman of the Council), Sir Frederick Bramwell, Professor James Dewar, Mr. Harry Jones, M.Inst.C.E., Professor Vivian B. Lewes, Professor Boverton Redwood, Professor W. C. Roberts-Austen, Professor J. M. Thomson, and Sir Henry Trueman Wood (Secretary).

Payment for Coroners' Juries will henceforth be the rule at the courts of all the London coroners, with the exception of those in the City of London, the London County Council having fixed the amount payable at two shillings per head for fifteen jurymen. It is anticipated that some difficulty may be experienced, as it is usual to summon more than fifteen persons to serve, because experience shows that there are always several persons either incapacitated by illness or legally exempt from service, who do not attend. The fee however will not be paid to persons attending as substitutes, or to those summoned from the street in cases of emergency. The amount of recompense to jurors in the City of London Coroner's Court is fourpence per head for the seventeen jurymen whom it is there customary to summon, not an extravagant sum for the richest city in the world.

Certified Spectaclemakers are to be added to the ranks of individuals holding a personal qualification, as the Court of the Spectaclemakers' Company has now perfected a certification scheme for the examination of opticians. The idea is stated to have received the cordial support of the profession (*sic*), and it is gravely reported that under the new scheme an optician who passes the Company's examination will be granted a diploma, as is done in the case of chemists holding a pharmaceutical certificate. Whilst it is eminently desirable that persons who have occasion to adapt spectacles to the eyes of those whose sight may require such aid should be properly qualified to do so, it seems somewhat extravagant to talk of a City company presenting "diplomas" as evidence of such qualification, whilst the comparison with the case of pharmaceutical chemists is far-fetched, to say the least. What is to be done, however, will presumably be done thoroughly, and we understand that regulations and a syllabus of subjects for theoretical and practical examinations have already been drafted, whilst the first examination will take place in London in November next.

Sir William Turner has been elected President of the General Medical Council, in succession to the late Sir Richard Quain. He represents the University of Edinburgh on the Council, and acted as Sir Richard's deputy at the meeting of that body in November last. It is understood that the new President will meet any objection to his appointment, on the score of his residence being in Edinburgh, by resigning the chair of Anatomy in the University of Edinburgh and removing to London. He is an excellent man of business and his appointment is likely to meet with general approval.

Advertisements of Quack Medicines are doubtless a profitable source of income to newspapers, observes the editor of the *Practitioner*, and so long as the wares which it is sought to sell are harmless he supposes John Bright's principle, *caveat emptor*, must be held to apply. It is asserted, however, that a very large proportion of such advertisements are simply attempts to obtain money under false pretences, and that some can only be regarded as incitements to crime. The money got by quackery is the dirtiest on earth, and there is little between that and money got by quack advertisements, continues this candid critic, and whilst some newspaper managers may pocket the money with a com-

placent *non olet*, he prefers to believe that most of them who publish such advertisements do so in ignorance of their real nature. It is a curious fact, however, that many continue to publish them after their real nature has been exposed.

Postal Reform is always in the air, and at a meeting of the Postal Service Committee of the London Chamber of Commerce, held on Monday afternoon, it was reported that the representations made by the Chamber to the Postmaster-General on the subject of the prohibition against the transmission through the post of samples of liquids, and greasy and colouring substances, had at last borne fruit, a circular notice having been issued from the General Post Office announcing that samples would henceforth be accepted if packed in accordance with the regulations, which are identical with those in force in other countries of the Postal Union. The concession applies to samples for transmission either at home or abroad, and should appeal to chemists and druggists.

Compound Liquorice Powder Without Sulphur can hardly be regarded as a B.P. preparation, and it is not surprising, therefore, that a Woodhouse shopkeeper has been fined at the West Riding Police Court for selling such an article. The wholesale dealer who supplied the powder—F. W. Thackray, Charlotte Street, Sheffield—gave evidence for the defence, stating that he had manufactured compound liquorice powder for the last fifteen years, had bought a large quantity by auction eight years ago, and that it was only recently the Pharmacopœia had directed the addition of sulphur. So far as can be gathered from the press report, this individual had been using the 1874 reprint of the B.P. as his "uniform standard and guide," and if that be so, there would appear to be a fine field amongst Mr. Thackray's customers for the West Riding inspectors of food and drugs.

Ammonia given in Mistake for Gripe Water caused the death of an infant at Chesterfield last week, and a correspondent directs attention to the somewhat apathetic manner in which the matter was treated by the Coroner at the inquest. It appears that the solution of ammonia had been purchased at the door from a person not qualified to deal with poisonous substances, and it was poured into an empty gripe-water bottle. As a matter of course it was not labelled with the name of the contents or the word "poison," and nothing was more likely than that such an accident should happen. The Coroner seems to have contented himself with remarking that it was a great pity the label on the bottle was not removed, and that there was no law to prevent anyone from selling ammonia; the jury then returned a verdict of accidental death, no blame being attached to anyone. Our correspondent thinks that if a chemist had sold the ammonia without labelling the bottle he would not have escaped blame, and that is doubtless correct, for, rightly or wrongly, the opinion is apt to prevail that the public is entitled to think itself safe in the registered chemist's hands. After all, therefore, chemists may regard it as a compliment that what they are expected to do, as a matter of course, other people are considered too ignorant to think of, and therefore not to be severely blamed.

Compounders in Her Majesty's Prisons are henceforth to be selected as far as possible from the officers of the prison hospital staffs, the appointment of compounder being now open to all such officers, subject to their obtaining the Minor qualification of the Pharmaceutical Society and being, in all other respects, suitable for the position. Such is the gist of a circular recently issued by the Prison Commissioners to Governors of H.M. Prisons. How the officers of the hospital staffs are to obtain the Minor qualification is left to the imagination, but it may be anticipated that occasional appointments will still be open to registered chemists who are not on those staffs.

The Post of Public Analyst is vacant for the Borough of Ipswich, the Council of that Borough requiring the services of a person of competent knowledge, skill, and experience. As analyst, the chemist appointed will have to perform all the duties required of him under the Sale of Food and Drugs Act, and any Act amending the same, a retaining fee of five guineas per annum being paid, with a fee for each analysis undertaken at the request of the Local Authority. Applicants for the appointment are requested to specify what their fee will be for each analysis, and applications, together with testimonials, must be sent to the Ipswich Town Clerk on or before April 12.

The Manufacture and Sale of Alcoholic Liquors in Hong Kong is to be the subject of an inquiry, a Commission having been appointed to inquire into and report on the importation into Hong Kong, and the manufacture and sale in Hong Kong, of alcoholic liquors of all kinds, and into the operation of the laws regulating the same; also to ascertain whether any and what descriptions of crude, inferior, adulterated, or deleterious liquors are imported, manufactured, or sold, and by whom and to what extent; and, further, what measures may usefully be taken to improve the laws and to check the importation, manufacture, and sale in licensed houses and elsewhere of such crude, inferior, adulterated, or injurious liquors. The Secretary to the Commission, appointed by the Administrator of the Government of Hong Kong, is Mr. Frank Browne—an old friend of a very large number of our readers, and formerly Demonstrator in the School of Pharmacy.

The Belfast Arrangements for the reception of the British Pharmaceutical Conference in August are now nearing completion. A deputation, consisting of Mr. R. W. McKnight, Sir James Haslett, M.P., and Mr. James Payne, J.P., representing the Ulster Executive Committee, has waited upon the Lord Mayor of Belfast to ask him to receive the members of Conference on August 9. That he has consented to do, and it has also been decided to take the visitors for an excursion on August 11, by train to Larne, thence by cars along the coast, through the Glens of Antrim to Parkmore, returning by train from Parkmore Station. This trip will give the visitors an opportunity of seeing some of the most beautiful scenery in the world. The Committee, in making these arrangements, considered that a one-day excursion to the Giant's Causeway would not be entirely satisfactory, as only about two hours could be spent in exploring the district, and there is so much to be seen that it could not be done in the time. Dinner will be served at Garron Tower Castle, and tea in the Glens of Antrim. There is little reason to doubt that no efforts will be spared to make the Conference of 1898 a record one.

In the North of Ireland, according to a local correspondent, their exists—presumably by a sort of medical "Ulster custom"—a body of practitioners known as "Charmers." These persons ply a lucrative trade with the humbler classes, whose credulity is marvellous. A Mr. M'Govern, of Cavan, is in possession of a traditional receipt for the cure of hydrophobia, which the Irish Chief Secretary was recently seriously asked to substitute for the Pasteur treatment. As herbalists and decocters of strange potions, they affect to cure everything from a sore toe to paralysis. In lieu of payment, which would interfere with the efficacy of the charm, they accept a gift or "honorarium." Needless to say, these persons are never interfered with.

Pharmaceutical Transactions.

CHEMISTS' ASSISTANTS' ASSOCIATION.

On Thursday, March 31, the President, Mr. T. Morley Taylor, took the chair at a meeting of this Association at 73, Newman Street, W., when Mr. Harold E. Matthews read a paper on

Alternation of Generations.

Mr. Matthews, in his opening remarks, said that during the early part of the present century the study of botany became revolutionised, especially with regard to the relations between the phanerogams and cryptogams. The two groups, so long considered to be totally different from one another, being at length studied side by side. As a result came an intelligent conception of their intimate relationship. Between the years 1849 and 1852 Wilhelm Hofmeister brought before the notice of the scientific world a series of researches which showed that the life cycle of a large part of the vegetable kingdom involves an alternation of two generations, one sexual, the other asexual. Among the lowest plants the asexual generation is seen in a very rudimentary form in a few species only, the majority of the *Thallophyta* showing no differentiation of separate plant bodies. In the *Bryophyta* alternation of generations is fully established, the sexual generation largely predominating in vegetative development over the asexual. The *Pteridophyta* exhibit the same alternation, but the sexual generation is reduced to a prothallus and the asexual plant attains large dimensions. From the heterosporous members of the group an interpretation of the significance of the pollen grain and embryo sac of the gymnosperms can be gathered. In the gymnosperms the endosperm formed within the embryo sac prior to the development of egg cells corresponds to the endosporous prothallus of *Salvinia* and *Selaginella*. The homologue of the male prothallus in *Ginkgo* and *Zamia* shows differentiated male zametes, but in the majority of cases plants of this group do not form such definite reproductive bodies. The vanishing point of the female prothallus is reached in the *Spermaphyta*, and it is difficult to find the homologues of the male and female prothalli of the heterosporous Pteridophytes. Alternation of generations prevails as a general law of development through all the long series of these very different plants.—The President, in thanking Mr. Matthews for his paper, remarked that it would have been impossible, throughout the whole field of biology, to have chosen a more striking subject than that of the alternation of generations. The paper was one that would make a valuable addition to the "Proceedings of the Chemists' Assistants' Association," and would be read with great interest.—Mr. Fothergill said that although not of direct interest to pharmacy, indirectly botany was one of the most important subjects that a pharmacist should have a thorough knowledge of, for by its aid he would the more easily detect any spurious drugs, if not at the first glance, with the aid of the microscope. He thought they were very much indebted to Mr. Matthews for bringing the subject before them, especially at a time when he was going through the trying experience that most of them had already passed through—the Major examination—and he was sure they all wished him every success.—Mr. Matthews replied, and the meeting then terminated.

PHARMACEUTICAL SOCIETY OF IRELAND.

At Dublin, on March 28, Dr. H. A. Auchinleck delivered an interesting lecture before the Pharmaceutical Society of Ireland, on

Pharmacy, the Handmaid of Medicine.

The lecturer began by stating that the word handmaid was in no wise intended to convey any degree of subserviency. Pharmacy and medicine should walk together hand in hand, each helping the other. Pharmacy, the younger of the two professions, was not directly related to medicine, and happily so, as, if of the same family, the pharmacist would feel bound to support the medical profession, and *vice versâ*. If they considered that the medical profession was the older of the two professions, how were they to prove that contention? They could not go back farther than the Garden of Eden, and, starting from that point, they came down to the days of primeval man, when hunting and fighting formed the principal part of the day's work. At this time men began to devise means of alleviating pain, and thus the study of medicine began. Animals were observed to eat certain plants when sick, and man, following his instincts, groped, as it were, in the dark, and by chance hit on some herb which he found gave relief in sickness. Recourse was had to the same plant when further similarly affected. Suppose early man was injured in battle by one of the stone hatchets then in use, he cast about for something to defend himself with, and in his search after curative remedies he also found noxious drugs which produced unpleasant effects when applied to the point of a flint knife destined to enter the internal economy of an enemy. This was the very earliest age of poisoning, when pharmacy was made use of for vicious or revengeful purposes. The medicine man thus gained a reputation for knowledge. He could assist his friends or injure his or their foes. Fawned upon and flattered by all, the medicine man enjoyed the love and dread of his fellows. His investigations were conducted secretly. It would not suit him to let others see into his mysteries if he wished to maintain his reputation. Hence he began to pound up plants, thereby becoming a primeval pharmacist. Medicine men in those days had to study different forms of sickness, and they began to acquire a certain amount of knowledge gained from seeing the effect produced by illness or injury. Their knowledge of simples enabled them to diagnose certain well-defined cases of sickness, and in this way they gained a large amount of experience, which they stored up for future use. Certain symptoms in certain cases were noted, but beyond that the why or wherefore was not known. They were simply recognised by their action in reference to plants and herbs, and the knowledge thus acquired was used accordingly. One thing, however, never failed. They knew that the same drugs had the same effect on all persons, and this principle of simple pharmacology formed the leading line in subsequent pharmacy. After a time pharmacy was found at another stage. The physician could not heal unless he gave medicines, believing that if no medicines were used there was no need for his services. The pharmacist started as the assistant to the doctor, but as knowledge increased vice began to show itself. The great fundamental rule of working hand in hand began to be forgotten, and as a result pharmacy went back. The early physicians studied anatomy. In the removal of the brain, etc., they acquired a knowledge of the organs of the human body, and even at that period Harvey's great discovery of the circulation of the blood was foreshadowed, as it was not improbable that the ancient Egyptians knew all about the circulation of the life-giving fluid, even as medical men of to-day knew it. The effects of the action of drugs on each organ of the body led to experiments, and pharmacy again made a great start ahead. Proceeding, the lecturer touched upon the making of extracts and tinctures in their relation to the professional poisoner. The Egyptian pharmacists were referred to, and their wonderfully accurate prescriptions—not unlike those of the nineteenth century in some instances—came in for comment. The origin of embalming bodies was explained, and the Egyptian custom of preserving their dead, in the belief that 10,000 years afterwards the spirit would again inhabit the body, was listened to with great interest. Stripped of their extraneous covering, some of the ancient Egyptian formulæ contained very useful matter, and having regard to the scientific attainments of the sons of the Pharaohs, due respect should be paid to the old-time medicines. Having dwelt on the pharmacy of the early ages, the lecturer brought his hearers down to the later days of the Egyptians, and described the fashion in some Eastern cities of obliging each stranger to pass by certain squares containing sick beds. Every strange medical man had to listen to each case, and say whether he had met elsewhere with similar diseases. It was obligatory on every physician to give his opinion on the malady, whether the opinion be good, bad, or indifferent. Dr. Auchinleck alluded to the Dublin Museum, in which all varieties of the same species were classed and tabulated. Without such classification the collection was of very little use to the student, and so it was with early medicine, which was practised without due knowledge of the art, until with the advent of Hippocrates began the age of classification and tabulation of diseases. Names were given to certain ailments, and these names were not allowed to be forgotten. Some nineteenth-century diseases were mentioned by the lecturer as having been unknown in the time of Hippocrates, notably measles, which would surely have been referred to in the works of Hippocrates had it been known at the time. There was then no typhoid fever. The hygienic age had not yet set in, and the Dublin Corporation was an unknown quantity. The Roman period next came under review. In that age poisoning was reduced to a fine art. The skilled poisoner obtained any money for his services

in proportion to his skill. But the very depth of infamy to which pharmacy had been dragged down resulted in the future advance of both it and medicine. When people began to understand poisons they became aware that certain symptoms were not due to ordinary causes, and at this stage the physician began to be *en évidence*, and antidotes for poisons made their first appearance. Little by little the curative value of the physician increased, and poisoners were obliged to ply their calling more discreetly. Pharmaceutital chemistry was now brought into requisition, and poisons of the most subtle nature were resorted to. Rings, daggers, and other kindred articles were made the medium for the poisoner's art, a single drop of poison concealed in a hollow needle secreted in a ring was the favourite method in vogue. A pressure of the fingers in a handshake effected the object; hence the danger even to the present day of handling some of the trinkets seen in old castles in Italy and elsewhere on the Continent. The hypodermic injection of to-day was largely in use in the time of the Borgias, and in the latter days of the Roman Empire. The favourite methods of poisoning adopted by some of the most skilful of the Borgias were described. The pharmacy of Shakespeare next came under observation, and in this connection the old-time apothecary referred to in Romeo and Juliet was amusingly described, in terms which showed the learned lecturer to be an ardent Shakespearean scholar. The apothecary of that period was not allowed to sell certain of his wares, and was forbidden by law to give poisonous drugs without an order from the physician. This, remarked the speaker, was a good and wholesome law, and might with advantage be occasionally applied to the present day. Another important factor consisted of the pharmacist being allowed to manufacture his own drugs. Medical men then, as now, were glad to get information from all. At this time, when pharmacy and knowledge were going ahead so satisfactorily, they began to wander from the straight and even course of science into the bye-ways of alchemy, and the search for the elixir of life began and continued for one and a half centuries. Men's energies became concentrated on the pursuit of the *elixir vitæ*, and when unsuccessful in finding that which was to ensure perpetual youth they turned their thoughts to the transmutation of metals; and the mad race after the philosopher's stone began the quest, ending, like its predecessors, in disappointment, madness, or death. At the time when pharmacists were searching for two impossible things they became acquainted with other matters. They discovered certain means of obtaining crystalline substances out of plants, such as morphia, and as soon as that stage in pharmacy was reached medical science was pretty fairly set upon its feet. A great deal of facts concerning the human body were put together, and diseases with their causes, effects, and cures began to be more generally understood. Then began the use of reasonable medicines, and soon afterwards the hitherto infallible pharmacy of fasting spittle, live spiders, toads, and other small cattle was enabled to be dispensed with for the cure of ordinary indigestion. The use by the female sex of substances to add to their beauty was next referred to by the lecturer, who said that certain condiments, to add to the brilliancy of the eyes, were to this day largely used by the women of Cairo—not in Ireland—he added gallantly, as the Irish girls had eyes which sparkled naturally like diamonds, and they required no artificial aids to beauty. The discovery of tartar emetic and antimony was referred to, and a pleasant anecdote in connection told *en passant*. Science fell into such disrepute in the Middle Ages that to be a chemist or a pharmacist was a great reproach, but all the time pharmacy and medicine were advancing hand in hand. Coming down to the present age, it was very satisfactory to know by experience that pharmacy was the handmaid of medicine, a maid who did not require to be watched or instructed in her duties. Medical men were satisfied with the pharmacists, and were glad to assist their handmaid in every possible way. It was necessary for both that a thorough harmonic understanding should exist between both branches of the healing art. One should be loyal, true, and faithful to the other; both united could do a great deal of good, but, if hostile, their utility failed. At present there should be a very great bond of unity between the doctor and the chemist. Each had its own province. The sale of dangerous drugs should not, he thought, be permitted unless authorised by a physician. The existing Act of Parliament in this respect needed amendment. The stronger the safeguard around the pharmacist and the doctor the better for both. The law was also defective in regard to the sale of patent medicines, some of which, containing very deadly poison, could be purchased at grocers' shops. The lecturer animadverted strongly against the law which allowed a person without legal qualification to patent a preparation, of perhaps the utmost value from a therapeutic point of view, but which because of its having been registered could not be sold by the name given to it unless as a patent medicine. This was a disadvantage to the chemist, as free trade was restricted. Fellow's syrup, for instance, was a very excellent preparation, but it could not be sold by anyone except under the patentee's name. Regarding the unqualified trader, Dr. Auchinleck said there was no law to prevent the veriest quack setting up next door to the most highly qualified medical man and practising medicine and surgery as long as he did not assume the name of doctor or surgeon. It was only in the event of accident or fatality that the law stepped in. Another anomaly existed in that the Pharmaceutical Society was obliged to prosecute offenders against the Pharmacy Act. The law was made for the protection of the public, and he thought the initiative should be taken by the Government in all cases requiring investigation, and not left to individuals to carry out. Until this was recognised by the Government, the illegal trader would, he feared, continue to flourish. He concluded by likening pharmacy to the little Hebrew maid who knew of a remedy for her master's leprosy, and suggested that remedy. She did not bring the prophet to her master, nor did she get out the Syrian troops to convey Naaman to the river Jordan. She simply suggested the remedy, and that was the way in which pharmacists should act in their relations with the medical faculty, and which, he was glad to say, was his experience of pharmacists in Ireland.—At the close of the lecture, Mr. W. F. Wells (ex-President of the Pharmaceutical Society), in proposing a hearty vote of thanks to Dr. Auchinleck for his very able lecture, said the Society was highly complimented in having prevailed on that gentleman to come there that evening and give such an instructive and educating address. Mr. Wells hit off neatly the growing tendency of medical men to widen out their prescriptions by adding patent and proprietary drugs, and, *à propos*, told a good story of an Irish apothecary whose stock of medicines did not exceed seven or eight, and who retired from business a wealthy man. He agreed with the lecturer on the existing laws, which, so far as illegal trading was concerned, were a *dies non*.—Mr. Doran seconded the vote of thanks, which was carried by acclamation.

IRISH PHARMACISTS' ASSISTANTS' ASSOCIATION.

At Dublin on Friday, April 1, the members of this Association discussed the question whether membership of the Pharmaceutical Society of Ireland should be conferred by examination instead of by payment of a fee, and after a long and interesting debate it was decided, by a majority of seven votes, that the membership of the Pharmaceutical Society of Ireland ought to be conferred upon its Licentiates by examination only and not by the payment of a fee, as at present.

GRIMSBY AND DISTRICT CHEMISTS' AND DRUGGISTS' ASSOCIATION.

The annual dinner of this Association was held at the Oberon Hotel, on Thursday, March 31. The Deputy-Mayor (Alderman Palmer, J.P.) presided, and amongst the company were Councillor Wharton, Messrs. T. C. Palmer, J.P., Robt. Cook, J. A. Hawdon, J. T. Hearne, S. J. North, H. J. Colley, T. D. Sneath, J. A. Moore, J. Willey, C. Dewing, H. W. Colley, and C. Willson. The menu left nothing to be desired, and there was sufficient sociability and entertaining talent amongst the company to make the evening one of very pleasant relaxation. A short toast-list included the usual loyal compliments, "The Association," "The President and Vice-President," "The Town and Trade of Grimsby," and "The Ladies."—Mr. Dewing, in proposing the health and success of the

Grimsby and District Chemists' and Druggists' Association,

remarked that though a junior, he was as old a member of the Association as anyone present. It was proposed to form that Association by Mr. C. Willson and the proposal which was hailed with satisfaction, was almost immediately carried out. Looking back, he thought they must all regard Mr. Willson as a chemists' benefactor. When the Association was formed he scarcely knew one other chemist in the town; but now they all knew each other and met as friends. They were all there to live and plan out lives for themselves in the business best suited to their own requirements and localities. But that was no reason why they should not be friendly one towards another. At chemists it behoved them all to pull together and educate

the public to the fact that the cheapest goods were not always the best. Their Association had done good work, and, he believed, had a future before it so long as the members worked amicably together. Amongst the objects of the Association were: The advancement of chemical science, the better education of apprentices, the discussion of trade interests in general, and the formation of a library and museum. These were all laudable objects, and it behoved the Association to work hard to attain them. He, Mr. Dewing, had been considering for some time the advisability of having a club-room, and if they could get the scientific societies of the town to join them, they could at least have a room to meet in instead of going from bar to bar. After speaking with appreciation of the work of Mr. North, the Secretary, and saying he was glad that gentleman had been re-elected, Mr. Dewing asked the company to drink to the toast.—Mr. North, replying to the toast, said there was not the slightest doubt that combination in any profession was a good thing, and he only hoped such associations would go on increasing throughout the country. Their efforts during the past year had not been unattended with success. He was certain there was a better feeling amongst the chemists than last year, and he was satisfied that the Association had a tendency to stop cutting in a measure, and he asked them individually and collectively to uphold to the utmost the interests of the Association, by which they would assist the Association and also help themselves.—Mr. Hawdon, offering the toast of "The President and Vice-President," said his acquaintanceship with the President extended over thirty years. That Association should be pleased that they had a man like their President to keep them together. Their Vice-President, too, was always courteous and willing to oblige in anything connected with the business. He had the greatest pleasure in giving the toast.—The President said he responded with pleasure, mixed with some alloy. He had pleasure in the fact that he still held their confidence, and that they had done him the great honour to elect him as their President for another year. The alloy came in the circumstances that they had not been able to make a better show. Theirs was only a small town, and their Association was in the position of an acorn which, when buried, took a great many years to come to maturity. They could not grow much more now in the town, because they had a large proportion of their trade already associated, but they might spread out into the district with advantage to themselves and others. Combination was good and necessary, but although cutting shops made a great show, the people of England did not forget their old friends. Chemists had made a great mistake in the past by freely giving information about their commodities to anybody who asked for it—and then letting the people go away to get the stuff a halfpenny cheaper at the grocer's. The druggist of the country lacked independence, and allowed himself to be played upon and cross-examined with regard to his trade for the benefit of other people.—Mr. Cook, who also responded, thanked the members for again electing him as Vice-President. He assured them that he had the love of pharmacy at heart, and anything he could do to further the ends of that cause he would discharge.—The usual toast of "The Town and Trade of Grimsby" was proposed in an able speech by Mr. C. Willson, and responded to by Mr. J. Wharton; the toast of "The Ladies" being afterwards offered by Mr. H. W. Colley, and replied to by Mr. T. C. Palmer.—Cheerful music was discoursed from the piano during the evening by Mr. J. J. Redman, who also delivered two or three of his very droll songs. The vocal entertainment was also assisted by Messrs. J. A. Moore, T. C. Palmer, Sneath, J. A. Wharton, S. J. North, and C. Willson.

Election of Officers.

At the annual meeting of this Association, held at the Hotel before the dinner, the officers were re-elected with the exceptions and additions indicated in the ensuing list:—President, Alderman Palmer; Vice-President, Mr. R. Cook; Treasurer, Mr. J. A. Hawdon; Secretary, Mr. S. J. North; Assistant-Secretary, Mr. C. Dewing; Committee, Messrs. T. D. Sneath, J. Wharton, J. C. White, C. Willson, and J. A. Moore (elected in place of Mr. C. Dewing, retired), with Messrs. Hy. Colley and Herbt. W. Colley as Auditors.

Gilding Copper.—Potassium cyanide, 30; chloride of gold and sodium, 10; water, *q.s.* to form a soft paste. Clean the copper articles to be gilded, then apply the paste, and allow to remain on for several hours, then wash freely in water.—*Pharm. Central.*

LEGAL INTELLIGENCE.

PROCEEDINGS UNDER THE PHARMACY ACTS.

Pharmaceutical Society of Great Britain v. Vickers.

At the Manchester County Court on Friday, April 1, before His Honour Judge Parry, the Council of the Pharmaceutical Society of Great Britain sued A. L. Vickers, 192, Princess Street, Manchester, for a penalty of £5 for selling poison contrary to the Pharmacy Act, 1868.

Mr. T. R. Grey, instructed by Messrs. Flux, Thompson and Flux, appeared for the Society.

The defendant appeared in person.

Mr. Grey, in opening, said the action was brought to recover a penalty for keeping open shop for the sale of poisons contrary to the Pharmacy Act of 1868. The defendant was a manufacturer and dealer in druggists' and grocers' sundries, and on November 27 there were purchased at his shop certain chemical fly papers, which were found on analysis to contain a great amount of arsenic, as much as 6 grains in one of them. The fly paper he should put in had the word "Poison" upon it, and the defendant knew perfectly well what he was doing when he was selling this, and, further, it gave directions as to what ought to be done in regard to its being kept out of the way of children and domestic animals, and also as to its use. The liquid from the moistening of the fly paper contained as much as nine-tenths of arsenic, and was very dangerous, having before now been used for the purpose of murder and so on. The average in the six papers altogether, he thought, amounted to about 7 grains each, so there would be no question of the quantity or dangerous part of the arsenic. There could be no question about that, and the only question for His Honour was whether those fly papers came within the Act, and the only defence which could be advanced was that this was wholesale dealing. He did not think he need mention that to His Honour, because it was clearly a retail transaction. These papers were sold to a gentleman who had not any shop at all, and there was no wholesale dealing in any way whatever. The Act under which they were suing was the 31 and 32 Vic., chap. 121, an Act to regulate the sale of poisons, and was passed as stated in the preamble for the safety of the public, that persons keeping open shop for retailing, dispensing, or compounding poisons should be competent in their business, and also that the several articles named or described in Schedule A should be deemed to be poisons within the meaning of the Act, and on the Schedule arsenic was one of the poisons mentioned. Section 10 made it the duty of the Registrar to keep a correct register in accordance with the provisions of the Act of all persons entitled to be registered, and Section 13 made it evidence in a court of law, so that if defendant's name did not appear on the Register, as it did not, that was sufficient to show that he was not qualified under the Act. Section 15 made it incumbent on the Pharmaceutical Society to see that the Act was carried out, and Section 17 dealt with exceptions and with the business of wholesale dealers in supplying poisons.

His Honour: Supposing this man makes these things wholesale and sells them wholesale?

Mr. Grey: If he sold them wholesale to another shop for the purposes of retailing he will come within the exception, but in this case he sold to a man he had never seen before six of those papers, for which the sum of threepence was paid, and I submit that is clearly retail. They were sold for use; they were not sold for retailing.

His Honour: What is a wholesale sale?

Mr. Grey: There is no definition in any known case. I can give you Webster's dictionary. "To retail, to sell by small quantities and at second hand; secondly, dealing out in small portions. Wholesale: the first is the sale of goods in large quantities to retailers; (2) the whole mass or bulk; (3) by mass or bulk without discrimination or distinction."

His Honour: I do not know what this case is until I have heard the facts. Supposing this man deals wholesale in these articles, and a chemist comes into his place of business and asks for six at chemists' prices, he would sell at wholesale prices. That might be alleged.

Mr. Grey: Yes, that would be, because he would sell to the chemist to sell again, and that is a great distinction.

His Honour: That would be the distinction probably, whether it was sold to the general public or to a druggist, and is probably the right view.

Mr. Grey replied that that was what he should submit. He should also call His Honour's attention to Section 17, in order to show how Parliament had made the sale of arsenic as difficult as possible. It was stated that it was unlawful to sell or retail any poison in Part 1 of the list—this included arsenic—to any person unknown to the seller ("this person was unknown," said Mr. Grey) or unless introduced by some person known to the seller—there was no introducer in this case—and, on the sale of any such article, the sellers shall, before delivery, cause to be made an entry in a book to be kept for that purpose, the name and address of the purchaser, the name and quantity of the article sold, the purpose for which it was stated to be required, signature, etc. This was not done in the present instance. Then, again, there was the Arsenic Act itself, and there it was enacted that poison of a colourless character should be mixed with soot, and the occupation, as well as the name and address, entered in the poison book.

His Honour: You need not go further than that.

Mr. Grey said, that being the case, he would only draw His Honour's attention to three cases shortly. One was the case of the Pharmaceutical Society *v.* Armson, reported 1894, Q.B.D., 2, p. 720, the head-note in the law report being as follows:—"The prohibition in Section 15 of the Pharmacy Act, 1868, against the sale of poisons other than by registered chemists is not confined to the sale of the scheduled poisons in their simple state or of preparations of such poisons, but extends to the sale of a compound containing a scheduled poison as one of its ingredients. The exception under Section 16 of the Act as to the making or dealing in patent medicines does not extend to proprietary medicine."

His Honour: Is that the balsam of aniseed case?

Mr. Grey: Yes.

His Honour: I remember that.

Mr. Grey quoted at length Lord Esher's remarks in dismissing the appeal, in which his Lordship stated that with regard to the facts of the case they were not to depart from the facts as found by the County Court judge. They must take it, therefore, that in the article which was sold by the defendant in that case there was one of the poisons named in the Schedule to the Act of 1868. They did not know what the other ingredients in that bottle were, but they knew that one was one of the poisons named. It was alleged that the defendant did not sell poison, because although nothing had been done to it which altered its chemical nature, it had been mixed with other things. Did that in ordinary language make it not a poison? Did poison put into a bottle of wine or a cup of tea cease to be poison? It was clear that when poison was put into medicine, and a person sold the medicine, he sold the poison that was in it. There was nothing in the Act of Parliament that he could see, reading it in its ordinary language, which said you may sell poison mixed with other things, though you may not sell poison by itself. Lord Justice Kay also, Mr. Grey said, followed, and he held it was a case in which the maxim *de minimis* did not apply at all. He could quite understand that although a case might be otherwise within the meaning of the Act, if the proportion of one of the poisons mentioned in the Schedule were so exceedingly small as to be perfectly innocuous or comparatively innocuous when taken, then the maxim *de minimis non curat lex* might possibly apply in an action of that kind, but that was not such a case.

His Honour: Yes, I remember that case.

Mr. Grey said there was Lord Justice Smith's holding in similar language. Then there was the case of the Pharmaceutical Society *v.* Wheeldon, which he merely drew his Honour's attention to to show the Act did not deal merely with medicines, but with other preparations. In that case it was Battle's vermin killer, and in the last case of all, which he was sorry to say did not go to appeal, and was not reported, except a verbatim report of the action, and as he (Mr. Grey) was there he could vouch for its accuracy, was a case tried before Judge Bacon on January 21, 1896, and he was going to say that the wording on those identical fly papers was almost the same as in this case. There Mr. Danckwerts appeared for the plaintiff, and judgment was given for the Pharmaceutical Society with leave to appeal.

Arthur Foulds stated: On the November 27 last, I went to the shop of the defendant, 195, Princess Street, Manchester, and asked for some castor oil, a bottle of ink, and half-a-dozen fly papers. The label on the bottle of ink was "Vickers' Black Ink, A. L. Vickers, 195, Princess Street, Manchester." On the fly papers is the name Vickers, and the words "it is comparatively safe if not moistened," and "Vickers' Sauce." at the corner. I paid 3*d.* for them. He did not ask me my name or anything of that kind. I handed them over to Mr. Moon in the same condition as I received them, except putting on a label and the date so that I should know them again.

His Honour (to defendant): Do you want to ask any questions?

Defendant: No. I was not aware that a person had to be a qualified chemist to sell fly papers.

His Honour: Where did you get them from?

Defendant: I bought them as an advertising medium.

His Honour: For the sauce?

Defendant: Yes.

In reply to other questions by his Honour, defendant said he had a shop in Princess Street, and dealt wholesale, chiefly with small shops. Of course, if anybody came in he obliged them with anything he had, but it was no stand for a retail shop. There was a window to it.

Witness (Foulds) stated there was a window with the name "Vickers" upon it, and there was a counter in the shop.

In reply to his Honour, defendant said he bought £3 worth of the fly papers twelve months ago from a firm of wholesale drysalters in Liverpool. He had none left, having given most of them away. He did not make a profit, as anyone could have had them for a penny a dozen. They were an advertising medium.

His Honour: You have done very wrong.

Defendant: As soon as I got the notice from the Pharmaceutical Society I at once destroyed them.

Harry Moon, examined: I am clerk to the Registrar of the Pharmaceutical Society, and received from the last witness the fly papers with the other articles named. With the exception of marking them with my initials they are in the same condition as received. I afterwards handed over the fly papers to Mr. Eastes for analysis.

Ernest John Eastes, examined: I received from the last witness six new chemical papers. I took one whole paper, and on analysing it found 6 grains of arsenic in it. I subsequently analysed the others. I cut the remaining five papers in halves, and found 17½ grains, which works out to 7 grains in each paper. If the fly papers were moistened as directed with water the result would be that the arsenic would come out. About 2 grains is stated by medical authorities to be a fatal dose, and the liquid resulting is highly poisonous.

His Honour: Is not that more arsenic than usual in a fly paper?

Witness: It is an average quantity.

Mr. Grey: Not so much as in a previous case, some 8 or 9, and some as many as 11 grains of arsenic. That is the case for the plaintiff. I put in the Register.

His Honour (to the defendant): There seems no defence to this, Mr. Vickers. It is not necessary in the interest of the public that they should be sold, and it is not wise to give away those things. They are very dangerous to get into the hands of bad people, and it is an extremely foolish thing having anything to do with them.

Defendant: As soon as I got notice I stopped the sale.

His Honour: Did you reply to their letter?

Defendant: Yes.

Mr. Grey quoted defendant's letter, in which he stated that his trade was absolutely wholesale, and that, as regarded drugs and poisons, he did not sell any wholesale, let alone retailing them. If he had made himself liable he should, of course, have to pay, but he should like to know what he was charged with selling. The Society then wrote and sent him particulars.

His Honour: Did he write again?

Mr. Grey replied not after they sent him the particulars. Of course, His Honour would see the word "Poison" was on the paper.

Defendant: They said compounding.

His Honour: The word is printed all over it, and they supposed you had had these manufactured for you.

Defendant: From what I understand it is manufactured in the paper.

His Honour (to Mr. Grey): Supposing he gave them away, he would not be liable for any penalty?

Mr. Grey: It is a rather difficult and moot point. There is no question about that.

His Honour (to defendant): I am afraid, Mr. Vickers, you have no case at all, and I must give judgment for plaintiffs with costs. I hope it will be understood that the sale of these fly papers is best left to chemists and other qualified people. This is a loose method of advertising and extremely dangerous.

Judgment was accordingly entered for the full penalty, £5 and costs, His Honour certifying for counsel.

EXTRACTS FROM CONSULAR REPORTS.

A Professional Chemist is employed by Russian manufacturers of beet sugar, his sole duty being to prevent waste. This fact is pointed out by Her Majesty's Consul at Kieff in a recent report, in which he contrasts the Russian method of procedure in the manufacture of sugar and that employed in the West Indies. According to the report of the West India Commission, there, owing to the imperfect method of crushing adopted and the somewhat crude methods of manufacturing sugar, an average of over 2000 lbs. of sugar per acre is left in the canes after crushing, which is burnt in the megass. Thus through imperfect manufacture, there is a loss of 25 tons of sugar for every 100 tons contained in the juice extracted. In Russia, however, every precaution is taken to procure the best results, so that by careful study and cultivation and the selection of seeds from only the best sugar-producing sorts, where comparatively a few years ago it required about 13 tons of beetroot to produce a ton of beet sugar, now the quantity to produce that amount has been reduced to from 8½ to 9 tons of beetroot. The quantity of sugar expected to be produced from the 1897 beet crop is 38,000,000 poods (611,800 tons), being 2,000,000 poods (32,258 tons) less than prospects at same date in 1896. This decrease is accounted for by the dry spring and consequent late germination of the seed, followed by tropical heat in June, July, and August, which caused the bulbs to be smaller in size and to have a lower percentage of sugar than usual.

Phylloxera in the Vineyards of the South of France some years ago was the cause of a great migration of vine growers from that district to Algeria, and consequently for the last seventeen years the manufacture and exportation of wine has formed the chief industry of Algeria. In 1878 the vineyards contained an area of 17,000 hectares* (42,500 acres), 2000 of which were planted in that year, while at the commencement of 1898 the total area covered by the vine amounted to about 125,000 hectares. During that period the cultivators acquired valuable experience in vinification, and realising that quantity is not the sole object, but that good quality is the most important point, scientific methods are being adopted to regulate all processes involved in vinification. The many influences of different climates and soils have been carefully studied, the various qualities of the plants recognised, and the proportion in which the grapes require to be mixed observed, so that now Algerian wines are classified with those of France, and the Algerians can annually export about 4,000,000 hectolitres† of wine, the greater part of which goes to France.

The Importation of Phosphate of Lime and Chemical Manures has increased during the year 1897 by 6500 tons at La Rochelle, Great Britain supplying the greater part.

"Transfer of British Works to France" is the sub-heading of a paragraph in a recent report from La Rochelle, in which Consul Warburton states that he understands a manufacturer has left England and set up his plant in France, where he expects, by the lower wages, longer hours, and freedom from interference in the management of his works, to gain a material advantage with his automatic machinery, and that several other manufacturers are following his example.

The Superior Quality of British Artificial Manures has triumphed over the attempts of the Franco-Belgian syndicate to close French markets to them. During 1897, the British manures imported into the agricultural district of Cherbourg held their own, and maintained their prices, while the Franco-Belgian firms were selling at a loss, several of the firms breaking down under the strain. The Continental superphosphates in many cases proved unsatisfactory, there being a general complaint of the uneven quality of manures from Germany, Belgium, and the north of France, the percentage of phosphoric acid not being uniform, and therefore, could not be depended on. As the use of artificial manures for pasture, potatoes, and market gardening is gradually extending in the district, an advance may be expected in this branch of British imports.

* 1 hectare = 2½ acres nearly.
† 1 hectolitre = 22 gallons.

NEW REMEDIES.

Bromalin as a Sedative.—Under this name bromethylformin has been recommended as a sedative in epilepsy; it may be given several times daily in doses of 2 to 4 grammes without producing bromism.—*L'Union Pharm.*, xxxviii., after *Pharm. Post*, 448.

Calophyllum Oil for Tapeworms and Rheumatism.—The oil of the seeds of *Calophyllum pachyphyllum* and *C. brasilianæ* is used as a remedy for tapeworm and rheumatism. The balsam obtained from the trunk of the tree is stated to be an external remedy for various complaints.—*Pharm. Zeit. f. Russ.*, xxxvi., 385.

Oil of Turpentine for Scarlet Fever.—Pujador recommends oil of turpentine in the treatment for scarlet fever in the form of subcutaneous injections of the oil mixed with a little bicarbonate of sodium. The dose is 1 gramme for children, with a limit of 3 grammes per diem for adults. Internally it may be ordered in gelatin capsules. Pujador states that this treatment prevents nephritis, or quickly suppresses it.—*Pharm. Zeit.*, xlii., 709.

Amyl Nitrite in Apparent Death Under Chloroform.—A case is recorded by Walker in which a girl, aged seven years, who suddenly ceased respiration while under the influence of chloroform, and appeared to be quite dead, was resuscitated by repeated use of amyl nitrite while artificial respiration was conducted. Under the combined influence of artificial respiration and the nitrite the patient was saved, although the writer considers the case to be the nearest approach to death that he has ever seen. He therefore recommends the employment of amyl nitrite in all similar cases of chloroform syncope.—*Brit. Med. Journ.*, ii., 97.

Sulphonal as an Antisudorific in Phthisis.—Combermale and Descheemayer find sulphonal to be very efficient in lessening the night sweats of phthisis. In one case these disappeared entirely after three doses; in others a marked lessening of the perspiration followed. The dose given was 15 to 30 grains at bedtime, which was continued daily for a fortnight.—*Med. Chron.*, viii., 57, after *Med. Mod.*

Creosote in Habitual Constipation.—Holstein finds that creosote given in drop doses in water or milk twice a day after meals, is a valuable remedy in chronic constipation. To accustom patients to the taste, one drop only should be given at first, the dose being slowly increased until seven or eight, or more if necessary, are taken. It is not supposed that cresote itself acts as a laxative, but that it counteracts the effects of some toxin formed in the intestine, which, in patients with chronic constipation, paralyses the action of the digestive canal, and slackens peristalsis.—*Lancet*, i., 97.

Blennostasin in Hay Fever and Influenza.—This is a derivative of a cinchona alkaloid crystallising from diluted solution in large prisms, or from concentrated solutions in the form of needles. It is soluble in water and has a bitter taste like quinine. The action of blennostasin is intense on the vasomotor system of the respiratory nerves, and, although non-poisonous, is similar in effect to belladonna. On the brain it has a sedative influence and diminishes reflex action. Chappel obtained good results with blennostasin for hay fever and influenza. It is better given in pills than in capsules.—*Pharm. Centr.*, xxxviii., 722.

Chlorinated Lime for Chilblains.—Binz recommends the following ointment for chilblains: Chlorinated lime, 1·0; paraffin in ointment, 9·0. Cover the inflamed places well with ointment, and rub for about five minutes before going to bed, cover with a bandage and a stocking, or glove. Inflammation and pain usually disappear within a week. In preparing the ointment lard or lanolin should not be used, as the free chlorine is absorbed rapidly by these.—*Pharm. Zeit.*, xlii., 733.

Cyclea Peltata for Abdominal Complaints.—The leaves and root of this Menispermaceous plant are used as a remedy for abdominal complaints. Dousma isolated from the root 2·5 per cent. of a very bitter non-crystallising alkaloid, which he calls cyclonine. It is said to agree in many respects with buxine.—*Zeit. d. allg. oest. Apoth. Ver.*, li., 692.

NOTICES TO CORRESPONDENTS.

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

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

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

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

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

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

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

ANSWERS TO QUERIES.

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

CHEMICAL SOCIETY.—Write to the Secretary, Burlington House, W., for particulars. [*Reply to* J. D.—8/4.]

PHARMACOPŒIA.—We have no information on the subject other than is published in the issue you refer to. [*Reply to* B. G.—8/23.]

MENE TOWELS.—The sole inventors and manufacturers of these articles are Messrs. Robinson and Sons, Ltd., Wheat Bridge Mills, Chesterfield. [*Reply to* MALTINE.—8/24.]

OPIUM.—If you will refer to the characters of opium, as described in the B.P., you will find that the masses are stated to be usually covered with "the reddish-brown chaffy fruits of a species of Rumex." That is the answer to your question. *Reply to* FEMINA.—8/21.]

HOUSEHOLD AMMONIA.—Soft soap, 2 ozs.; pearlashes, 1 oz.; strong solution of ammonia, 40 fl. ozs.; distilled water, 3 pints. Dissolve soap and pearlashes in the water, then add the ammonia. Another formula which gives a bright preparation is washing soda, 10 ozs.; strong solution of ammonia, 20 fl. ozs.; distilled water, 30 fl. ozs. [*Reply to* A. P.—8/18.]

PRESERVING SYRUP FERRI IODIDI.—Yes; this should be exposed to full sunlight. Keep it on the sunniest shelf in the laboratory or pharmacy, next the glass of a window. Even if it has developed a slightly yellow tint this speedily vanishes when exposed to direct sunlight. Our experience with syrup. ferri bromid. and liquores ferri brom. and ferri iodid. are the same—they all keep best in bright light. [*Reply to* F.S.H.—8/19.]

COMPOSITION OF CHIMNEY CLEANERS.—You will probably find that this is a mixture of common salt, 2; and sulphur, 1. We have heard of this compound being used for the purpose, also sal ammoniac and sulphur. Nitre mixed with sulphur would probably remove the soot, but too effectually, as gunpowder does. This last, as you probably know, has been used for the purpose with disastrous results. You do not "trouble" us at all, as we are always very glad to help correspondents as far as lies in our power. [*Reply to* FEMINA.—8/11.]

PRESERVATION OF EGGS.—Apparently they are to be kept in the solution, and not simply coated with it. [*Reply to* W. G.—8/25.]

STARCH GLOSS POWDER.—(1) Powdered stearin, 1; starch, 18; powdered borax, 1. Mix. (2) Powdered soap, 2; powdered borax, 1; French chalk, 3. Rub the powder over the surface of the linen with a dry flannel, then iron in the usual way. [*Reply to* EBOR.—8/15.]

COMBINED BATH.—The bath may be used over and over again till the gold is exhausted, but as practically only one sheet of paper can be toned with 2 grs. of gold, you will hardly find a ready sale for the bath at 8 ozs. for 1*s*. Considering that the cost of the gold is only about 3*d*., are you not allowing a very large margin of profit? [*Reply to* F. S. H.—8/20.]

MEAT, MALT, AND QUININE WINE.—Prepare the wine with beef extract and liquid malt, as directed in reply to "F. W." in the *Pharmaceutical Journal*, of March 5, p. 254, adding to the mixture, before filtering, quinine sulphate, 40 grains, citric acid, 60 grains, and using port instead of sherry. If you use less quinine you will require a wine licence to sell the article. [*Reply to* CARNIS.—8/5.]

FRENCH CAMERA.—We are afraid we cannot help you as regards the maker of the camera, as the information is so meagre. You might try Clement and Gilmer, 8, Rue de Malte, Paris, or H. Mackenstein, 15, Rue des Carmes, Paris, or possibly if you wrote to Mr. E. Cecil Hertslet, H.M. Consul-General at Havre, who is an amateur photographer, he might be able to assist you. [*Reply to* D. J. M.—8/12.]

LIQUID BOOT POLISH.—(1) Asphaltum, 4 ozs.; turpentine, 8 ozs.; gold size, 3 ozs.; boiled oil, 3 ozs.; nigrosine, ¼ oz. Heat together until a uniform mixture results, then thin down with turpentine to the desired consistence. (2) Methylated spirit, 1½ pint; shellac, 8 ozs.; castor oil, ½ oz.; yellow resin, 3 ozs.; lampblack, 3 ozs. Macerate the shellac and resin in the spirit, add the oil, and lastly the lampblack. Shake before using. [*Reply to* LYRA.—8/17.]

COLORATION OF AROMATIC ACETIC ACID.—It is impossible to say what may be the cause of the dark brown tint developed by the aromatic acetic acid which was put into the Parma violet bottle. That would result, probably, from one of the ingredients in the perfume acting on a trace of iron in the acid. If vanillin were present it would give a brown colour, such as you describe. The best way to get rid of the colour would be to distil from a flask; if you cannot manage that, try maceration or digestion with a little animal charcoal and filtering. [*Reply to* E. P.—7/22.]

INFORMATION WANTED.

LIQUOR CALCIS GLYCERINATUS.—"Crusader" (7/21) will be glad if any reader can furnish a reference to a formula for this preparation.

OBITUARY.

LEA.—On March 26, at 4, Harbour Street, Folkestone, Carolina Sophia, the wife of John Lea, Chemist and Druggist. Aged 75.

MACKEY.—On March 26, John Brunt Mackey, Pharmaceutical Chemist, Rotherhithe. Aged 84. Mr. Mackey was a member of the Pharmaceutical Society for many years, and was auditor of the Society in 1867. He was one of the founders of the Galen Lodge, and for some considerable time occupied the position of Treasurer

BRAMWELL.—On March 27, James Bramwell, Chemist and Druggist, Liverpool. Aged 62.

KING.—On March 29, Frederick Herbert King, Chemist and Druggist, Market Drayton. Aged 38.

MACDUFF.—On April 1, James Macduff, Chemist and Druggist, Paisley. Aged 61.

COMMUNICATIONS, LETTERS, etc., have been received from

Messrs. Clark, Clayton, Dove, Edwards, Gare, George, Gowing, Griffiths, Guthrie, Harper, Hickman, Horsfield, Knight, McKellar, Millard, North Pegg, Porteous, Rhead, Sampson, Spence, Tierney, Wallbridge.

Pharmacy and the Allied Sciences.

A REVIEW OF CURRENT WORK.

Surinam Copaiba Balsam. Poole has examined Surinam copaiba balsam and reports upon it as being of the consistence of wood oil, yellowish, and not very clear (but not opalescent as is generally stated). The specific gravity is 0·942 at 15° C. It mixes in any proportion with petroleum ether, ether, chloroform, and carbon disulphide. A little absolute alcohol produces turbidity, which disappears on the addition of 4 to 5 parts of the solvent; 77 per cent. of ethereal oil is obtained from the fresh balsam, but the amount is diminished considerably on keeping. The saponification number is 34; 1 gramme of balsam combines with 94 Mgm. of iodine. The ethereal oil obtained by distillation is colourless, boiling point 250° to 260°, spec. gravity 0·910. Copaivic acid crystals melting at 130° are obtained by extracting the resinoid residue left after distilling the oil with diluted alcohol.—*Pharm. Zeit.*, xliii., 129, through *Nederl. Tijdschr. voor Pharm.*, 321.

Interaction of Magnesium and Copper Sulphate. Dr. Edward Divers points out that neither Clowes and Caven nor Tilden, in their communications made to the Chemical Society in November last, seem to have recognised the significance of the results of the interaction of magnesium metal and a solution of copper sulphate. A closely analogous case is that of zinc immersed in a solution of an alum. In that case there is free evolution of hydrogen and precipitation of basic sulphate, and, when chromium alum replaces the aluminium salt, there is also reduction of some of the chromic sulphate to chromous sulphate. The only part of the change which finds no parallel in the action of zinc upon chrome alum is that of the deposition of a little copper, but that deposition is quite in accordance with the general behaviour of copper salts. The formation of basic salt and hydrogen is a change independent of that of reduction, and since the alum solution is dialysable into sulphuric acid and basic aluminium or chromium sulphate (besides potassium sulphate), and is also strongly acid in reaction, the action in the case of an alum is really that of dilute sulphuric acid upon the zinc. The gradual precipitation of the previously soluble basic salt as the zinc dissolves in the solution is just what happens when zinc sulphate is dissolved in a dialysed solution of aluminium, or chromium hydroxide, or basic sulphate. Similar changes probably occur between copper sulphate and magnesium, or, in a less degree, zinc; for the solution is here also very acid in reaction, and needs only a little boiling to make it deposit basic sulphate. With regard to the production of cuprous oxide, there would be nothing in that unlike what happens when ferric or chromic sulphate is reduced by zinc or magnesium, could cuprous salt only be found in solution, and it is not altogether improbable that in dilute solution and in presence of much cupric sulphate a little cuprous sulphate may exist for a very short time. It seems, therefore, that the precipitation of cuprous oxide during the action of magnesium upon cuprous sulphate is a fact highly favourable to the view that cuprous sulphate is actually formed, part of it then quickly decomposing into cupric sulphate and metallic copper, and the rest of it being decomposed by the basic cupric salt into normal cupric sulphate and cuprous oxide. When finely divided copper is acted upon by nitrogen peroxide, nitric oxide and a copper nitrate are formed, and no nitrite, and the copper nitrate, when touched with water, decomposes into cupric nitrate and bright metallic copper, thus proving, apparently, that in absence of water cuprous nitrate can exist, and, therefore, by analogy, other oxylic cuprous salts. Tilden has suggested that some of the hydrogen reduces cupric to cuprous oxide, but hydrogen is known not to have such an action, and therefore the usual assumption of there being a more active "nascent" hydrogen has to be made, but also without the least foundation in experience. In the present case it is pointed out, first, that in the reduction of chromic sulphate to chromous sulphate by zinc, hydrogen continues to be evolved, although very great excess of chromic salt is always in contact with the zinc; and, secondly, that in the reduction of ferric salts by zinc it has been established that this takes place much more rapidly when clean zinc dust is put into the ferric solution in the absence of excess of acid, than when, as is usual, an excess of acid is added to generate hydrogen. It may, therefore, with great probability be assumed that the reactions are

$$2CuSO_4 + Mg = Cu_2SO_4 + MgSO_4$$

and

$$Fe_2(SO_4)_3 + Zn = 2FeSO_4 + ZnSO_4,$$

hydrogen apparently having nothing to do in the matter.—*Proc. Chem. Soc.*, 190, 57.

Toxic Boraginaceous Plants. It is stated that extract of *Echium vulgare* is expected to prove a valuable substitute for curare. It furnishes, according to A. Drescher, with acidulated water, solutions which have marked alkaloidal reactions. The extract produces paralysis when administered to guinea-pigs. Buckheim stated as long ago as 1878 that a large number of the Boraginaceæ contain alkaloids, whose action is similar to those of curare, and later *Cynoglossum officinale* was proved to possess a paralysing effect on the nerve system.—*Pharm. Zeit.*, xliii., 129, after *Med. Record.*

Veratria in Bronchitis. Sir Dyce Duckworth has directed attention in the *Practitioner*, March (p. 272), to the fact that errhines are of considerable value when, in suffocative bronchitis, coughing does not cause adequate expectoration. Snuff, as fresh and pungent as possible, or a snuff composed of 1 part of veratria and 20 parts of starch, lycopodium, or liquorice powder, is usually unfailing to provoke effective sneezing and cough, with abundant expectoration, the powder being used two or three times a day. It is presupposed that the patient is already under the internal employment of ammonium carbonate, senega, nux vomica or terebene. The action of errhines appears to be to rouse the respiratory centre in the medulla oblongata reflexly through the nasal branches of the fifth nerve. It is hardly necessary to suggest that veratria requires to be used with considerable caution, and that if mixed with starch, owing to the white colour, accidents might easily happen through its being mistaken for other powders. For most people powdered white hellebore root is an active errhine.

Diastasic Substances from Fungus Growths. At a meeting of the New York section of the Society of Chemical Industry on January 21, M. Jokichi Takamine read a valuable paper on the production of diastase by fungi. *Eurotium oryzæ* is one of those used by the Japanese for this purpose. The growth of the fungus depends on the presence of phosphates, potash, and nitrogen in the substance on which it is developed. M. Takamine finds that wheat bran, containing these ingredients and affording a large surface for the growth of the fungus and a ready access of air, answers well for the purpose, and it is also cheap and abundant. The bran is moistened so as to give it about 30 to 40 per cent. of moisture, and live steam is then

passed through it in order to sterilise the mass and gelatinise the starch grains. It is then cooled below 40° C., and a small quantity of the fungus added (varying from 1-100 to 1 - 1000), and thoroughly mixed. The mass is then spread out in thin layers on a cemented floor, or on shelves in a growing room, where the temperature is kept at about 25° C., and the humidity near saturation point. The temperature, which rises with the growth of the fungus, is kept below 40° or 41° C. by adjusting the thickness of the layer, or the temperature of the room. After about twenty-four hours the growth becomes visible, and diastatic power is acquired. This increases rapidly after thirty-six hours, and reaches its maximum at forty-eight hours, when the mass is removed from the growing room and cooled to the ordinary atmospheric temperature. The mass, called "taka-koji" is of a light yellow colour, and when thoroughly dried can be kept indefinitely. About 20 per cent. of it is soluble in water, which extracts all the diastase generated by the fungus. Such an extract, containing about 4 or 5 per cent. of the soluble matter, is used in alcohol distilleries. The liquid extract, when evaporated, is of a dark brown colour, similar to that of malt extract, half a gallon being about equal to a bushel of the best malt. The residue left after extraction with water is employed over again, usually three or four times, and then used for cattle food.

Preparation of Pure Taka-Diastase.

The simplest method of preparing the pure taka-diastase from the 20 per cent. fluid extract is by precipitation with four or five times its own volume of strong alcohol, added slowly with vigorous agitation. The white flocculent precipitate is separated and further freed from alcohol in a centrifugal machine. The paste is then washed with strong alcohol and placed under hydraulic pressure. The resulting cake, broken and air-dried, forms the taka-diastase of commerce. Thus obtained, it is a yellowish-white amorphous powder, odourless, and possessing a pleasant nutty taste, soluble in water with little or no sediment. It is non-hygroscopic, and is capable of converting at least 100 times its own weight of dry starch into sugar in ten minutes, as determined by the modified Junk's test. Taka-diastase differs from malt diastase in not giving Lintner's characteristic reaction of an intense blue colour with tincture of guaiacum and hydrogen peroxide, but gives a milky appearance instead. It also differs in having three or four times the starch-breaking or liquefying power. In malt diastase the two properties seem equally balanced, but in taka-diastase there is an excess of the liquefying power. M. Takamine has found that a liquid having a saccharifying power can be dissolved out of unfermented grain by water, but the power can only be exercised on broken starch grains. This saccharifying substance is destroyed by boiling. In fermenting rocesses, therefore, it has been found economical to percolate the grain or bran with cold water before mashing it, as the cold saccharifying percolate mixed with taka-diastase possesses more diastatic power than the sum of the two taken separately. In other words, the taka-diastase breaks down the starch for the cold saccharifying liquid to act on. Taka-diastase is affected by heat, like malt diastase; at 70° C. its diastatic power is permanently destroyed. Its action is strongest at 144° to 146° F. (about 62° to 64° C.). In aqueous solution it does not keep very long, decomposing in a few days in an ordinary room. To a certain extent acids destroy its action; of hydrochloric acid it will stand a strength of 1 per 1000. It is not yet clear whether the saccharifying and starch liquefying substances can be obtained separately. It is evident, however, that the action of fungi and the products they form offer a large field for investigation.

Roccella Genus.

Dr. O. V. Darbishire has published a revision of this genus of lichens in the *Ber. der Deutsch. Bot. Ges.*, bd. xvi., heft 1, pp., 6-16. The features of the genus as now limited are: the cortical fibres are perpendicular to the upper surface of the thallus; the spores are colourless, the hypothecium black, and the apothecia circular, and the soredia are coloured red by solution of chloride of lime. He includes seventeen species, of which *R. fuciformis*, D.C., *R. phycopsis*, Ach., and *R. tinctoria*, D.C., are European. *R. balfourii*, Müll. Arg., *R. hypomecha*, Ach., *R. flaccida*, Del., *R. mauritiana*, Darbish., *R. canariensis*, Darbish., are African, and *R. portentosa*, Mtg., *R. gayana*, Mtg., *R. peruensis*, Krphbr., *R. difficilis*, Darbish., *R. dubia*, Darbish., *R. caribæa*, Darbish., *R. decipiens*, Darbish., and *R. montagnei*, Bil., *R. sinensis*, Nyl., are Asiatic, *R. montagnei* and *R. phycopsis* occurring also in Australia. Other species formerly included under *Roccella* are now referred to other genera.

The Bacillus of Plague.

An interesting account of the plague bacillus is given by G. A. Buckmaster in *Science Progress*, pp. 104–119. It appears that its ordinary form is that of a short bacillus with rounded ends and apparent vacuolation in the centre. It is not endowed with movement, and is often surrounded by a capsule. It is rather difficult to recognise microscopically, as it has a marked tendency to the production of polymorphic and involution forms. One of the best cultivating media is a 2 per cent. alkaline peptone solution, with the addition of 1 to 2 per cent. of gelatin. It is easily killed by weak solutions of disinfectants like carbolic acid, lyssol, mercuric perchloride, and milk of lime. It is also easily killed by drying. The germs are quickly killed by boiling the water containing them, and water at 80° C. kills them in five minutes. The microbes can live for weeks in ordinary water, and the disease can be carried by flies, and they may contaminate water or food by their excreta. Rats, mice, shrew mice, fowls, cats, and horses are susceptible of the disease, but pigeons, dogs, and oxen are immune. Infection by the bacillus in the majority of cases is at the surface of the body, minute wounds and abrasions of the skin affording a means of entrance, also lesions in the mouth or tonsils. By employing the serum of horses, that have been immunised by subcutaneous injection of cultures of the plague bacillus, warmed to 58° C., mice and other animals can be protected from and cured of plague.

A New British Flora.

According to the *Journal of Botany* (p. 94), a new British flora is in preparation by the Rev. E. T. Linton, which promises to be a more satisfactory work than any at present in use. The 'London Catalogue' will be taken as the basis, each species will be described anew from living material as far as possible, and a critical view will be given of the distinctive features of closely allied forms. The co-operation of specialists in revising the manuscript of the more difficult genera has been promised. A reference with date of each species will be given. Mr. Linton will be grateful for fresh specimens of interesting plants, which may be sent to his address, "Crymlyn, Bournemouth."

Sorghin and Sorgho-rubin

Sig. N. Passerini has extracted from the red-spotted leaf-sheaths of *Sorghum saccharatum*, *S. vulgare*, and *Zea mays*, a pigment which he terms sorghin. It is a transformation product of the natural pigment sorgho-rubin. The red colour of the spots is due in the first place to this pigment, not directly to bacteria, as has been stated.—*Bull. Soc. Bot. Ital.*, 1897, p. 195.

The British Pharmacopœia, 1898.

Formulæ and Processes—Alterations, Additions, and Omissions.

In the following summary will be found sufficiently full details concerning all medicinal preparations in the British Pharmacopœia, 1898, that the pharmacist usually prepares for himself, to enable him to make the necessary alterations in, and additions to, his existing stock, without waiting until copies of the book can be purchased. The desirability of rendering this information generally available will be evident when it is explained that the new Pharmacopœia may become authoritative the moment its publication is announced in the London, Edinburgh, and Dublin Gazettes. It may be considered that the crude drugs and the chemicals should first have been dealt with, but though that would undoubtedly be the more logical course to pursue, expediency suggests the advisability of publishing all the formulæ, together with such particulars regarding the materials employed as will obviate any difficulty in making or altering the various preparations. All that is necessary is to read the following notes in conjunction with the 1885 Pharmacopœia and its Addendum, and to bear in mind that, unless the contrary is expressly stated here, no change in a formula, process, or dose has been made. All quantities in the new Pharmacopœia are stated in terms of both Imperial and metric systems, but in order to simplify matters as much as possible, whilst the relative proportions have been strictly adhered to in all cases, the formulæ are, as far as possible, given in parts and fluid parts, in accordance with the well-established rule, solids by weight and liquids by measure. In certain cases, however, there are special difficulties that prevent the adoption of this rule, and in such instances definite weights and volumes are given. An asterisk (*) preceding a name indicates that the preparation is new, and a dagger (†) indicates an alternative preparation sanctioned for use in India and the Colonies.

Abbreviations.—To economise space in the following pages, certain abbreviations have been adopted throughout, thus: s. g. = specific gravity; p. c. = per cent.; m. p. = melting point; fl. dr. = fluid drachm; fl. oz. = fluid ounce; Gm. = gramme; Mgm. = milligramme; and C. c. = cubic centimetre, whilst it is hardly necessary to explain that *q.s.* means a sufficiency.

Acetum Cantharidis.—Bruised cantharides, 2; glacial acetic acid, 99 p. c., and distilled water in equal volumes, 18; Macerate for 24 hours, percolate, and add sufficient menstruum to make 20 of product. S. g. not stated.

Acetum Ipecacuanhæ.—Liquid extract of ipecacuanha, 1: alcohol (90 p. c.), 2; diluted acetic acid, 17; mix, filter and, if necessary, add sufficient acid to make 20 of product. Dose: 10 to 30 minims.

Acetum Scillæ.—Bruised squill, 2·5; diluted acetic acid, 20; macerate as directed for tinctures, and make product up to 20. S. g. not stated. Dose: 10 to 30 minims.

Acidum Aceticum Dilutum.—Acetic acid (s. g. 1·044), 2·49; distilled water, *q.s.* to produce 20. S. g. 1·006. Dose: ½ to 2 fluid drachms.

Acidum Carbolicum Liquefactum.—Phenol (m. p. 38°·8 C. and s. g. 1·060 to 1·066) liquefied by the addition of 10 p. c. by weight of distilled water. S. g. 1·064 to 1·069. Dose: 1 to 3 minims.

Acidum Hydrochloricum Dilutum.—Strength unaltered. Dose: 5 to 20 minims.

Acidum Lacticum Dilutum.—Omitted.

Acidum Nitricum Dilutum.—Strength unaltered. Dose: 5 to 20 minims.

Acidum Nitro-Hydrochloricum Dilutum.—Strength and dose unaltered.

Acidum Phosphoricum Dilutum.—Process unaltered. Dose: 5 to 20 minims.

Acidum Sulphuricum Aromaticum.—Tincture of ginger, 10; spirit of cinnamon, 0·5; alcohol (90 p. c.), 29·5; sulphuric acid (s. g. 1·843), 3. Mix acid gradually with alcohol, then add tincture and spirit. S. g. 0·922 to 0·926. Dose: 5 to 20 minims.

Acidum Sulphuricum Dilutum.—Strength unaltered. Dose: 5 to 20 minims.

Adeps.—Additional tests of purity are given.

Adeps Benzoatus.—Lard, 500; benzoin in powder, 15.

† **Adeps Induratus.**—Lard deprived of a portion of its oil by pressure may be employed in India and the Colonies in place of ordinary lard.

Adeps Lanæ.—No alteration.

Adeps Lanæ Hydrosus.—Strength unaltered.

Alcohol.—See Spiritus Rectificatus for strength.

Aqua Anethi.—Dill fruit, not bruised, 1; water, 20. Distil, 10.

Aqua Anisi.—Anise fruit, not bruised, 1; water, 20. Distil, 10.

Aqua Aurantii Floris.—Orange-flower water of commerce, 1; distilled water, 2. Mix immediately before use.

Aqua Camphoræ.—Camphor, 1; alcohol (90 p. c.), *q.s.* to make 3. Dissolve and add in successive portions to distilled water, 1000; shaking after each addition, and subsequently agitate occasionally until all the camphor is dissolved.

Aqua Carui.—Caraway fruit, not bruised, 1; water, 20. Distil 10.

Aqua Chloroformi.—Chloroform, 2·5; distilled water, *q.s.* to produce 1000. Shake together until complete solution is effected.

Aqua Cinnamomi.—Cinnamon bark, bruised, 1; water, 20. Distil 10.

Aqua Fœniculi.—Fennel fruit, not bruised, 1; water, 20. Distil 10.

Aqua Laurocerasi.—Strength and dose unaltered.

Aqua Menthæ Piperitæ.—Peppermint oil, 1; water, 1500. Distil 1000.

Aqua Menthæ Viridis.—Spearmint oil, 1; water, 1500. Distil 1000.

Aqua Pimentæ.—Pimento, bruised, 25; water, 1000. Distil 500.

Aqua Rosæ.—Rose water of commerce, 1; distilled water, 2. Mix immediately before use.

Aqua Sambuci.—Formula unaltered.

† **Aquæ.**—Anise, caraway, cinnamon, dill, fennel, peppermint, pimento and spearmint waters may be prepared in India and other tropical countries by triturating the corresponding oil in each case with twice its weight of calcium phosphate, and five hundred times its volume of distilled water, afterwards filtering.

Argenti Nitras Induratus.—Silver nitrate, 95; potassium nitrate, 5. Fuse and mould.

Argenti Nitras Mitigatus.—Identical with the old Argenti et Potassii Nitras.

Bismuth et Ammonii Citras.—Omitted.

Caffeinæ Citras.—Process unaltered.

***Caffeinæ Citras Effervescens.**—Sodium bicarbonate, in powder, 51; tartaric acid, in powder, 27; citric acid, in powder, 18; refined sugar, in powder, 14; caffeine citrate, 4. Mix the citrate with the acids, then thoroughly incorporate the mixed sodium bicarbonate and sugar, and granulate. Dose: 60 to 120 grs.

Cataplasmata.—All omitted.

Charta Epispastica.—Omitted.

Charta Sinapis.—Black and white mustard seeds, in equal proportion by weight. Bruise, extract the fixed oil by percolation with benzol (s. g. 0·880 to 0·888), dry residue, and reduce to No. 60 powder. Mix this powder, 5 Gm., with solution of india-rubber, 18 C.c., and spread over about 30 square inches of cartridge paper.

Collodium.—Pyroxylin, 1; ether (s. g. 0·735), 36; alcohol (90 p. c.), 12.

Collodium Flexile.—Formula unaltered.

Collodium Vesicans.—Blistering liquid, 40; pyroxylin, 1.

Confectio Opii.—Omitted.

Confectio Piperis.—Formula unaltered.

Confectio Rosæ Caninæ.—Omitted.

Confectio Rosæ Gallicæ.—Formula unaltered.

Confectio Scammonii.—Omitted.

Confectio Sennæ.—Formula unaltered.

Confectio Sulphuris.—Sublimed sulphur, 100; acid potassium tartrate, 25; tragacanth, in powder, 1; syrup, 50; tincture of orange, 12·5; glycerin, 37·5.

Confectio Terebinthinæ.—Omitted.

Decocta.—All omitted except those referred to below.

Decoctum Aloes Compositum.—Extract of Barbados aloes is substituted for extract of Socotrine aloes.

Decoctum Granati Corticis.—Pomegranate bark, in No. 10 powder, 4; distilled water, 24. Boil for 10 minutes, strain, and add sufficient water to produce 20. Differs from Decoctum Granati Radicis in bark of stem being permitted as well as root-bark. Dose: ½ to 2 fl. oz.

Decoctum Hæmatoxyli.—Logwood, in chips, 50; cinnamon bark, bruised, 8; distilled water, 1200. Boil for 10 minutes, strain, and add sufficient water to make 1000. Dose: ½ to 2 fl. oz.

Decoctum Sarsæ Compositum.—Omitted. See Liquor Sarsæ Compositus Concentratus.

Decoctum Scoparii.—Omitted. See Infusum Scoparii.

Emplastrum Ammoniaci cum Hydrargyro.—Formula unaltered.

Emplastrum Belladonnæ.—Liquid extract of belladonna, 4; resin plaster, 5. Contains 0·5 p. c. of alkaloids of belladonna root.

Emplastrum Calefaciens.—Omit expressed oil of nutmeg, and use distilled water. Otherwise unaltered.

Emplastrum Cantharidis.—Cantharides, in powder, 7; yellow beeswax, 4; lard, 4; resin, 4; soap plaster, 1.

Emplastrum Ferri.—Omitted.

Emplastrum Galbani.—Omitted.

Emplastrum Hydrargyri.—Formula unaltered.

Emplastrum Menthol.—Menthol, 3; yellow beeswax, 2; resin, 15. Add the menthol when mixture of melted wax and resin is at a temperature of 71° to 76° C., and stir until dissolved.

Emplastrum Opii.—Unaltered.

Emplastrum Picis.—Omit expressed oil of nutmeg.

Emplastrum Plumbi.—Formula unaltered.

Emplastrum Plumbi Iodidi.—Formula unaltered.

Emplastrum Resinæ.—Hard soap is substituted for curd soap.

Emplastrum Saponis.—Hard soap is substituted for curd soap

Emplastrum Saponis Fuscum.—Omitted.

Enemata.—All omitted.

Essentia Anisi.—Omitted. See Spiritus Anisi.

Essentia Menthæ Piperitæ.—Omitted. See Spiritus Menthæ Piperitæ.

†**Extracta Liquida.**—In India and other tropical countries any liquid extract containing less than one-fourth of its weight of 90 p. c. alcohol, may have the proportion of alcohol increased to an extent not exceeding one-fourth of the weight of the extract.

Extractum Aconiti.—Omitted.

Extractum Aloes Barbadensis.—Formula unaltered, but period of maceration extended to 24 hours and evaporated, liquid to be evaporated at temperature not exceeding 60° C. Dose: 1 to 4 grains.

Extractum Aloes Socotrinæ.—Omitted.

Extractum Anthemidis.—Formula unaltered, but consistence directed to be that of a soft extract. Dose: 2 to 8 grains.

Extractum Belæ Liquidum.—Omitted.

Extractum Belladonnæ.—See Extractum Belladonnæ Viride.

Extractum Belladonnæ Alcoholicum.—Liquid extract of belladonna, 20; milk sugar, *q.s.* Evaporate the liquid extract to a thin syrup, and add sufficient milk sugar to produce, on evaporation, 15 parts of a moderately firm extract containing 1 p. c. of the alkaloids of belladonna root. To determine the quantity of milk sugar that must be added, evaporate 50 C.c. of the liquid extract, in a counterpoised dish on a water bath, to a moderately firm extract, and weigh. The difference between that weight and 37·5 Gm. will indicate the amount of milk sugar that must be used as a diluent for each 5 C.c. of the liquid extract. Dose: ¼ to 1 grain.

***Extractum Belladonnæ Liquidum.**—Belladonna root, in No. 20 powder, is exhausted with a mixture of alcohol (90 p. c.), 7 volumes, and distilled water, 1 volume, by re-percolation. Moisten belladonna powder, 8, with menstruum, 6, and set aside for 6 hours; next pack firmly in a percolator, add menstruum, 6, and when the liquid begins to drop close the lower orifice of the percolator and set aside for 24 hours. Then percolate slowly, adding more of the menstruum as required, collect the percolate in small portions, and use this as the menstruum for percolating a second quantity of belladonna powder, equal in weight to the first. Two more similar quantities must subsequently be treated in like manner, the third portion being extracted with the percolate from the second, and the fourth with that from the third. The product collected from the fourth percolator should measure 12·5. This product is not standardised, so that it shall contain 0·75 Gm. of the alkaloids of the root in 100 C.c. Shake 10 C.c. of the extract with 10 C.c. of chloroform, 50 C.c. of water, and a decided excess of ammonia; separate the chloroformic solution, and twice repeat the agitation and separation with chloroform. Shake the mixed chloroformic solutions with 5 C.c. of diluted sulphuric acid, mixed with twice its volume of warm water, separate, and repeat the operation. Wash the mixed acid liquids with 3 C.c. of chloroform, then agitate with 10 C.c. of chloroform and an excess of ammonia. Separate the chloroformic solution, twice repeat the agitation and separation with chloroform, wash the mixed chloroformic solutions with 5 C.c. of water containing 1 drop of solution of ammonia, evaporate on a water-bath, dry the residue at 100° C., and weigh. Next dissolve the residue in 10 C.c. of decinormal hydrochloric acid, neutralise with centinormal sodium hydroxide, using tincture of cochineal as an indicator, deduct the measure of soda solution required from 100 C.c., and multiply the remainder by 0·00287. The product will be the weight in grammes of alkaloids present in 10 C.c. of the liquid extract; from this weight calculate the amount present in the bulk of strong percolate, and add to the latter sufficient of the alcoholic menstruum to make it contain 0·75 Gm. of alkaloids in 100 C.c.

Extractum Belladonnæ Viride.—Identical with Extractum Belladonnæ of the 1885 Pharmacopœia, except that the consistence is to be that of a soft extract.

Extractum Calumbæ.—Omitted.

Extractum Cannabis Indicæ.—Indian hemp, in coarse powder, is exhausted with alcohol (90 p. c.), and the percolate evaporated to the consistence of a soft extract.

Extractum Cascaræ Sagradæ.—Cascara sagrada, in No. 20 powder, is exhausted with distilled water by moistening and setting aside for a few hours, then percolating. The percolate is then evaporated to dryness.

Extractum Cascaræ Sagradæ Liquidum.—Cascara sagrada, in No. 20 powder, 20; alcohol (90 p. c.), 4; distilled water, *q.s.* Moisten the drug with water, 15, set the mixture aside for 6 hours, then percolate till the powder is exhausted, evaporate the percolate to 12 fluid parts, add the alcohol, and sufficient water to make the product measure 20. Dose: ½ to 1 fl. dr.

Extractum Cimicifugæ Liquidum.—The drug is exhausted with 90 p. c. alcohol instead of rectified spirit. Dose: 5 to 30 minims.

Extractum Cinchonæ Liquidum.—The rectified spirit of the older process is replaced by 90 p. c. alcohol. The finished extract must contain 5 Gm. of the alkaloids of red cinchona bark in 100 C.c. The assay process is practically the same as that official in the 1885 Pharmacopœia, 5 C.c. of the evaporated percolate being placed in a stoppered glass separator, together with 25 C.c. of water, 30 C.c. of benzolated amylic alcohol, and 15 C.c. of solution of potassium hydroxide. After shaking repeatedly, the lower dark-coloured alkaline layer that separates is run off and again shaken with 30 C.c. of benzolated amylic alcohol, the lower layer that now separates being rejected. The two upper layers containing the alkaloids in solution are then mixed, washed with a little water, and agitated thoroughly with 30 C.c. of a warm mixture of 1 volume of diluted hydrochloric acid and 5 volumes of water. This operation is repeated with the alcoholic layer that separates, and the two acid layers are subsequently mixed. The alkaloids are then shaken out with 10 C.c. of chloroform and sufficient solution of ammonia to impart a strongly alkaline reaction; the agitation and separation repeated with two successive quantities of 10 C.c. of chloroform, the chloroformic liquids mixed, evaporated slowly, the residue dried at 110° C., and the residual alkaloids weighed. The liquid extract must now be adjusted, either by evaporation or dilution with water, so that 5 parts of total alkaloid are contained in 85 fluid parts. Now add 12·5 of alcohol (90 p. c.), and make up to 100 with distilled water. Dose: 5 to 15 minims.

Extractum Cocæ Liquidum.—The coca leaves are reduced to No. 20 powder and exhausted with 60 p. c. alcohol. Dose : ½ to 1 fl. dr.

Extractum Colchici.—Process unaltered, but consistence to be that of a soft extract. Dose : ¼ to 1 grain.

Extractum Colchici Aceticum.—Omitted.

Extractum Colocynthidis Compositum.—Extract of Barbados Aloes is to be used in making this preparation, the proportion of curd soap is reduced by one-fourth, 60 p. c. alcohol is ordered instead of proof spirit, and the consistence is to be that of a firm extract. Dose : 2 to 8 grains.

Extractum Conii.—Omitted.

***Extractum Ergotæ.**—Ergot, in No. 40 powder, 1000; alcohol (60 p. c.), 500 ; distilled water, 250 ; diluted hydrochloric acid, 47 ; sodium carbonate, 20. Moisten the ergot with the alcohol and percolate until exhausted, then evaporate to 250, add the water and filter when cold, washing the residue with a little water. Add the acid to the filtrate, set aside for 24 hours, filter, wash the residue with distilled water until the washings no longer have an acid reaction, and add the washings to the filtrate Finally add the sodium carbonate and evaporate to a soft extract. Dose : 2 to 8 grains.

Extractum Ergotæ Liquidum.—Use 90 p. c. alcohol instead of rectified spirit.

Extractum Euonymi Siccum.—Euonymus bark, in No. 20 powder, 20 ; alcohol (45 p. c), *q.s.* ; calcium phosphate, *q.s.* Moisten the drug with the alcohol, 10, and percolate until exhausted, using sufficient of the menstruum for that purpose. Evaporate off the alcohol, thoroughly dry the residue, powder and mix with one-fourth its weight of calcium phosphate, again dry and powder, and immediately transfer to a well-closed bottle. Dose : 1 to 2 grains.

Extractum Filicis Liquidum.—Male fern rhizome, in No. 20 powder, is exhausted by percolation with ether ; and the ether evaporated from the clear percolate, on a water-bath or by distillation, until an oily extract remains. Dose : 45 to 90 minims.

Extractum Gelsemii Alcoholicum.—Omitted.

Extractum Gentianæ.—Gentian root not directed to be sliced, and consistence to be that of a soft extract. Dose : 2 to 8 grains.

Extractum Glycyrrhizæ.—The first period of maceration is extended to 24 hours, and the consistence is to be that of a soft extract.

Extractum Glycyrrhizæ Liquidum.—Liquorice root, in No. 20 powder, 20 ; distilled water, 5 ; 90 p. c. alcohol, *q.s.* Mix the liquorice with half of the water, set aside for 24 hours, strain, press, mixed the strained liquids, heat to 100° C., strain through flannel, and evaporate until the fluid, when cold, is of s.g. 1·200. Finally add to the extract one-fourth its volume of the alcohol, stand for 12 hours and filter. Dose : ½ to 1 fl. dr.

Extractum Hamamelidis Liquidum.—Alcohol (45 p. c.) replaces the mixture of rectified spirit and water formerly employed as a menstruum. Dose : 5 to 15 minims.

Extractum Hæmatoxyli.—Omitted.

Extractum Hydrastis Liquidum.—Alcohol (45 p. c.) replaces the mixture of rectified spirit and water formerly employed as a menstruum. Dose : 5 to 15 minims.

Extractum Hyoscyami Viride.—Identical with Extractum Hyoscyami of the 1885 Pharmacopœia, except that the consistence is to be that of a soft extract. Dose : 2 to 8 gr.

***Extractum Ipecacuanhæ Liquidum.**—Ipecacuanha root, in No. 20 powder, 80 ; calcium hydroxide, 8 ; alcohol (90 p. c.), 3. Moisten the ipecacuanha with the alcohol, pack firmly in a percolator, add more alcohol, and when the liquid begins to drop, close the lower orifice of the percolator and set aside for 24 hours. Then percolate slowly until the product measures 67·5, and set this portion aside. Continue percolation until nothing more is extracted, drain well, mix the lime with the marc, and after standing for 24 hours, continue percolation until exhaustion is complete. Recover the alcohol from the last two percolates by distillation, and dissolve the residual extract in the portion of the percolate that was set aside. The extract is next standardised so that it shall contain 2 to 2·5 Gm. of the alkaloids of the root in 100 C.c. The assay process is as follows :—Dilute 20 C.c. of the strong liquid extract with an equal bulk of water, remove the alcohol by the aid of a water-bath, add to the warm solution an excess of solution of lead subacetate, filter, wash the precipitate with water, and add the washings to the filtrate. Remove excess of lead from filtrate by precipitation with diluted sulphuric acid, filter, wash, and add the washings to the filtrate. Transfer filtrate to a separator, add excess of solution of ammonia (s. g. 0·959), and agitate with 25 C.c. of chloroform. Separate and set aside the chloroformic solution, and twice repeat the agitation with chloroform and the subsequent separation. Then mix the chloroformic solutions, evaporate, dry at a temperature below 80° C., and weigh the residue of total alkaloids. From this weight calculate the amount of alkaloids in the bulk of strong liquid extract, and add to the latter sufficient alcohol (90 p. c.) to make the liquid extract of the required strength. Dose : As an expectorant, ½ to 2 minims ; as an emetic, 15 to 20 minims.

Extractum Jaborandi.—Omitted.

***Extractum Jaborandi Liquidum.**—Jaborandi leaves, in No. 20 powder, 20 ; alcohol (45 p. c.), 10. Moisten the powder with the alcohol, pack in a percolator and set aside for twelve hours ; then percolate with more alcohol, and collect 17 of percolate. Continue percolation until 50 parts more are obtained, distil the latter so as to recover the alcohol, evaporate the residual aqueous liquid to the consistence of a soft extract, add to this the reserved percolate, and sufficient alcohol to make 20 of product. Dose : 5 to 15 minims.

Extractum Jalapæ.—Alcohol (90 p. c.) is substituted for rectified spirit, as the first macerating medium, and the finished product must have the consistence of a firm extract. Dose : 2 to 8 grains.

Extractum Krameriæ.—Coarsely powdered krameria root is macerated in twice its weight of distilled water for 24 hours ; then packed in a percolator and percolated with more water until exhausted. Finally evaporate the liquid to dryness. Dose 5 to 15 grains.

Extractum Lactucæ.—Omitted.

Extractum Lupuli.—Omitted.

Extractum Mezerei Æthereum.—Omitted.

Extractum Nucis Vomicæ.—Liquid extract of nux vomica, 10 ; milk sugar, *q.s.* Distil the alcohol from the liquid extract, and add sufficient milk sugar to produce, on evaporation, three parts of a firm extract containing 5 p. c. of strychnine. To determine the quantity of milk sugar that must be added, evaporate 50 C.c. of the liquid extract in a counterpoised dish on a water-bath to a moderately firm extract, and weigh. The difference between that weight and 15 Gm. will indicate the amount of milk sugar that must be used as a diluent for each 50 C.c. of the liquid extract. Dose : ¼ to 1 grain.

***Extractum Nucis Vomicæ Liquidum.**—Moisten nux vomica in No. 20 powder, 16, with alcohol (70 p. c.), 8 ; set aside in a covered vessel for 6 hours, then pack firmly in a percolator, and add more alcohol, so as to saturate the powder and leave a stratum above it. When the liquid begins to flow, close the lower orifice of the percolator, set aside for 24 hours, then continue slow percolation, and collect the first 12 fluid parts of strong percolate. Change the receiver and continue percolation until the powder is exhausted, press the marc, add the expressed liquid to the weaker percolate, which must then be freed from alcohol by distillation and evaporated to 1 fluid part. To this add alcohol (90 p. c.), 3, mix with the reserved stronger percolate, and, after standing for 24 hours, pour off the clear liquid and filter the remainder. Next determine the proportion of strychnine present in the liquid extract, evaporate 10 C.c. to a thick syrup on a water-bath, dissolve the residue in 20 C.c. of water, heating if necessary, place the solution in a separator, and shake out with 5 Gm. of sodium carbonate dissolved in 25 C.c. of water, together with 10 C.c. of chloroform. Separate, and twice repeat the operation with chloroform only. Then mix 6 C.c. of diluted sulphuric acid with 25 C.c. of water, divide the mixture into three parts, and shake the mixed chloroformic solutions with each in turn. Mix the acid liquids, dilute with water to 175 C.c., and shake well and frequently in a stoppered flask during half an hour with 25 C.c. of potassium ferrocyanide solution (10 Gm. in 200 C.c.). The precipitate formed is transferred to a filter, the flask rinsed with water containing one-fortieth its volume of diluted sulphuric acid, and the precipitate washed until the washings are free from bitterness. Next, shake the precipitate in a separator with 5 C.c. of solution of ammonia, add 15 C.c. of chloroform in two successive portions, shaking well after each addition, separate and mix the chloroformic solutions, evaporate in a counterpoised dish in a current of warm air, the dish being covered to avoid loss of strychnine. The residue is dried for 1 hour on a water-bath, and then weighed. From this weight calculate the amount of strychnine in the bulk of the strong liquid extract, and add to the latter sufficient alcohol

(70 p. c.) to produce a liquid extract of nux vomica containing 1·5 Gm. of strychnine in 100 C.c. Dose : 1 to 3 minims.

Extractum Opii.—The opium is directed to be sliced. Dose : ½ to 2 grains.

Extractum Opii Liquidum.—Extract of opium, 3, distilled water, 64, alcohol (90 p. c.), 16. Mix the extract with the water, and set aside for an hour, stirring frequently ; then add the alcohol, set aside in a cool place for 24 hours, and filter. The product should measure 80 fluid parts ; its s. g. should be from 0·985 to 0·995, and 100 C.c. should contain 0·75 Gm. of morphine. Dose : 5 to 30 minims.

Extractum Papaveris.—Omitted.

Extractum Pareiræ.—Omitted.

Extractum Pareiræ Liquidum.—Pareira root, in No. 40 powder, is moistened with boiling distilled water, set aside for 24 hours, then slowly percolated with more boiling water until exhausted. The proportion of extractive matter in the percolate is determined by evaporating a small weighed quantity in a counterpoised dish on a water-bath to a firm consistence, and weighing the product. Next, evaporate the bulk of the percolate until it contains one-third its weight of such extractive matter, and add sufficient alcohol (90 p. c.) to increase the bulk of the evaporated liquid by one-third. Filter, or otherwise clarify, if necessary. Dose : ½ to 2 fl. dr.

Extractum Physostigmatis.—Alcohol (90 p. c.) replaces the rectified spirit formerly used as a menstruum, and after a very soft extract has been produced on evaporation it is mixed with three times its weight of milk sugar, so as to produce a firm extract. The strength of this preparation is thus reduced to one-fourth of the older extract. Dose : ¼ to 1 grain.

Extractum Quassiæ.—Omitted.

Extractum Rhamni Frangulæ.—Omitted.

Extractum Rhamni Frangulæ Liquidum.—Omitted.

Extractum Rhei.—Rhubarb root, in No. 20 powder, is exhausted by moistening with 60 p. c. alcohol, setting aside for 48 hours, then slowly percolating with alcohol, most of which is subsequently recovered by distillation, and the residual liquid then evaporated to dryness. Dose : 2 to 8 grains.

Extractum Sarsæ Liquidum.—Sarsaparilla, in No. 40 powder, 20 ; alcohol (20 p. c.), *q.s.* ; glycerin, 2. The sarsaparilla is divided into three portions, the first of which is moistened with alcohol, 4 fluid parts, packed in a percolator, set aside for 24 hours, then percolated with alcohol until the product measures 4 fluid parts. Repeat the whole operation with the second and third portion. Moisten the second portion with this, and go through the same steps as before, percolating with a menstruum obtained by further percolation of the first portion. Repeat the whole operation with the third portion, and adjust the final percolate, so that after adding the glycerin it shall measure exactly 20 fluid parts. Dose : 2 to 4 fl. dr.

Extractum Stramonii.—Pack stramonium seeds, in No. 40 powder, in a percolator, exhaust by slow percolation with alcohol (70 p. c.), remove most of the alcohol by distillation, and evaporate the residual liquid to a firm extract. Dose : ¼ to 1 grain.

***Extractum Strophanthi.**—Pack strophanthus seeds, reduced to No. 30 powder and dried at 43° C. in a percolator, moisten with purified ether (s. g. 0·720 to 0·722), set aside for 24 hours, then percolate with ether until it passes through colourless. Remove the marc and dry it, gradually heating it up to 49° C. Then reduce to powder, repack in percolator, moisten with alcohol (90 p. c.), leave for 48 hours, then percolate slowly with alcohol until for each part of the powder 10 fluid parts of liquid have been obtained. Evaporate most of the alcohol, transfer residual liquid to a counterpoised basin and concentrate until it begins to thicken, then add sufficient finely-powdered milk sugar to produce extract, in powder, equal to twice the weight of the strophanthus powder operated upon. Dose : ¼ to 1 grain.

Extractum Taraxaci.—No limit of temperature is specified at which to evaporate the juice, and the final consistence is to be that of a soft extract : Dose : 5 to 15 grains.

Extractum Taraxaci Liquidum.—Alcohol (60 p. c.) is used as a menstruum instead of the proof spirit. Dose : ½ to 2 fl. dr.

Fel Bovinum Purificatum.—Alcohol (90 p. c.) is used as a solvent instead of rectified spirit, and the consistence of the product is to be that of a thick extract. Dose : 5 to 15 grains.

Ferri et Ammonii Citras.—Strength unaltered.

Ferri et Quininæ Citras.—Strength unaltered.

Ferrum Tartaratum.—Strength and dose unaltered.

***Glycerinum Acidi Borici.**—Boric acid, in fine powder, 6 ; Glycerin (s. g. 1·260), sufficient to produce 20 by weight. Heat glycerin, 9 fluid parts by weight, to a temperature not exceeding 150° C., and add the boric acid gradually, constantly stirring until all is dissolved. Maintain the temperature until the mixture has been reduced to 10 parts by weight, then add sufficient glycerin to make 20.

Glycerinum Acidi Carbolici.—Phenol, 1 ; glycerin, sufficient to produce 5 by volume. Dissolve by trituration.

Glycerinum Acidi Gallici.—Omitted.

Glycerinum Acidi Tannici.—Tannic acid, 1 ; glycerin, sufficient to produce 5 by volume. Dissolve by trituration.

Glycerinum Aluminis.—Alum, in powder, 40 ; distilled water, 15 ; glycerin, sufficient to produce 240 by volume. Dissolve by trituration, warming if necessary, set aside to settle and pour off the clear liquid.

Glycerinum Amyli.—Starch, 2 ; glycerin, 13 ; distilled water, 3. Mix, heat, and stir constantly until a translucent jelly is formed.

Glycerinum Boracis.—Borax, 1 ; glycerin, 6. Dissolve by trituration.

***Glycerinum Pepsini.**—Pepsin (2500 times), 16 ; hydrochloric acid, 2 ; glycerin, 105 ; distilled water, sufficient to produce 175. Mix the acid, glycerin, and 52 of water ; then add the pepsin, and, after one week, filter and make up to the required volume with water. Dose : 1 to 2 fl. dr.

Glycerinum Plumbi Subacetatis.—Lead acetate, 5 ; lead oxide, in powder, 3·5 ; glycerin, 20 ; distilled water, 12. Mix, boil for 15 minutes, filter, and evaporate at a temperature not exceeding 105°·5 C. until the product weighs 32·75 and is of s. g. 1·48.

Glycerinum Tragacanthæ.—Tragacanth, in fine powder, 1 ; glycerin, 3 ; distilled water, 1. Mix the glycerin with the tragacanth, add the water, and triturate until a homogeneous paste is produced.

***Hydrargyri Oleas.**—Mercuric chloride, 8 ; hard soap, powdered, 16 ; oleic acid, 1 ; boiling distilled water, *q.s.* Dissolve the mercuric chloride in 80 of water ; triturate the acid with the soap and dissolve in 88 of water. Mix the solutions, boil for 10 minutes, set aside to deposit, decant, wash the precipitated oleate with hot distilled water until free from chloride, and dry on a water-bath.

Hydrargyrum Ammoniatum.—Unaltered.

Hydrargyrum cum Creta.—Unaltered:

†**Infusa.**—In India and the Colonies, dried instead of fresh lemon peel may be used in preparing the compound infusions of gentian and orange peel.

Infusum Anthemidis.—Omitted.

Infusum Aurantii.—Formula unaltered. Dose : ½ to 1 fl. oz.

Infusum Aurantii Compositum.—Formula unaltered. Dose: ½ to 1 fl. oz.

Infusum Buchu.—The buchu leaves are to be freshly broken, not bruised, and infused for 15 minutes only. Dose : 1 to 2 fl. oz.

Infusum Calumbæ.—The calumba root is to be thinly sliced, not cut small. Dose : ½ to 1 fl. oz.

Infusum Caryophylli.—Infuse for 15 minutes only. Dose : ½ to 1 fl. oz.

Infusum Cascarillæ.—Cascarilla, in No. 10 powder, 1 ; boiling distilled water, 20. Infuse for 15 minutes. Dose : ½ to 1 fl. oz.

Infusum Catechu.—Omitted.

Infusum Chiratæ.—Chiretta, cut small, 1 ; boiling distilled water, 20. Infuse for 15 minutes. Dose ½ to 1 fl. oz.

Infusum Cinchonæ Acidum.—Formula unaltered. Dose : ½ to 1 fl. oz.

Infusum Cuspariæ —Cusparia bark, in No. 20 powder, 1 ; boiling distilled water, 20. Infuse for 15 minutes.

Infusum Cusso.—Omitted.

Infusum Digitalis.—Digitalis leaves, in No. 20 powder, 3 ; boiling distilled water, 437·5.

Infusum Ergotæ.—Ergot, freshly crushed, 1 ; boiling distilled water, 20. Infuse for 15 minutes.

Infusum Gentianæ Compositum.—Formula unaltered, but but period of infusion reduced to 15 minutes. Dose : ½ to 1 fl. oz.

Infusum Jaborandi.—Omitted.

Infusum Krameriæ —Krameria root, bruised, 1 ; boiling distilled water, 20. Infuse for 15 minutes. Dose : ½ to 1 fl. oz.

Infusum Lini.—Omitted.

Infusum Lupuli.—Hops, freshly broken, 1 ; boiling distilled water, 20. Infuse for 15 minutes.

Infusum Maticæ.—Omitted.

Infusum Quassiæ.—Quassia wood, finely rasped, 1; cold distilled water, 100. Infuse for 15 minutes. Dose: ½ to 1 fl. oz.

Infusum Rhei.—The proportion of rhubarb is doubled, and the time of infusion reduced to 15 minutes. Dose: ½ to 1 fl. oz.

Infusum Rosæ Acidum.—Formula unaltered. Dose: ½ to 1 fl. oz.

***Infusum Scoparii.**—Broom tops, dried and bruised, 2; boiling distilled water, 20. Infuse in a covered vessel for 15 minutes. Dose: 1 to 2 fl. oz.

Infusum Senegæ.—The senega root is ordered in No. 10 powder. Dose: ½ to 1 fl. oz.

Infusum Sennæ.—Infuse for 15 minutes only. Dose: ½ to 1 fl. oz.; as a draught, 2 fl. oz.

Infusum Serpentariæ.—Serpentary rhizome, in No. 10 powder, 1; boiling distilled water, 20. Infuse for 15 minutes. Dose: ½ to 1 fl. oz.

Infusum Uvæ Ursi.—Infuse for 15 minutes only. Dose: ½ to 1 fl. oz.

Infusum Valerianæ.—Omitted.

Injectio Apomorphinæ Hypodermica.—Apomorphine hydrochloride, 1; diluted hydrochloric acid, 1; distilled water, 100. Boil the water for a few minutes, cool, add the acid, and dissolve the apomorphine hydrochloride in the mixture; if necessary make up with recently boiled and cooled distilled water to 100 fluid parts. Dose: 5 to 10 minims.

***Injectio Cocainæ Hypodermica.**—Cocaine hydrochloric, 10; salicylic acid, 0·15; distilled water, 100. Boil the water, add the acid, and dissolve the cocaine hydrochloride in the solution when cool; if necessary, make up to 100 fluid parts with recently boiled and cooled distilled water. Dose: 2 to 5 minims.

***Injectio Ergotæ Hypodermica.**—Extract of ergot, 50; phenol, 1·5; distilled water, 100. Mix the phenol with the water and boil for a few minutes; cool, add the extract of ergot and, if necessary, make up to 100 fluid parts with recently boiled and cooled distilled water. Dose: 3 to 10 minims.

Injectio Ergotini Hypodermica.—Omitted.

Injectio Morphinæ Hypodermica.—Dissolve morphine tartrate, 5, in sufficient recently boiled and cooled distilled water to produce 100 fluid parts. Dose: 2 to 5 minims.

Jalapæ Resina.—Alcohol (90 p. c.) is used to exhaust the jalap, instead of rectified spirit. The powdered resin should not yield more than 10 p. c. to ether.

Lamellæ Atropinæ.—Formulæ unaltered.

Lamellæ Cocainæ.—Weight of discs increased to 2·17 Mgm., and each containing 1·3 Mgm. of cocaine hydrochloride. Four times the strength of the discs of the 1885 Pharmacopœia.

***Lamellæ Homatropinæ.**—Discs of gelatin, with some glycerin, each weighing about 1 3 Mgm., and containing 0·65 Mgm. of homatropine hydrobromide.

Lamellæ Physostigminæ.—Physostigmine sulphate used instead of physostigmine.

Linimentum Aconiti.—Alcohol (90 p. c.) is ordered instead of rectified spirit.

Linimentum Ammoniæ.—Solution of ammonia, 1; almond oil, 1; olive oil, 2. Shake together.

Linimentum Belladonnæ.—Liquid extract of belladonna, 10; camphor, 1; distilled water, 2; alcohol (90 p. c., *q.s.*) to produce 20. Dissolve the camphor in 6 of the alcohol, add the extract, water, and sufficient alcohol to produce the required volume. Set aside for 24 hours, then filter.

Linimentum Calcis.—Unaltered.

Linimentum Camphoræ.—The camphor is ordered in flowers.

Linimentum Camphoræ Ammoniatum.—This is the Linimentum Camphoræ Compositum of the 1885 Pharmacopœia, with the rectified spirit replaced by 90 p. c. alcohol, whilst a definite volume—20 fl. oz.—is to be produced with the quantities there ordered, the camphor and oil being dissolved in about 5 times their volume of alcohol, the strong solution of ammonia gradually added, with constant shaking, and sufficient alcohol then added to make a clear solution of the required volume.

Linimentum Chloroformi.—Unaltered.

Linimentum Crotonis.—Alcohol (90 p. c.) takes the place of rectified spirit.

Linimentum Hydrargyri.—Ointment of mercury, 30; strong solution of ammonia, 10; liniment of camphor, *q.s.* Add the ammonia solution to sufficient of the liniment to make 45 of product; triturate the ointment with sufficient of the liniment to produce an equal volume; then mix the two liquids.

Linimentum Iodi.—Now official as Liquor Iodi Fortis, which see.

Linimentum Opii.—Formula unaltered, but the product is directed to be set aside for a few days before filtration.

Linimentum Potassii Iodidi cum Sapone.—The curd soap must be recently prepared and in fine shavings.

Linimentum Saponis.—Soft soap replaces the hard soap formerly ordered, and 90 p. c. alcohol is to be used instead of rectified spirit. Dissolve the soap in the water and the camphor and oil in the alcohol, mix the two solutions, set aside for a week, and filter.

***Linimentum Sinapis.**—Volatile oil of mustard, 2; camphor, 3; castor oil, 7; 90 p. c. alcohol, 43. Dissolve the camphor in the alcohol and add the oils.

Linimentum Sinapis Compositum.—Omitted.

Linimentum Terebinthinæ.—Soft soap, 1 5; distilled water, 5 or *q.s.*; camphor, 1; oil of turpentine, 13. Mix the soap with 2 of water, dissolve the camphor in the turpentine, gradually add the second solution to the first, triturate until a thick creamy emulsion is formed, then add sufficient water to make 20 of product.

Linimentum Terebinthinæ Aceticum.—Unaltered.

Liquor Acidi Chromici.—Unaltered.

Liquor Ammoniæ.—Unaltered.

Liquor Ammoniæ Fortis.—Identical with Liquor Ammoniæ Fortior of the 1885 B.P.

Liquor Ammonii Acetatis.—Dissolve ammonium carbonate, 1, in 10 times its weight of distilled water, neutralise with acetic acid, and add sufficient distilled water to produce 20 of the solution. Preserve in a green glass bottle. Dose: 2 to 6 fl. dr.

Liquor Ammonii Acetatis Fortior.—Omitted.

Liquor Ammonii Citratis.—Dissolve citric acid, 2·5, in 5 times its weight of distilled water, neutralise with ammonium carbonate (about 1·75), and add sufficient distilled water to produce 20 of the solution. Preserve in a green glass bottle. Dose: 2 to 6 fl. dr.

Liquor Ammonii Citratis Fortior.—Omitted.

Liquor Antimonii Chloridi.—Omitted.

Liquor Arsenicalis.—Add half a grain each of arsenious anhydride and potassium carbonate to the quantities ordered in the 1885 B.P., to produce one pint.

Liquor Arsenici Hydrochloricus.—Add half a grain of arsenious anhydride to the quantity ordered in the 1885 B.P., to produce one pint.

Liquor Arsenii et Hydrargyri Iodidi.—Arsenious iodide, 1; mercuric iodide, 1; distilled water, *q.s.* to produce 100 of solution. Dose: 5 to 20 minims.

Liquor Atropinæ Sulphatis.—Dissolve atropine sulphate, 1, and salicylic acid, 0·12, in sufficient recently boiled and cooled distilled water to produce 100 of the solution. Dose: ½ to 1 minim.

Liquor Bismuthi et Ammonii Citratis.—Bismuth oxynitrate, 35; potassium citrate, 35; potassium carbonate, 10; nitric acid, 25; solution of ammonia and distilled water, *q.s.* Dissolve the oxynitrate in the acid diluted with an equal volume of water, add more water with constant stirring until the liquid is very faintly opalescent; then add the potassium salts dissolved in a little water, heat the liquid to the boiling-point, cool, separate the precipitate, and wash it with distilled water until free from nitrates. Now gradually add solution of ammonia to the moist precipitate until it is just dissolved, dilute with distilled water to produce 500 fluid parts of the solution, and filter.

Liquor Calcii Chloridi.—Omitted.

Liquor Calcis.—Calcium hydroxide is specified in the formula instead of slaked lime.

Liquor Calcis Chlorinatæ.—Formula unaltered, but it is recommended that the filtered solution should be preserved in a cool and dark place.

Liquor Calcis Saccharatus.—Calcium hydroxide is ordered instead of slaked lime, and the specific gravity is altered to 1·055. Dose: 20 to 60 minims.

***Liquor Calumbæ Concentratus.**—Calumba root, in No. 5 powder, 10; 90 p. c. alcohol, 4·5; distilled water, *q.s.* to make 20. Macerate the calumba for 24 hours with 10 of water, press strongly, macerate the residue for 24 hours with 10 of water, again press strongly, mix the expressed liquids and heat for 5 minutes to 82° C. When cold, add the alcohol, set aside, filter, and add sufficient water to produce the required volume. Dose: ½ to 1 fl. dr.

*Liquor Caoutchouc.—Indiarubber, 1; benzol, 10; carbon bisulphide, 10. Cut the rubber into fine shreds, and place in a well-stoppered bottle containing the previously mixed liquids. Set aside in a cool place, and agitate occasionally until solution is effected.

*Liquor Chiratæ Concentratus.—Chiretta, in No. 40 powder, 10; 20 p. c. alcohol, *q.s.* to produce 20. Moisten the chiretta with 5 of alcohol, pack in a closed percolator, and set aside for three days, then percolate with 20 of alcohol, added in 10 equal portions at intervals of 12 hours, and continue percolation with more alcohol until the required volume of product is obtained. Dose: ½ to 1 fl. dr.

Liquor Cocainæ Hydrochloratis.—Now official as Injectio Cocainæ Hypodermica, which see.

*Liquor Cuspariæ Concentratus.—Cusparia bark, in No. 40 powder, 10; 20 p. c. alcohol, *q.s.* to produce 20. Proceed in the same manner as in preparing Liquor Chiratæ Concentratus. Dose: ½ to 1 fl. dr.

Liquor Epispasticus.—Cantharides, in No. 20 powder, 10; acetic ether, *q.s.* to produce 20.

*Liquor Ethyl Nitritis.—A mixture of 95 parts by volume of absolute alcohol with 5 of glycerin, containing, when freshly made, 3 p. c. by weight of ethyl nitrite, and even when long kept not less than 2·5 p. c. The ethyl nitrite is obtained by the interaction of 90 p. c. alcohol, sodium nitrite, and diluted sulphuric acid at a low temperature. Dose: 20 to 60 minims.

Liquor Ferri Acetatis.—Solution of ferric sulphate, 2·5; solution of ammonia, 4 or *q.s.*; glacial acetic acid, liquefied, 1·5; distilled water, *q.s.* to produce 20 of the solution. Mix the solution of ammonia with 20 of water, gradually add to this the ferric sulphate solution diluted with 20 of water, stir well together, keeping the ammonia in slight excess, and let the whole stand for two hours, stirring occasionally. Next, transfer to a calico filter, wash the precipitate with distilled water until free from sulphates, drain and squeeze to remove superfluous moisture, dissolve the precipitate in the glacial acetic acid, and make up the required volume with distilled water. Finally, allow any insoluble matter to subside and pour off the clear solution. S. g. 1·031. Dose: 5 to 15 minims.

Liquor Ferri Acetatis Fortior.—Omitted.

Liquor Ferri Dialysatus.—Omitted.

Liquor Ferri Perchloridi.—Formula unaltered. Dose: 5 to 15 minims.

Liquor Ferri Perchloridi Fortis.—Formula unaltered.

Liquor Ferri Pernitratis.—Formula unaltered. Dose: 5 to 15 minims.

Liquor Ferri Persulphatis.—Unaltered.

Liquor Gutta-Percha.—Omitted.

*Liquor Hamamelidis.—Macerate fresh hamamelis leaves, 50, in a mixture of water, 100, and 90 p. c. alcohol, 10, for 24 hours; then distil one-half.

Liquor Hydrargyri Nitratis Acidus.—Unaltered.

Liquor Hydrargyri Perchloridi.—The ammonium chloride is omitted from the formula. Dose: ½ to 1 fl. dr.

*Liquor Hydrogenii Peroxidi.—An aqueous solution of hydrogen, prepared by the interaction of water, barium peroxide, and a dilute mineral acid, at a temperature below 10° C. The solution should yield from 9 to 11 volumes of oxygen, and not more than 0·5 p. c. of solid residue should remain when it is evaporated to dryness on a water-bath. Dose: ½ to 2 fl. dr.

Liquor Iodi.—Omitted.

*Liquor Iodi Fortis.—Dissolve iodine, 25, and potassium iodide, 15, in distilled water, 25; then add 90 p. c. alcohol, 180, and shake. This preparation replaces the Linimentum Iodi of the 1885 B.P.

*Liquor Krameriæ Concentratus.—Krameria root, in No. 40 powder, 10; 20 p. c. alcohol, *q.s.* to produce 20. Proceed in the same manner as in preparing Liquor Chiratæ Concentratus. Dose: ½ to 1 fl. dr.

Liquor Lithiæ Effervescens.—Omitted.

Liquor Magnesii Carbonatis.—Unaltered.

Liquor Magnesii Citratis.—Omitted.

Liquor Morphinæ Acetatis.—Dissolve morphine acetate, 1, in a mixture of 90 p. c. alcohol, 25, distilled water, 25, and diluted acetic acid, 2; then dilute with sufficient distilled water to produce 100 of the solution. Dose: 10 to 60 minims.

Liquor Morphinæ Bimeconatis.—Omitted.

Liquor Morphinæ Hydrochloridi.—Dissolve morphine hydrochloride, 1; in a mixture of 90 per cent. alcohol, 25; distilled water, 25; and diluted hydrochloric acid, 2. Then dilute with sufficient distilled water to produce 100 of the solution. Dose: 10 to 60 minims.

Liquor Morphinæ Sulphatis.—Omitted.

*Liquor Morphinæ Tartratis.—Dissolve morphine tartrate, 1, in a mixture of 90 per cent. alcohol, 25, and distilled water, 25, then dilute with sufficient distilled water to produce 100 of the solution. Dose: 10 to 60 minims.

*Liquor Pancreaticus.—A liquid preparation containing the digestive principles of the fresh pancreas of the pig. Digest 5 parts of pancreas—freed from fat and external membrane and finely divided by trituration with washed sand or powdered pumice—in a closed vessel in 20 fluid parts of 20 per cent. alcohol for 7 days, then filter.

*Liquor Picis Carbonis.—Coal tar—prepared by heating the tar of commerce in a shallow vessel at 49° C. for 1 hour and stirring frequently—is emulsified by means of a tincture of quillaia. Moisten quillaia bark, in No. 20 powder, 2 parts, with 1 of 90 p. c. alcohol, and percolate with more alcohol until the product measures 20. To this add 4 of prepared coal tar, and digest the mixture at 49° C. for two days, stirring occasionally. Then cool, and decant or filter.

Liquor Plumbi Subacetatis Dilutus.—Alcohol (90 p. c.) is used in place of rectified spirit.

Liquor Plumbi Subacetatis Fortis.—Unaltered.

Liquor Potassæ.—Strength unaltered.

Liquor Potassæ Effervescens.—Omitted.

Liquor Potassii Permanganatis.—Potassium permanganate, 1, is dissolved in sufficient distilled water to produce 100.

*Liquor Quassiæ Concentratus.—Quassia wood, in No. 40 powder, 2; 20 p. c. alcohol, *q.s.* to produce 20. Moisten the quassia with 2 of alcohol, and proceed in the same manner as in preparing Liquor Chiratæ Concentratus. Dose: ½ to 1 fl. dr.

*Liquor Rhei Concentratus.—Rhubarb root, in No. 5 powder, 10; 20 p. c. alcohol, *q.s.* to produce 20. Proceed in the same manner as in preparing Liquor Chiratæ Concentratus. Dose: ½ to 1 fl. dr.

*Liquor Sarsæ Compositus Concentratus.—Sarsaparilla, cut transversely and bruised, 20; sassafras root, in shavings, 2; guaiacum wood, in shavings, 2; dried liquorice root, bruised, 2; mezereon bark, cut small, 1; 90 p. c. alcohol, 4·5; distilled water, *q.s.* to produce 20. Infuse the sarsaparilla in three successive portions of 100 fluid parts of distilled water, for 1 hour each, at 71° C. Boil the other solid ingredients with distilled water until exhausted, and rapidly concentrate the mixed infusion and decoction until, when cold, the liquid measures 16 fluid parts. Next add the alcohol, set aside for at least 14 days, and filter. The product should measure 20 fluid parts. Dose: 2 to 8 fl. dr.

*Liquor Senegæ Concentratus.—Senega root, in No. 20 powder, 10; a mixture of 2 parts of 20 p. c. alcohol and 1 part of 45 p. c. alcohol, *q.s.* to produce 20. Moisten the senega with 4 of the menstruum, and proceed as in preparing Liquor Chiratæ Concentratus. Dose: ½ to 1 fl. dr.

*Liquor Sennæ Concentratus.—Senna, in No. 5 powder, 20; tincture of ginger, 2·5; 90 p. c. alcohol, 2; distilled water, *q.s.* to produce 20. Divide the senna into three portions and exhaust by moistening with water, setting aside for 24 hours, then percolating and repercolating, as in the process for preparing Extractum Sarsæ Liquidum. Collect 16 fluid parts from the third percolator, heat the liquid to 82° C. for 5 minutes; then cool, and add the alcohol and tincture of ginger, previously mixed. Set aside for 7 days and filter. The product should measure 20 fluid parts. Dose: ½ to 1 fl. dr.

*Liquor Serpentariæ Concentratus.—Serpentary rhizome, in No. 40 powder, 10; 20 p. c. alcohol, *q.s.* to produce 20. Proceed in the same manner as in preparing Liquor Chiratæ Concentratus. Dose: ½ to 2 fl. dr.

Liquor Sodæ.—Omitted.

Liquor Sodæ Chlorinatæ.—Unaltered.

Liquor Sodæ Effervescens.—Omitted.

Liquor Sodii Arsenatis.—Sodium arsenate, recently rendered anhydrous, 1; distilled water, *q.s.* to produce 100. Dose: 2 to 8 minims.

Liquor Sodii Ethylatis.—Unaltered.

Liquor Strychninæ Hydrochloridi.—Dissolve strychnine hydrochloride, 1, in 90 p. c. alcohol, 25, mixed with sufficient distilled water to produce 100. Dose: 2 to 8 minims.

*Liquor Thyroidei.—A liquid prepared from the fresh and healthy thyroid gland of the sheep. Carefully selected glands,

taken from sheep immediatcly after killing, are sliced and bruised thoroughly in a mortar; then, for each entire gland, add 2 C.c. each of glycerin and 0·5 p. c. solution of phenol in distilled water. Transfer the mixture, well stirred, to a flask, and close the neck with a plug of cotton wool. Allow to stand for 24 hours, then strain through linen, with strong pressure, and add to the strained liquid sufficient of the 0·5 p. c. solution of phenol to make 6 C.c. of the thyroid solution for each gland used. The solution must be freshly prepared and kept in well-stoppered, sterilised bottles. Dose: 5 to 15 minims.

Liquor Trinitrini.—Dissolve trinitroglycerin of commerce, 1, in sufficient 90 p. c. alcohol to produce 100. S. g. 0 840. Dose: ½ to 2 minims.

Liquor Zinci Chloridi.—Formula practically unaltered, but the specific gravity is to be 1·530.

***Lithii Citras Effervescens.**—Mix lithium citrate, 5, with citric acid, in powder, 21, then add tartaric acid, in power, 31, and sodium bicarbonate, in powder, 58. Triturate thoroughly, and heat the mixture to a temperature between 93° and 104° C., until granulation is effected. Dry the granules at a temperature not exceeding 54° C. The product should weigh about 100.

Lotio Hydrargyri Flava.—The quantity of mercuric chloride is increased by one-ninth.

Lotio Hydrargyri Nigra.—Each 10 fluid parts must contain 0·5 of glycerin, and 1·25 of mucilage of tragacanth. Triturate the mercurous chloride with the glycerin and mucilage, transfer to a bottle, and add 2 fluid parts of the solution of lime; shake well, then add sufficient solution of lime to make up to 10 fluid parts.

Magnesii Sulphas Effervescens.—Formula unaltered, but it is directed that the granules are to be dried at a temperature not exceeding 54° C. Dose: 60 to 240 grains, for repeated administration; ½ to 1 ounce for a single administration.

Mel Boracis.—Unaltered.

Mel Depuratum.—Should not yield more than 0 2 p. c. of ash, nor contain starch.

Mistura Ammoniaci.—One-sixteenth part of the distilled water is to be replaced with syrup of tolu.

Mistura Amygdalæ—Formula unaltered. Dose: ½ to 1 fl. oz.

Mistura Creosoti.—The glacial acetic acid is omitted, the quantity of creosote increased by one-fifteenth, and the quantity of spirit of juniper is reduced so as to equal the amount of creosote. Finally, the volume of the finished product is increased by one-fifteenth. Dose: ½ to 1 fl. oz.

Mistura Cretæ.—Triturate prepared chalk, 1, with powdered tragacanth, 0·125, and refined sugar, 2, then add gradually sufficient cinnamon water to produce 32 of the mixture. Dose: ½ to 1 fl. oz.

Mistura Ferri Aromatica.—Omitted.

Mistura Ferri Composita.—The quantity of spirit of nutmeg is reduced to 50 minims, and the quantity of rose water is increased so as to make the volume of finished product the same as before. Dose: ½ to 1 fl. oz.

Mistura Guaiaci.—The gum acacia is replaced by 35 grains of powdered tragacanth. Dose: ½ to 1 fl. oz.

Mistura Olei Ricini.—Place mucilage of acacia, 1·5, in a mortar, and add to it, in alternate portions, castor oil, 3, and a mixture of strong orange-flower water, 1, and cinnamon water, 2·5, with constant trituration. Dose: ½ to 2 fl. oz.

Mistura Scammonii.—Omitted.

Mistura Sennæ Composita.—Dissolve magnesium sulphate, 5, in infusion of senna, 10. Then add a mixture of liquid extract of liquorice, 1; compound tincture of cardamoms, 2; and aromatic spirit of ammonia, 1, together with sufficient infusion of senna to make 20. Dose: 1 to 2 fl. oz.

Mistura Spiritus Vini Gallici.—Unaltered.

Mucilago Acaciæ.—The gum is to be rapidly rinsed with a little distilled water before dissolving it, and the mucilage must be strained.

Mucilago Tragacanthæ.—Alcohol (90 p. c.) replaces the rectified spirit, and the volume of finished product is to be that of the quantity of distilled water formerly ordered.

Oleatum Hydrargyri.—Omitted. See Hydrargyri Oleus.

Oleatum Zinci.—Omitted. See Unguentum Zinci Oleatis.

Oleo-Resina Cubebæ.—Omitted.

Oleum Phosphoratum.—This now contains 1 p. c., by weight, of phosphorus. Dose: 1 to 5 minims.

Oxymel.—The specific gravity must be 1·320.

Oxymel Scillæ.—Digest bruised squill 2·5, for 7 days in a mixture of acetic acid, 2·5, and distilled water, 8. Then press strongly, filter, and mix with sufficient clarified honey, liquefied, to produce an oxymel of s. g. 1·320.

Pilula Aloes Barbadensis.—Formula unaltered. Dose: 4 to 8 grains.

Pilula Aloes et Asafetidæ.—Formula unaltered except that the asafetida is directed in powder. Dose: 4 to 8 grains.

Pilula Aloes et Ferri.—The ferrous sulphate is replaced by two-thirds the quantity of the exsiccated salt, and the confection of roses by three-fourths its weight of syrup of glucose. Dose: 4 to 8 grains.

Pilula Aloes et Myrrhæ.—Socotrine aloes, in powder, 2; myrrh, in powder, 1; syrup of glucose, 1·5 or *q.s.* to make a mass. Dose: 4 to 8 grains.

Pilula Aloes Socotrinæ.—Formula unaltered. Dose: 4 to 8 grains.

Pilula Asafœtidæ Composita.—Name altered to Pilula Galbani Composita, which see.

Pilula Cambogiæ Composita.—The syrup is replaced by syrup of glucose. Dose: 4 to 8 grains.

Pilula Coloeynthidis Composita.—Formula unaltered, except that the potassium sulphate is directed to be in very fine powder. Dose: 4 to 8 grains.

Pilula Colocynthidis et Hyoscyami.—Formula unaltered. Dose: 4 to 8 grains.

Pilula Conii Composita.—Omitted.

Pilula Ferri.—Exsiccated ferrous sulphate, in fine powder, 150; exsiccated sodium carbonate, in fine powder, 95; gum acacia, in powder, 50; tragacanth, in powder, 15; syrup, 150; glycerin, 10; distilled water, 20 or *q.s.* In this instance both solids and liquids are to be weighed. Mix the liquids, add the ferrous sulphate, and mix; then add quickly the sodium carbonate and mix, set aside for 15 minutes, or until the reaction is complete, add the gums and incorporate thoroughly. Each 5-grain pill prepared from this mass should contain about 1 grain of ferrous carbonate. Dose: 5 to 15 grains.

Pilula Ferri Carbonatis.—Omitted.

Pilula Ferri Iodidi.—Omitted.

Pilula Galbani Composita.—Identical with Pilula Asafœtidæ Composita, except that syrup of glucose replaces the treacle. Dose: 4 to 8 grains.

Pilula Hydrargyri.—Formula unaltered. Dose: 4 to 8 grains.

Pilula Hydrargyri Subchloridi Composita.—The quantity of castor oil is reduced to 180 grains, and 1 fluid drachm or *q.s.* of 90 p. c. alcohol added. Dose: 4 to 8 grains.

Pilula Ipecacuanhæ cum Scilla.—Syrup of glucose replaces the treacle. Dose: 4 to 8 grains.

Pilula Phosphori.—Melt white beeswax, 12·5, and lard, 12·5, in a slightly warmed mortar, and stir to a creamy consistence. Then carefully mix with this a solution of phosporus, 1, in carbon bisulphide, 3 or *q.s.*, add kaolin, 11·5, and mix well together. Keep the mixture immersed in cold water in a bottle from which light is excluded. When dispensing, incorporate 1 part of powdered gum acacia with every three of the mixture, and varnish the pills. Dose: 1 to 2 grains.

Pilula Plumbi cum Opio.—The confection of roses is replaced by two-thirds its weight of syrup of glucose. Dose: 2 to 4 grains.

***Pilula Quininæ Sulphatis.**—Triturate quinine sulphate, 30, with powdered tartaric acid, 1; then add the product to a mixture of glycerin, 4 (by weight), and powdered tragacanth, 1. Dose: 2 to 8 grains.

Pilula Rhei Composita.—The glycerin and treacle are replaced by syrup of glucose, 2·75 oz. or *q.s.* Dose: 4 to 8 grains.

Pilula Saponis Composita.—The strong tincture of ginger and rectified spirit are replaced by an equal volume of tincture of ginger. Dose: 4 to 8 grains.

Pilula Scillæ Composita.—The treacle is replaced by half its weight of syrup of glucose. Dose: 4 to 8 grains.

***Pix Carbonis Præparata.**—Commercial coal tar is placed in a shallow vessel, and maintained at a temperature of 49° C. for 1 hour, stirring frequently.

Podophylli Resina.—The rectified spirit is replaced by 90 p. c. alcohol, and the distilled water, into which the distilled liquid is poured, is acidulated with one twenty-fourth of its bulk of hydrochloric acid. Dry the washed resin at a temperature not exceeding 38° C. Dose: ¼ to 1 grain.

(Continued on page 378.)

PHARMACEUTICAL SOCIETY.

EXAMINATIONS IN EDINBURGH.

April, 1898.

MAJOR EXAMINATION.

Candidates examined	.....	3
,, failed	.....	2
,, passed	.....	1

Laird, James Craigie.

MINOR EXAMINATION.

Candidates examined	.....	145
,, failed	.....	101
,, passed	.....	44

Allan, William Fleming.
Armstrong, Henry Swan.
Brayn, Percy Harold Garmeston.
Brunyee, Nathaniel.
Cheyne, Charles August.
Cole, Reginald.
Correy, Alexander.
Crofts, John Henry.
Dow, William Burgess.
Foreman, Albert Edward.
Foster, Ernest Upsall.
France, Hugh Archibald.
Grant, George Brown.
Grant, Peter.
Hitchon, Peter.
Hogg, George Templeton.
Holdsworth, Joseph.
Jelly, John William.
Jones, Henry Rogers.
Jones, William Luther.
Junor, Alexander Rose.
Kennedy, Robert.
Love, John Campbell Martin.
McCallum, Robert.
Mackenzie, Andrew.
McMaster, Peter.
Manson, John.
Metcalfe, Frank.
Morrison, John Lawson.
Muir, John.
Mushet, Robert.
Potts, George Henry.
Robertson, Charles Bryden.
Ross, James Daniel.
Shirras, Alexander Wilson.
Stokoe, John Calvert.
Stubbs, William Campion.
Sutherland, John James.
Taylor, Arthur Frederic.
Turton, Herbert.
Watson, Edward Alexander.
Wilkie, John Matthew.
Williams, David Thomas.
Wilson, James Bell.

EXAMINATIONS IN LONDON.

April, 1898.

MAJOR EXAMINATION.

Candidates examined	.....	39
,, failed	.....	18
,, passed	.....	21

Barlow, Thomas Oldham.
Black, William Reynolds.
Blackmore, Frank.
Burnett, John.
Chapman, Edgar Marsh.
Coley, James Wm. Ernest.
Day, John Edwin.
Evans, John Richard.
Exelby, George Henry.
Farrow, Tom.
Happold, Carl.
Henderson, Henry John.
Hornby, Frederick William.
Matthews, Harold Evan.
Morgan, Harold Marston.
Nelson, William Brown.
Perrédès, Pierre Elie Félix.
Priestman, William.
Smith, Fredk. Alfred Upsher.
Swinn, Charles Gosling.
Todd, Arthur Higgs.

"FIRST" EXAMINATION QUESTIONS.

April 12, 1898.

ENGLISH.

(Time allowed—from 3 p.m. to 4.30 p.m.)

1. Analyse:—

"Within the girdle of these walls
Are now confined two mighty monarchies,
Whose high upreared and abutting fronts
The perilous narrow ocean parts asunder."

2. Write out the subjunctive present of the verb *to be*, and the passive indicative future of the verb *to love*.

3. What are *primary derivative* adjectives? Form them from the following words:—*fill, pride, three.*

4. In the following passage supply the necessary capital letters, and put in the stops and the inverted commas where necessary:—this is sir charles vandrift the great diamond king marvi lier said introducing us so i see the man answered then you know me charles asked i wouldnt be worth much the detective replied if i didnt know everybody and youre easy enough to know why everybody in the street knows you

The following question must be attempted by every candidate:—

5. Write a short composition on one of the following subjects:—
(i.) The garden in early spring.
(ii.) Free libraries.
(iii.) English colonisation as compared with other systems.
(iv.) "Example is better than precept."

ARITHMETIC.

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

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

1. Reduce 174 cub. yd. 22 cub. ft. 580 cub. in. to cubic inches.
2. If 1 qr. 2 bus. 2 pk. of corn cost £1 1*s.* 10½*d.*, how many pecks can be purchased for £42 14*s.* 2*d.*?
3. Express 1⅛ of 7 guineas as a fraction of 1⅛ of £7 14*s.* 7*d.*
4. Reduce 2·6 of £·877083 to the decimal of half-a-sovereign.
5. By selling goods for 11*s.* 4½*d.* I lose 5 per cent. What shall I gain or lose per cent. by selling them for 14*s.*?
6. I sold £1000 4 per cent. Stock at £90, and with the proceeds bought a 3 per cent. Stock, gaining £10 per annum in income by the transaction. At what price did I buy the 3 per cent. Stock?

The following question must be attempted by every candidate:—

7. Write out the Metric Table of Weights.
Express 471685 grammes approximately in hundredweights, etc.

LATIN.

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

I. For all candidates. Translate into Latin:—

1. You will receive great praise.
2. His wife and son have been found.
3. I hear that he sings.
4. The Athenians accused Timotheus of high treason.
5. If you are disgusted with such citizens, judges, show it.

II. Translate into English *either* A (Caesar) *or* B (Virgil).

(Candidates must not attempt both authors.)

A.—Caesar.

1. Is ita cum Caesare egit: Si pacem populus Romanus cum Helvetiis faceret, in eam partem ituros atque ibi futuros Helvetios, ubi eos Caesar constituisset atque esse voluisset: sin bello persequi perseveraret, reminiscretur et veteris incommodi populi Romani, et pristinae virtutis Helvetiorum. Quod improviso unum pagum adortus esset, quum hi, qui flumen transissent, suis auxilium ferre non possent, ne ob eam rem aut suae magnopere virtuti tribueret, aut ipsos despiceret: se ita a patribus majoribusque suis didicisse, ut magis virtute quam dolo contenderent, aut insidiis niterentur.

2. Id ne accideret, magno opere sibi praecavendum Caesar existimabat. Namque omnium rerum, quae ad bellum usui erant, summa erat in eo oppido facultas; idque natura loci sic muniebatur, ut magnam ad ducendum bellum daret facultatem, propterea quod flumen Alduasdubis ut circino circumductum paene totum oppidum cingit; reliquum spatium, quod est non amplius pedum sexcentorum, qua flumen intermittit, mons continet magna altitudine, ita ut radices montis ex utraque parte ripae fluminis contingant.

Grammatical Questions.

(For those only who take Caesar.)

1. Give the genitive singular and the gender of *pacem, eam, Helvetios, bello, qui, flumen, rem, ipsos, partibus* (Passage 1).
2. Give the first person singular of the indicative perfect, and the infinitive present, of all the verbs in Passage 2.
3. What verbs in Latin take a double accusative? Write *two* sentences in illustration.
4. What is meant by the "Sequence of Tenses"? Give, in Latin, *two* sentences in illustration.

B.—Virgil.

1. At puer Ascanius, cui nunc cognomen Iulo
Additur (Ilus erat, dum res stetit Ilia regno),
Triginta magnos volvendis mensibus orbes
Imperio explebit, regnumque ab sede Lavini
Transferet, et Longam multa vi muniet Albam.
Hic jam ter centum totos regnabitur annos
Gente sub Hectorea; donec regina sacerdos,
Marte gravis, geminam partu dabit Ilia prolem.

2. Namque videbat, uti bellantes Pergama circum
Hac fugerent Graii, premeret Trojana juventus;
Hac Phryges, instaret curru cristatus Achilles.
Nec procul hinc Rhesi niveis tentoria velis
Agnoscit lacrymans; primo quae prodita somno
Tydides multa vastabat caede cruentus;
Ardentesque avertit equos in castra, prius quam
Pabula gustassent Trojae, Xanthumque bibissent.
Parte alia fugiens amissis Troïlus armis,
Infelix puer, atque impar congressus Achilli,
Fertur equis, curruque haeret resupinus inani,
Lora tenens tamen: huic cervixque comaeque trahuntur
Per terram, et versa pulvis inscribitur hasta.

Grammatical Questions.

(For those only who take Virgil.)

1. Give the genitive singular and the gender of *juventus, curru, quae, somno, caede, parte, alia, lora, cervix* (Passage 2).
2. Give the first person singular of the indicative perfect, and the infinitive present, of all the verbs in Passage 1.
3. What verbs in Latin take a double accusative? Give *two* sentences in illustration.
4. What is meant by the "Sequence of Tenses"? Give, in Latin, *two* sentences in illustration.

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OPTIMISM AND PESSIMISM IN PHARMACY.

Many of our readers, forgetful of their earlier impressions of the craft and yielding unresistingly to a baseless tendency to despair of improvement, may be inclined to doubt the reality of any optimistic feeling in pharmacy, not recognising that, like the occupants of a slowly moving vehicle, the surroundings of which are also tending in a similar direction, they may easily fail to detect the absolute change of position which is actually being effected. That movement, too, is an advance, in pharmacy as in every other department of legitimate human activity, for the average pharmacist of to-day is infinitely better off, in every way, than his immediate and more remote predecessors, whether he is inclined to acknowledge the fact or not. This position has been maintained in these pages for some time past, and quite recently confirmation of our assertion was supplied by the Lord Mayor of Manchester, who informed an important gathering of representative pharmacists that, in his opinion, based on the experience of fifty years' connection with pharmacy, the druggist holds a far higher social position to-day than he did formerly, that he is also better off financially, and that, given industry and ordinary economy, the chemist and druggist has no cause to grumble at his lot in comparison with that of other craftsmen. Something very like this is also reported from New York, where a well-known pharmacist, Mr. W. C. Alpers, has contrasted the position of the optimist and the pessimist in pharmacy.

As a young beginner, he contended, the pharmacist is generally very optimistic in his attitude. "He considers his stock complete and of the best quality, and there is no question in his mind that others will do the same. Difficulties in answering intricate questions or preparing medicines do not exist in his mind; he has learned enough, he knows it all. His confidence in his own power of attraction and persuasion is unlimited, and any sceptic remark of more experienced friends is lightly brushed aside." But his optimistic expectations are not realised, and he soon learns, by bitter disappointment that perils and dangers lurk at every step. Physicians or others whom he depended upon to support him may not realise his anticipations in that direction, and his hopeful optimism receives its first shock, whilst the public also assists in shattering the ideal. Perhaps the few that patronise him regularly keep running up long accounts, paying absolutely no attention to his monthly statements. Thus his youthful optimism receives another shock, and his confidence in human nature gives way to gloomier contemplations. Then comes the temptation to pernicious and frantic cutting of prices, and it is not long before the optimistic young pharmacist discovers that a bright sunrise does not necessarily usher in a sunny day. Then he becomes converted to pessimism.

A feeling of discontent grows upon him; he feels that he is being abused; his business becomes to him mere drudgery; he talks to everyone about his feelings, and annoys his customers by lamentations about the decadency of pharmacy; he also berates the "cutting" stores, forgetting frequently that he was himself the first to cut prices. Thus he sours on everything and everybody; in order to reduce expenses, he does more work—or puts in more working hours—than he ought; and being most of the time without an assistant, and thus continually confined to his own store, he sees little or nothing of the world, and runs short of the needed current information on political, social, and scientific interests. "This seclusion, this retirement from all social intercourse, is the greatest disadvantage of our profession, and the pharmacist, young or old, who yields to it, thereby takes the first step towards failure. . . . Instead of growing with his profession, he becomes rusty before he is thirty years old, and finds cause to wonder that the world moves at all." This lack of social and literary intercourse and the consequent disgust with the world, observed Mr. Alpers, breed peculiar and sometimes pernicious traits of character, which have earned for the pharmacist the often well-deserved title of "crank," and the worst of those traits is the unmeasured jealousy and envy with which he too often looks upon his neighbour. He objects to any reform, and is reluctant to allow innovations a trial, even though he holds that the general outlook for the profession is gloomy and discouraging. No! he openly avows that pharmacy is on the down-grade road, and makes no concealment of his bitter pessimism in regard to any brighter future. He discourses continually about "The passing of the drug shop," and sees in his own rooted aversion to progress the decadence of pharmacy.

Fortunately the above is only an extreme example, and the individual representative of a limited minority. Opposed to him and his class are many true disciples and exponents of pharmacy, to whom their daily work is not drudgery. They do not envy their fellow-craftsman every penny he earns, nor do they give vent to loud-mouthed and ill-natured plaints at meetings or among neighbours. "Their thoughts and actions take a nobler flight; they are the true working representatives of our profession, on whom its future depends. They will be ready to step to the front at the time when a higher and more professional character of demands will be made on the pharmacist, and the coming generation will then see a better and more satisfactory state of affairs than the present one." It is recognised that the present is a time of danger and doubt as to the outcome in the struggle between the old and the new, and it is consequently a time of strife; but no matter how hard this strife may be, how grave and severe the sacrifices imposed, this healthy-minded critic would have everyone keep the ideal aim ever before him, and he calls upon his fellow pharmacists to fight on with an intelligent, cheerful, but tempered optimism, based on the consciousness that in all struggles of development, the right, the good, and the exalted, must finally win, not by trickery or chance, but by virtue of its own value, greater usefulness, and its blessing to the individual, to the profession of pharmacy, and to the whole of humanity.

ANNOTATIONS.

The New Pharmacopœia now exists in the form in which it will be issued to the public, but the price is not yet fixed, nor the actual date of publication, those matters being dependent on the action of the Treasury authorities. As briefly stated last week, an advance copy of the book was sent to the *Pharmaceutical Journal*, and we were thus enabled to print a complete general review of the work, though no review has yet appeared in any other journal, pharmaceutical or medical. Having dealt with the work on general lines, we commence this week to publish such details as it appears desirable to render generally available in advance of the official publication of the new Pharmacopœia; in fact, the greater part of our present issue is devoted to that purpose. A complete survey is presented of the galenical and kindred preparations of the 1898 Pharmacopœia, and the information provided is so complete that no one with the 1885 Pharmacopœia in his hand, need experience any difficulty in proceeding at once to bring his old preparations up to date or to prepare new ones. If anything should not appear quite clear, an inquiry addressed to the Editor will receive a prompt response, as it is recognised that it is of the highest importance that full information concerning the changes about to be effected should be available as much as possible in advance of the actual publication of the new standard and guide.

The Changes Made in the official formulæ are enormous, and though but few of them are to be regarded as of primary importance, only a small minority of the existing preparations are unaffected by the sweeping wave of reform that is about to break on the devoted pharmacist's head. It may be considered, and with good reason, that a very large proportion of the alterations are hardly required. Apparently, the chief object in view has been to meet the medical practitioner's convenience by minimising the tax on his memory. As a result, the doses of the different classes of preparations have been grouped into as few classes as possible, and minor alterations innumerable have been made in formulæ and processes to enable that to be done more readily. A sense of irritation will doubtless affect many pharmacists when they note how needless and puerile many of those alterations are, and it will be difficult to avoid confessing that the revisers have missed a magnificent opportunity. Pedantry has been rampant in the compilation of the work, whilst an unsuccessful attempt has been made to convert it into a scientific text-book. Nevertheless, the Pharmacopœia of 1898 is a distinct improvement on its predecessors, and if ability has been lacking to make it what it ought to be, that fact can only be regretted.

The Weights and Measures directed to be used in the preparation of medicines are, of course, those of both the Imperial and metric systems, and in that respect alone great lack of judgment has been shown. If there be any good and sufficient reason for postponing the adoption of the metric system in its entirety in the British Pharmacopœia, there can at least be no possible objection to the use of "parts" and "fluid parts." If that plan had been resorted to, either Imperial or metric weights and measures could have been employed at will without any risk of confusion, but that is more than can be said of the arrangement actually adopted. Danger undoubtedly lies in the close juxtaposition of Imperial and metric quantities, for they are never more than approximately equivalent, and in most cases are not even that. Moreover, fractional differences exist in connection with some formulæ, with the result that certain preparations will differ in the proportions of ingredients they contain, according as materials are weighed or measured with Imperial or metric weights and measures. Why, too, should temperatures have been stated primarily in degrees Fahrenheit, with the result that the equivalents in degrees Centigrade more often than not contain awkward fractions? Even the most conservative amongst us would not have been likely to take objection to the sole use of the Celsius scale. Reverting to the metric system, it is stated in the appendix that 1·00016 cubic centimetre = 1 millilitre, and that 1·00016 cubic decimetre = 1 litre or 1000 millilitres. The differences are so trivial that they do not justify the distinction between the quantities in regard to any pharmaceutical operation. Thus the difference amounts to one four-hundredth part (0·0025) of a grain on the cubic centimetre, and only 2·5 grains on the litre. This is a ludicrous pretence at accuracy, and of no practical value. In this respect the Pharmacopœia cannot be regarded as a safe guide, and we must warn our readers not to be too precipitate in purchasing metric measures adjusted at 15°·5 C., for it is more than probable that, for purposes of trade, such measures would be regarded as illegal, and it is also doubtful if the Standards Office would recognise the cubic centimetre or cubic decimetre in connection with fluid measures.

The Alcohol Strengths of the new B.P. are entirely different from those of the 1885 Pharmacopœia. Thus, the three spirits at present in use are Absolute Alcohol (s. g. 0·797 to 0·800), 74·1 to 73·1 over proof; Rectified Spirit (s. g. 0·838), 56 o. p.; and Proof Spirit (s. g. 0·920). At 15°·5 C., proof spirit, according to Stevenson, contains 57·05 per cent. of ethyl hydroxide by volume, and has a specific gravity of 0·9198. Henceforth, there will be the following six strengths of alcohol recognised officially:—

Percentage by volume.	Sp. gr. at 15°·5 C.	Sp. gr. (Stevenson).	Percentage of Proof Spirit.	Proof Strength.
99·95 to 99·4	0·7940 to 0·7969	0·7939 to 0·7957	175·2 to 174·5	75·2 o. p. to 74·5 o. p.
90	0·8340	0·8338	157·7	57·7 o. p.
70	0·8900	0·8899	122·7	22·7 o. p.
60	0·9135	0·9135	105 2	5·2 o. p.
45	0 9436	0·9436	78·8	21·2 u. p.
20	0·9760	0·9760	35·1	64·9 u. p.

It is stated in the preface to the new B.P. that "Alcohol (90 per cent.), is the name given to a mixture containing in one hundred volumes ninety of ethyl hydroxide and ten of water." But such a statement gives a misleading impression, for if ninety volumes of ethyl hydroxide were mixed with ten of water, the product would measure less than one hundred volumes. Similarly, if the ethyl hydroxide in one hundred volumes of alcohol (90 per cent.) were entirely removed, and measured exactly ninety volumes, the residual water must measure more than ten volumes. It would have been better, therefore, to state simply that alcohol (90 per cent.) contains, in one hundred volumes, ninety of ethyl hydroxide, leaving the volume of water present out of the question. Another curious point in connection with the spirits of the new B.P. is that it is necessary to look under "Spiritus Rectificatus" to find what are the strengths of the various spirits to be employed. Rectified Spirit is given as a synonym for alcohol (90 per cent.), but the term "rectified spirit" is not employed in a single formula. Its continued existence seems unnecessary therefore, whilst the monograph on alcohol would have been more in place if it had preceded that on "Alcohol Absolutum."

The Descriptions of Crude Drugs, detailed consideration of which is deferred for the present, are perhaps the most commendable features in the new B.P. It was quite time that steps were taken to prevent the use, in medicine and pharmacy, of the tons of inferior stuff imported into this country, and by amplifying the lists of characters and tests for the official drugs, much has been done in the direction of checking the sale of such inferior material as of B.P. quality, and its employment in the manufacture of official galenical preparations. Standardisation of drugs is, and probably will continue to be, impracticable in a great majority of instances, but whenever a definite test of quality can be resorted to, it most certainly ought to be referred to in our national medicine book. With regard to other points of interest in the new B. P., it is satisfactory to note that all alcoholic solutions of essential oils are now described as "Spirits." They are also in nearly every case made of the strength of one volume of the oil to nine of 90 per cent. alcohol. Each tincture, again, is made with the strength of alcohol that appears best adapted to extract the medicinal principles of the drug. The tinctures of cinchona and opium are, as previously, to contain a definite proportion of "total alkaloid," but tincture of nux vomica is now to be standardised on the proportion of strychnine it contains. Belladonna and ipecacuanha preparations are also standardised, and though it seems a pity nothing is stated with regard to the identity of the alkaloids of ipecacuanha root, satisfaction must be expressed with what has been done, so far as it goes.

Concentrated Infusions have crept into official recognition a last, under the guise of "Liquores Concentrati." They are practically tinctures of the drugs, and their use need not be expected to displace infusions, properly so-called, yet awhile, the more especially as improvement has been effected in the direction of simplifying the preparation of the latter and shortening the time required for their preparation. Several well-known proprietary preparations are officially represented for the first time, and others have been altered so as to resemble their prototypes more closely. It should also be gratifying to the compilers of the B.P.C. Formulary to note how many of their formulæ have been copied or adapted. Possibly if the Conference authorities could see their way to extending the scope of the Formulary, and increasing it largely in size—so as to resemble the German 'Arzneimittel die im Deutschen Arzneibuch nicht enthalten sind'—much trouble would be spared the compilers of future pharmacopœias, whilst more generally satisfactory formulæ would be included therein, and pharmacists would receive more recognition in the work of compilation than they now do. What is required, in fact, is an extra-pharmacopœia such as was recently suggested by Dr. Wilkinson (see *ante*, p. 311), in which suggested new remedies and preparations could be included until they acquired established reputation. The present moment, too, seems a good time to take the matter in hand, so that when pharmacopœia revision is again in the air, the work of organisation will not need to be taken in hand at short notice.

Opposition to the Pharmacy Bill, on the part of Mr. Alexander Cross, M.P., is not yet at an end. At a meeting of the directors of the Scottish Chamber of Agriculture in Edinburgh last week, the Secretary read letters from Mr. Cross regarding the sale of sheep dips, insecticides, etc., in which he advocated amendment of the law "so that the power and monopoly of pharmaceutical chemists" in selling such stuffs would not be increased. The Pharmacy Acts Amendment Bill, it was said, would prevent these being sold by any dealers other than chemists *(sic)*. Mr. Cross, however, desires to extend the privilege of selling such goods, and in effect pleads for free trade in what, he said, are becoming necessities for agriculturists. By the present system, he alleges prices are kept up considerably. After consideration of this extremely one-sided and inaccurate statement, it was agreed, on the motion of Mr. John Spier, of Newton, to petition the Board of Agriculture in favour of the amendments to the Pharmacy Act which Mr. Cross intends to bring forward.

A New Application of the Röntgen Rays is reported from Vienna, some interesting particulars of a new application of the Röntgen rays for curative purposes having been communicated by Dr. Edward Schiff, lecturer at the Vienna University, at the last sitting of the Imperial and Royal Medical Society. It is stated that a series of experiments conducted by Dr. Schiff and his assistant proves that the rays can be used for the cure of disease in a manner capable of perfect control by means of a more or less intense application for a longer or shorter period, producing reaction in the exact degree required. In this way it has been possible for Dr. Schiff, on the one hand, to remove hair from parts of the body where it constituted a disfigurement without causing the slightest inflammation, while, on the other hand, he has been able to treat lupus with uniform success by means of an artificial inflammation, the intensity of which he was in a position to increase or reduce at will. The results secured by the new method both in the removal of superfluous hair and the treatment of lupus were demonstrated in the persons of some of Dr. Schiff's patients.

Sir William Turner, the new President of the General Medical Council, is not, after all, it appears, to take up his residence in London. No condition was imposed upon him when he was appointed to the position, and had the appointment affected his residence or his occupancy of his professorial chair at Edinburgh University, it is said to be more than likely that Sir William would have refused the nomination.

A Botanic Garden at Aberdeen is to perpetuate the memory of the late Dr. Alexander Cruikshank, the fact being intimated at a meeting of the Aberdeen University Endowments Association a few days ago, that a donation of £15,000 had been received from Miss Jane Cruikshank, with the view of providing such a garden in memory of her brother.

Honorary Members of the Pharmaceutical Society may be elected by the Council, from time to time, and in accordance with the Bye-laws a list is at present exhibited in the Society's Library of persons whom it is proposed to distinguish in that way. The following names are on the list:—Daniel John Leech, M.D., F.R.C.P., Professor of Materia Medica and Therapeutics, Victoria University; William Ramsay, Ph.D., F.I.C., F.R.S., Professor of Chemistry, University College, London; Ira Remsen, Professor of Chemistry at the Johns Hopkins University, Baltimore.

Mr. Horace T. Brown, F.R.S., was honoured on Wednesday, April 13, by having the degree of Doctor of Laws, of the University of Edinburgh, publicly conferred upon him. Mr. Brown was a pupil of Hofmann and Frankland, and from an early age has devoted himself to chemical research, so that he now holds a pre-eminent place amongst those experimentalists whose labours have been crowned with fruitful results. The range of his scientific activity has been extensive, and his published papers constitute a massive and important contribution to chemical, biological, and geological literature. In particular, it is worthy of mention that his investigations in connection with plant physiology, the chemistry of carbo-hydrates, and the action of enzymes on starch, cellulose, and other substances, entitle him to be regarded as the chief authority on these subjects.

The British Pharmacopœia, 1898.

Formulæ and Processes—Alterations, Additions, and Omissions.

(Continued from page 373.)

Potassa Sulphurata.—Formula unaltered.

Pulvis Amygdalæ Compositus.—Formula unaltered.

Pulvis Antimonialis.—Formula unaltered. Dose: 3 to 6 grains.

Pulvis Catechu Compositus.—Formula unaltered. Dose: 10 to 40 grains.

Pulvis Cinnamomi Compositus.—Formula unaltered. Dose: 10 to 40 grains.

Pulvis Cretæ Aromaticus.—The saffron is omitted. Dose: 10 to 60 grains.

Pulvis Cretæ Aromaticus cum Opio.—Formula and dose unaltered.

Pulvis Elaterini Compositus.—Formula unaltered. Dose: 1 to 4 grains.

Pulvis Glycyrrhizæ Compositus.—Formula unaltered. Dose: 60 to 120 grains.

Pulvis Ipecacuanhæ Compositus.—Formula and dose unaltered.

Pulvis Jalapæ Compositus.—Formula and dose unaltered.

Pulvis Kino Compositus.—Formula and dose unaltered.

Pulvis Opii Compositus.—Formula unaltered. Dose: 2 to 10 grains.

Pulvis Rhei Compositus.—Formula and dose unaltered.

Pulvis Scammonii Compositus.—Formula and dose unaltered.

Pulvis Sodæ Tartaratæ Effervescens.—Formula unaltered.

Pulvis Tragacanthæ Compositus.—Formula and dose unaltered.

Pyroxylinum.—Formula unaltered.

Scammoniæ Resina.—The rectified spirit is replaced by 90 p. c. alcohol, and the scammony root exhausted by percolation only. Dose: 3 to 8 grains.

Sevum Præparatum.—Melting point 44°·4 to 48°·9 C.; commences to re-solidify at about 37°·8 C.

Soda Tartarata.—Prepared by neutralising acid potassium tartrate with sodium carbonate.

Sodii Citro-Tartras Effervescens.—Formula unaltered. Dose: 60 to 120 grains.

Sodii Phosphas Effervescens.—Formula unaltered. Dose: 30 to 120 grains, for repeated administration; ¼ to ½ an ounce for a single administration.

Sodii Sulphas Effervescens.—Formula unaltered. Dose: 60 to 120 grains, for repeated administration; ¼ to ½ an ounce for a single administration.

Spiritus Ætheris.—The rectified spirit is replaced by 90 p. c. alcohol. S.g. 0·806 to 0·811. Dose: 20 to 40 minims, for repeated administration; 60 to 90 minims, for a single administration.

Spiritus Ætheris Compositus.—Distillation is to be continued until the temperature reaches 171°·6 C. Add to the supernatant liquor with 1·5 fl. oz. of distilled water and, gradually, sufficient sodium bicarbonate to nearly neutralise the liquid. Then separate the ethereal liquid, and add to it ether, 5·5 fl. oz., and 90 p. c. alcohol, 38 fl. oz. Finally, filter. S.g. 0·808 to 0·812. Dose: 20 to 40 minims, for repeated administration; 60 to 90 minims, for a single administration.

Spiritus Ætheris Nitrosi.—The rectified spirit is replaced by 90 p. c. alcohol, half of which is to be placed in the receiver. The finished product must contain 2·5 p. c. of ethyl nitrite, and is recommended to be kept in a cool, dark place in small bottles. S.g. 0·838 to 0·842. Dose: 20 to 40 minims, for repeated administration; 60 to 90 minims, for a single administration.

Spiritus Ammoniæ Aromaticus.—The rectified spirit is replaced by 90 p. c. alcohol. S.g. 0·888 to 0·893. Dose: 20 to 40 minims, for repeated administration; 60 to 90 minims, for a single administration.

Spiritus Ammoniæ Fetidus.—The rectified spirit is replaced by 90 p. c. alcohol. Dose: 20 to 40 minims, for repeated administration; 60 to 90 minims, for a single administration.

*Spiritus Anisi.—Oil of anise, 1; 90 p. c. alcohol, *q.s.* to make 10. Dose: 5 to 10 minims.

Spiritus Armoraciæ Compositus.—The proof spirit is replaced by five-eighths the volume of 90 p. c. alcohol, whilst the quantity of distilled water is doubled.

Spiritus Cajuputi.—Oil of cajuput, 1; 90 p. c. alcohol, *q.s.* to make 10. Dose: 5 to 20 minims.

Spiritus Camphoræ.—Camphor, 1; 90 p. c. alcohol, *q.s.* to make 10. Dose: 5 to 20 minims.

Spiritus Chloroformi.—Chloroform, 1; 90 p. c. alcohol, *q.s.* to make 20. Dose: 5 to 20 minims, for repeated administration; 30 to 40 minims, for a single administration.

Spiritus Cinnamomi.—Oil of cinnamon, 1; 90 p. c. alcohol, *q.s.* to make 10. Dose: 5 to 20 minims.

Spiritus Juniperi.—Oil of juniper, 1; 90 p. c. alcohol, *q.s.* to make 20. Dose: 20 to 60 minims.

Spiritus Lavandulæ.—Oil of Lavender, 1; 90 p. c. alcohol, *q.s.* to make 10. Dose: 5 to 20 minims.

Spiritus Menthæ Piperitæ.—Oil of peppermint, 1; 90 p. c. alcohol, *q.s.* to make 10. Dose: 5 to 20 minims.

Spiritus Myristicæ.—Distilled oil of nutmeg, 1; 90 p. c. alcohol, *q.s.* to make 10. Dose: 5 to 20 minims.

Spiritus Rectificatus.—Alcohol (90 p. c.) of s. g. 0·834. To produce weaker spirits, dilute each 100 fluid parts of 70 p. c. alcohol (s. g. 0·890) with 31·05 of distilled water, at 15°·5 C.; for 60 p. c. alcohol (0·9135), add 53·65 of water; for 45 p. c. (s. g. 0·9436), add 105·34; and for 20 p. c. (s. g. 0·976), add 355·8.

Spiritus Rosmarini.—Oil of rosemary, 1; 90 p. c. alcohol, *q.s.* to make 10.

Spiritus Tenuior.—Omitted.

Spiritus Vini Gallici.—Must contain not less than 36·5 p. c. by weight, or 43·5 p. c. by volume, of ethyl hydroxide.

Succus Belladonnæ.—Preserved with 90 p. c. alcohol.

Succus Conii.—Preserved with 90 p. c. alcohol. Dose: 1 to 2 fl. dr.

Succus Hyoscyami.—Preserved with 90 p. c. alcohol.

Succus Limonis.—Freshly expressed from ripe fruit, and containing 7 Gm. to 9 Gm. of citric acid in 100 C.c. S.g. 1·03 to 1·04.

Succus Scoparii.—Preserved with 90 p. c. alcohol.

Succus Taraxaci.—Preserved with 90 p. c. alcohol.

† **Suppositora.**—In making suppositoria more or less white beeswax may be used in place of an equivalent amount of theobroma oil, in India and the Colonies.

*Suppositoria Acidi Carbolici.—Dissolve phenol, 12 grains, in a mixture of white beeswax, 24 grains, and threobroma oil, *q.s.* to fill twelve 15-grain moulds.

Suppositoria Acidi Carbolici cum Sapone.—Omitted.

Suppositoria Acidi Tannici.—Formula unaltered.

Suppositoria Acidi Tannici cum Sapone.—Omitted.

*Suppositoria Belladonnæ.—Alcoholic extract of belladonna, 18 grains; theobroma oil, *q.s.* to make 12 suppositories, as directed for Suppositoria Acidi Tannici.

Suppositoria Glycerini.—Formula unaltered.

Suppositoria Hydrargyri.—Omitted.

Suppositoria Iodoformi.—Formula unaltered.

Suppositoria Morphinæ.—Morphine hydrochloride, 3 grains; theobroma oil, *q.s.* to make 12 suppositories.

Suppositoria Morphinæ cum Sapone.—Omitted.

Suppositoria Plumbi Composita.—Formula unaltered.

Syrupus.—Formula unaltered.

*Syrupus Aromaticus.—Mix tincture of orange, 5, and cinnamon water, 5; shake the mixture with a little powdered talc, then filter, and add syrup 10. Dose: ½ to 1 fl. dr.

Syrupus Aurantii.—Formula unaltered. Dose: ½ to 1 fl. dr.

Syrupus Aurantii Floris.—Undiluted orange-flower water must be used. Dose: ½ to 1 fl. dr.

*Syrupus Calcii Lactophosphatis.—Add precipitated calcium carbonate, 2·5, gradually to lactic acid, 6, diluted with 4 times its volume of distilled water. When solution is complete, add concentrated phosphoric acid, 4·6, and triturate until the precipitate which forms is dissolved. Next, dilute the solution with a little distilled water, add undiluted orange-flower water, 2·5; then filter and dissolve in the liquid refined sugar, 70. Finally, strain and make up the volume with distilled water to 100. Dose: ½ to 1 fl. dr.

*Syrupus Cascaræ Aromaticus.—Liquid extract of cascara

sagrada, 8 ; tincture of orange, 2 ; 90 p. c. alcohol, 1 ; cinnamon water, 3 ; syrup, 6. Dose : ½ to 2 fl. dr.

Syrupus Chloral.—Formula and dose unaltered.

***Syrupus Codeinæ.**—Dissolve codeine phosphate, 40 grains, in distilled water, 0·25 fl. oz. ; then add to syrup, 19·75 fl. oz. Dose : ½ to 2 fl. dr.

Syrupus Ferri Iodidi.—Iron wire, 25 ; iodine, 83 ; refined sugar, 825 ; distilled water, *q.s.* to make 1000. The process is practically unaltered. S.g. 1·380 to 1·387. The syrup should contain 1 grain of ferrous iodide in each 11 minims.

Syrupus Ferri Phosphatis.—Dissolve iron wire, 8·6, in concentrated phosphoric acid, 62·5, diluted with an equal volume of distilled water, heating gently in a small flask, the neck of which is plugged with cotton wool. When cold filter the solution into syrup, 700, and pass sufficient distilled water through the filter to make the product measure 1000. The syrup should contain the equivalent of 1 grain of anhydrous ferrous phosphate in each fluid drachm. Dose : ½ to 1 fl. dr.

***Syrupus Ferri Phosphatis cum Quinina et Strychnina.**—Proceed as in making Syrupus Ferri Phosphatis, but before filtering the iron solution into the syrup, dissolve in the former powdered strychnine, 0·57, and quinine sulphate, 14·8, for each 1000 fluid parts of syrup required. The finished syrup should contain 1/32 grain of strychnine and 4/5 grain of quinine sulphate, in each fluid drachm. Dose : ½ to 1 fl. dr.

Syrupus Ferri Subchloridi.—Omitted.

***Syrupus Glucosi.**—Mix liquid glucose, of commerce, 1, and syrup, 2.

Syrupus Hemidesmi.—Formula unaltered. Dose : ½ to 1fl. dr.

Syrupus Limonis.—Macerate fresh lemon peel, in thin slices or grated, 1, in 90 p. c. alcohol, 1·5, for 7 days, press, filter, and add sufficient alcohol to produce 2. Then dissolve refined sugar, 38, in clarified lemon juice, 25, by the aid of gentle heat, and when the resulting syrup is cold, add to it the alcoholic liquid. Dose : ½ to 1 fl. dr.

†**Syrupus Limonis.**—In India and the Colonies, dried instead of fresh lemon peel may be used in preparing this syrup.

Syrupus Mori.—Omitted.

Syrupus Papaveris.—Omitted.

***Syrupus Pruni Virginianæ.**—Moisten Virginian prune bark, in No. 20 powder, 3, with distilled water, and set aside for 24 hours in a closed vessel ; then percolate with more water until the percolate measures 9. Dissolve in this, by agitation, refined sugar, 15, add glycerin, 1·25, strain, and pour sufficient water over the strainer to produce 20. Dose : ½ to 1 fl. dr.

Syrupus Rhei.—Alcohol (90 p. c.) replaces the rectified spirit. Dose : ½ to 2 fl. dr.

Syrupus Rhœados.—Alcohol (90 p. c.) replaces the rectified spirit. Dose : ½ to 1 fl. dr.

†**Syrupus Rhœados.**—In India and the Colonies, the proportion of 90 p. c. alcohol in this preparation may be increased to double the proportion stated in the official formula, an equivalent quantity of water being omitted.

Syrupus Rosæ.—Identical with Syrupus Rosæ Gallicæ of the 1885 B.P. Dose : ½ to 1 fl. dr.

Syrupus Scillæ.—The quantity of sugar ordered is reduced by one-twentieth.

Syrupus Sennæ.—Senna, 40 ; 90 p. c. alcohol, 70 ; refined sugar, 50 ; distilled water, *q.s.* ; a mixture of 1 part of oil of coriander and 4 parts of 90 p. c. alcohol, 1 minim for each ounce of sugar, or 1 C.c. for each 500 Gm. Moisten the senna with 40 of alcohol, pack tightly in a closed vessel, set aside for 3 days, press strongly and reserve the liquid obtained. Break up the marc, moisten it with 15 of alcohol, set aside for 24 hours, press, and add the liquid to that reserved ; then repeat the operation with the remaining 15 of alcohol, reducing the time of maceration to 3 hours and evaporating the liquid finally expressed until it is reduced to such volume that, when added to the reserved portion, the whole shall measure 40 fluid parts. Now heat the product in a covered vessel to 82° C. for a few minutes, set aside for 24 hours, then filter, pass distilled water through the filter until the liquid again measures 40, and dissolve the sugar in it, in a covered vessel, by the aid of gentle heat. Finally, cool the syrup, add the solution of oil of coriander, and shake well. The product should weigh 92 parts. Dose : ½ to 2 fl. dr.

Syrupus Zingiberis.—Percolate ginger, in fine powder, 1, with 90 p. c. alcohol, *q s.* to produce 1. To the resulting strong tincture add sufficient syrup to make 20. Dose : ½ to 1 fl. dr.

Syrupus Tolutanus.—Formula unaltered. Dose ½ to 1 fl. dr.

Tabellæ Trinitrini.—These are the Tabellæ Nitroglycerini, doubled in weight, but of the same strength as formerly.

***Thyroideum Siccum.**—Prepared from the fresh and healthy thyroid gland of the sheep, after removing external fat and connective tissue. Mince the glands finely, dry at a temperature of 32° to 38° C., powder the dried product, remove all fat with petroleum spirit, and again dry. Dose : 3 to 10 grains.

Tincturæ.—In several instances the new B.P. processes for preparing tinctures are described in full in the official monographs, and sufficiently so for all practical purposes in the abstracts here given. Where, however, it is simply stated that the solid materials are to be percolated or macerated, one or other of the following methods of procedure must be adopted :—*Percolation* : After moistening with the prescribed quantity of menstruum, set aside in a closed vessel for 24 hours. Then pack in a percolator, in a manner to be determined by the nature of the materials, and pour on successive portions of the menstruum, always maintaining a layer of liquid above the materials. Percolation should proceed slowly at first, and afterwards less slowly, until sufficient menstruum has been used to produce about three-fourths of the required volume of finished tincture, or until the solid materials have been exhausted. Then remove the marc and submit it to pressure. Filter the expressed liquid, if necessary, either at once or after standing for 24 hours ; mix the filtrate with the percolate, and then add sufficient menstruum to produce the prescribed volume of tincture. *Maceration* : Place the solid materials in the whole of the menstruum, in a closed vessel, for 7 days, frequently agitating. Strain, press the marc, mix the expressed with the strained liquid, and filter if necessary.

Tinctura Aconiti.—Moisten aconite root, in No. 40 powder, 1, with 70 p. c. alcohol, 0·5, percolate with that menstruum, so as to produce 20 of tincture. Dose : 5 to 15 minims ; if very frequently repeated, 2 to 5 minims.

Tinctura Aloes.—Macerate extract of Barbados aloes, 0·5, in 45 p. c. alcohol, 16, for 48 hours ; then add liquid extract of liquorice, 3, filter, and pass sufficient of the alcohol through the filter to produce 20 of tincture. Dose : ½ to 1 fl. dr., for repeated administration ; 1½ to 2 fl. dr., for a single administration.

Tinctura Arnicæ.—Moisten arnica rhizome, in No. 40 powder, 1 ; with 70 p. c. alcohol, 1, and percolate with that menstruum so as to produce 20 of tincture.

Tinctura Asafetidæ.—Macerate bruised asafetida, 4, in 70 p. c. alcohol, 15, for 7 days ; then filter and pass sufficient of the alcohol through the filter to produce 20 of tincture.

Tinctura Aurantii.—Macerate fresh bitter-orange peel, cut small, 5, in 90 p. c. alcohol, 20. Dose : ½ to 1 fl. dr.

Tinctura Aurantii Recentis.—Omitted.

Tinctura Belladonnæ.—Add to liquor extract of belladonna, 2, sufficient 60 p. c. alcohol to produce 30 of tincture ; sat aside for 24 hours and filter. The amount of alkaloid in 100 C.c. should be between 0·048 Gm. and 0·052 Gm. Dose : 5 to 15 minims.

Tinctura Benzoini Composita.—The rectified spirit is replaced by 90 p. c. alcohol, in which the other ingredients are macerated for 2 days, with frequent agitation.

Tinctura Buchu.—Moisten buchu leaves in No. 20 powder, 4, with 60 p. c. alcohol 4, and percolate with that menstruum, so as to produce 20 of tincture. Dose : ½ to 1 fl. dr.

Tinctura Calumbæ.—Macerate calumba root in No. 20 powder, 2, in 60 p. c. alcohol, 20. Dose : ½ to 1 fl. dr.

Tinctura Camphoræ Composita.—The powdered opium is replaced by tincture of opium, 585 minims, and the proof spirit by 60 p. c. alcohol. Dissolve the other ingredients in the alcohol, add the tincture, and make up to the specificd volume, filtering if necessary. The finished tincture should contain the equivalent of 1/30 grain of morphine hydrochloride, or ¼ grain of opium (containing 10 p. c. of anhydrous morphine), in each fluid drachm. Dose : ½ to 1 fl. dr.

Tinctura Cannabis Indicæ.—Dissolve extract of Indian hemp, 1, in 90 p c. alcohol, 18 ; filter if necessary and add sufficient alcohol to produce 20 of tincture. Dose : 5 to 15 minims.

Tinctura Cantharidis.—Macerate cantharides, in No. 40 powder, 0·25, in 90 p. c. alcohol, 20. Dose : 5 to 15 minims ; if frequently repeated, 2 to 5 minims.

Tinctura Capsici.—Macerate capsicum, in No. 20 powder, 1, in 70 p.c. alcohol, 20. Dose : 5 to 15 minims.

Tinctura Cardamomi Composita.—The proof spirit is replaced by 60 p. c. alcohol, and the tincture prepared by maceration only. Dose : ½ to 1 fl. dr.

Tinctura Cascarillæ.—Moisten cascarilla, in No. 40 powder, 4, with 70 p. c. alcohol, 3, and percolate with that menstruum so as to produce 20 of tincture. Dose: ½ to 1 fl. dr.

Tinctura Catechu.—Macerate coarsely-powdered catechu, 4, and bruised cinnamon bark, 1, in 60 p. c. alcohol, 20. Dose: ½ to 1 fl. dr.

Tinctura Chiratæ.—Moisten chiretta, in No. 40 powder, 2, with 60 p. c. alcohol, 2, and percolate with that menstruum so as to produce 20. Dose: ½ to 1 fl. dr.

Tinctura Chloroformi Composita.—Omitted.

Tinctura Chloroformi et Morphinæ Composita.—Mix chloroform, 75; tincture of capsicum, 25; tincture of Indian hemp, 100; oil of peppermint, 1·5; glycerin, 250; and 90 p. c. alcohol, 450. Dissolve morphine hydrochloride, 10, in the mixture; add diluted hydrocyanic acid (2 p. c.), 50; then mix with enough of the alcohol to produce 1000 of the tincture. This preparation contains ¾ minim of chloroform, ½ minim of diluted hydrocyanic acid, and 1/11th grain of morphine hydrochloride, in each 10 minims. Dose: 5 to 15 minims.

Tinctura Cimicifugæ.—Moisten cimicifuga, in No. 40 powder, 2, with 60 p. c. alcohol, 1, and percolate with that menstruum so as to produce 20 of tincture. Dose: ½ to 1 fl. dr.

Tinctura Cinchonæ.—Moisten red cinchona bark, in No. 40 powder, 4, with 70 p. c. alcohol, 4, and set aside for 24 hours in a closed vessel; then percolate with more of the alcohol until the product measures 14. Press the marc, add the expressed liquid to the percolate, set aside for 24 hours, and filter. Determine the alkaloidal strength of 10 C.c. of the filtrate by the assay process given for Extractum Cinchonæ Liquidum, and add to the bulk of the strong tincture such a quantity of 70 p. c. alcohol that 100 C.c. of the product shall contain 1 Gm. of alkaloids. Dose: ½ to 1 fl. dr.

Tinctura Cinchonæ Composita.—The red cinchona bark is replaced by an equivalent quantity of tincture of cinchona, and the proof spirit by 70 p. c. alcohol. The orange peel should be well bruised and the serpentary in No. 40 powder. Macerate the solid ingredients for 7 days in a quantity of alcohol equal in volume to the tincture of cinchona, and mix the strained and expressed liquids with that tincture, after which add sufficient alcohol to make up the required volume. Filter after standing for 24 hours. Each 100 C.c. of the product should contain about 0·5 Gm. of alkaloids. Dose: ½ to 1 fl. dr.

Tinctura Cinnamomi.—Moisten cinnamon bark in No. 40 powder, 4, with 70 p. c. alcohol, 4, and percolate with the same menstruum so as to produce 20 of tincture. Dose: ½ to 1 fl. dr.

Tinctura Cocci.—Macerate powdered cochineal, 2, in 45 p. c. alcohol, 20. Dose: 5 to 15 minims.

Tinctura Colchici Seminum.—Moisten colchicum seeds in No. 30 powder, 4, with 45 p. c. alcohol, 2·5, and percolate with that menstruum so as to produce 20 of tincture. Dose: 5 to 15 minims.

Tinctura Conii.—Moisten conium fruit, recently reduced to No. 40 powder, 4, with 70 per cent. alcohol, 4, and percolate with that menstruum so as to produce 20 of tincture. Dose: ½ to 1 fl. dr.

Tinctura Croci.—Macerate saffron, 1, in 60 p. c. alcohol, 20. Dose: 5 to 15 minims.

Tinctura Cubebæ.—Moisten powdered cubebs, 4, with 90 p. c. alcohol, 2, and percolate with that menstruum so as to produce 20 of tincture. Dose: ½ to 1 fl. dr.

Tinctura Digitalis.—Moisten digitalis leaves in No. 20 powder, 2·5, with 60 p. c. alcohol, 2, and percolate with that menstruum so as to produce 20 of tincture. Dose: 5 to 15 minims.

Tinctura Ergotæ.—Omitted.

*__Tinctura Ergotæ Ammoniata.__—Moisten ergot, in No. 20 powder, 5, with 2 parts of a mixture consisting of 2 of solution of ammonia, and 18 of 60 p. c. alcohol; then percolate with the rest of the mixture. Press the marc, mix the expressed liquid with the percolate, and add sufficient 60 p. c. alcohol to produce 20 of tincture. Dose: ½ to 1 fl. dr.

Tinctura Ferri Acetatis.—Omitted.

Tinctura Ferri Perchloridi.—The rectified spirit is replaced by 90 p. c. alcohol. Dose: 5 to 15 minims.

Tinctura Gallæ.—Omitted.

Tinctura Gelsemii.—Moisten gelsemium root, in No. 40 powder, 2, with 60 p. c. alcohol, 1, and percolate with that menstruum so as to produce 20 of tincture. Dose: 5 to 15 minims.

Tinctura Gentianæ Composita.—The quantity of gentian root is increased by one-third, and the proof spirit replaced by 45 p. c. alcohol. Prepare by maceration only. Dose: ½ to 1 fl. dr.

Tinctura Guaiaci Ammoniata.—Macerate powdered guaiacum resin, 4, for 48 hours, in a mixture of strong solution of ammonia, 1·5, and 90 p. c. alcohol, 16. Filter, add 30 minims of oil of nutmeg and 20 minims of oil of lemon for each pint of finished tincture to be produced, and pass sufficient 90 p. c. alcohol through the filter to produce 20 of tincture.

Tinctura Hamamelidis.—Moisten hamamelis bark, in No. 20 powder, 2, with 45 p. c. alcohol, 1, and percolate with that menstruum so as to produce 20 of tincture. Dose: ½ to 1 fl. dr.

Tinctura Hydrastis.—Moisten hydrastis rhizome, in No. 60 powder, 2, with 60 p. c. alcohol, 2, and percolate with that menstruum so as to produce 20 of tincture. Dose: ½ to 1 fl. dr.

Tinctura Hyoscyami.—Moisten hyoscyamus leaves and flowering tops, in No. 20 powder, 2, with 45 p. c. alcohol, 2, and percolate with that menstruum so as to produce 20 of tincture.

Tinctura Iodi.—Dissolve iodine, 0·5, and potassium iodide, 0·5, in distilled water, 0·5; then add sufficient 90 p. c. alcohol to produce 20 of tincture. Dose: 2 to 5 minims.

Tinctura Jaborandi.—Moisten jaborandi leaves, in No. 40 powder, 4, with 45 p. c. alcohol, 2·5, and percolate with that menstruum so as to produce 20 of tincture.

Tinctura Jalapæ.—Moisten jalap, in No. 40 powder, with 70 p. c. alcohol, 2, then pack in a percolator and gradually add more alcohol until the percolate measures 12. Press the marc, mix the expressed liquid with the percolate, set aside for 24 hours, and filter. Determine the amount of jalap resin present in 10 C.c. of the filtrate (see Jalapæ Resina), and add sufficient 70 p. c. alcohol to produce a tincture containing 1·5 Gm. of the resin in 100 C.c. Dose: ½ to 1 fl. dr.

Tinctura Kino.—The rectified spirit is replaced by 90 p. c. alcohol. Mix the glycerin and water, not the kino, to a smooth paste with sufficient of the mixture, then add the remainder; transfer to a closed vessel, add five-sixths of the alcohol, and set aside for 12 hours, frequently agitating. Filter through a plug of cotton wool, and pass sufficient alcohol through the filter to produce 20 of tincture. Dose: ½ to 1 fl. dr.

Tinctura Krameriæ.—Moisten krameria root, in No. 40 powder, 4, with 60 p. c. alcohol, 2, and percolate with that menstruum so as to produce 20 of tincture. Dose: ½ to 1 fl. dr.

Tinctura Laricis.—Omitted.

Tinctura Lavandulæ Composita.—The rectified spirit is replaced by 90 p.c. alcohol, and the tincture prepared by maceration, the oils being added last. Dose: ½ to 1 fl. dr.

Tinctura Limonis.—Macerate fresh lemon peel, cut small, 5, in 90 p. c. alcohol, 20. Dose: ½ to 1 fl. dr.

Tinctura Lobeliæ.—Omitted.

†__Tinctura Limonis.__—In India and the Colonies, dried instead of fresh lemon peel may be used in preparing this tincture.

Tinctura Lobeliæ Ætherea.—Moisten lobelia, in No. 40 powder, 4, with spirit of ether, 2, and percolate with the same menstruum. Dose: 5 to 15 minims.

Tinctura Lupuli.—Macerate hops, 4, in 60 p. c. alcohol, 20. Dose: ½ to 1 fl. dr.

Tinctura Myrrhæ.—Macerate coarsely powdered myrrh, 4, for 7 days, in 90 p. c. alcohol, 16. Agitate frequently, filter, and pass sufficient alcohol through the filter to produce 20 of tincture.

Tinctura Nucis Vomicæ.—Mix liquid extract of nux vomica, 2, with distilled water, 3, and add sufficient 90 p. c. alcohol to produce 12 of tincture, then filter. This preparation should contain from 0·24 Gm. to 0·26 Gm. of strychnine in each 100 C.c., about twice the proportion of the 1885 tincture. Dose: 5 to 15 minims.

Tinctura Opii.—Opium, 3, is rubbed to a paste with distilled water, 10, the water having previously been heated to at least 93° C. After standing for 6 hours, add 90 p. c. alcohol, 10, and, again set aside for 24 hours; then strain, press, mix the liquids set aside for 24 hours, and filter. Determine the proportion of morphine present by evaporating 80 C.c. of the tincture to 30 C.c., mixing the residue with 3 Gm. of freshly-slaked lime, adding water to 85 C.c., and setting aside for half an hour, stirring occasionally. Next, filter off 50 C.c. of the liquid representing 50 C.c. of the strong tincture, add 5 C.c. of 90 p. c. alcohol and 30 C.c. of ether, shake, and add 2 Gm. of ammonium chloride. Shake well and frequently during half-an-hour, set aside for 12 hours for the morphine to separate, filter, wash with morphinated water, and dry the crystals first by gentle pressure between filter paper, then at 55° and 60° C., and finally at 110° C. for two hours. Weigh the crystals and titrate 0·3 Gm. with decinormal solution of sulphuric acid until the liquid, after boiling, slightly reddens blue litmus paper. Add to the weight of anhydrous morphine, thus indicated,

0·05 Gm., to cover loss, and having thus ascertained the proportion present in 50 C c. of strong tincture, dilute the remainder of the latter with sufficient of a mixture of equal volumes of 90 p.c. alcohol and distilled water, to produce a tincture containing the equivalent of 0·75 Gm. of anhydrous morphine in each 100 C.c. Dose: 5 to 15 minims, for repeated administration; 20 to 30 minims, for a single administration.

Tinctura Opii Ammoniata.—The powdered opium is replaced by its equivalent of tincture of opium, the saffron is omitted, the strong solution of ammonia is replaced by the weaker solution, and 90 p. c. alcohol is ordered instead of rectified spirit. The oil and acid are dissolved in three-fourths of the alcohol, the other liquid ingredients added, and after filtration enough alcohol is added to produce the required volume of tincture.

Tinctura Podophylli.—The quantity of podophyllum resin is doubled and 90 p. c. alcohol is the menstruum. Macerate for 24 hours with nine-tenths of the alcohol, occasionally agitating; then filter and pass sufficient alcohol through the filter to produce the required volume of tincture. Dose: 5 to 15 minims.

*__Tinctura Pruni Virginianæ.__—Macerate Virginian prune bark, in No. 20 powder, 4, for 24 hours, with distilled water, 7·5, then add 90 p. c. alcohol, and complete the process. Dose: ½ to 1 fl. dr.

Tinctura Pyrethri.—Moisten pyrethrum root, in No. 40 powder, 4, with 70 p. c. alcohol, 3, and percolate with that menstruum so as to produce 20 of tincture.

Tinctura Quassiæ.—Macerate rasped quassia wood, 2, in 45 p. c. alcohol, 20. Dose: ½ to 1 fl. dr.

*__Tinctura Quillaiæ.__—Moisten quillaia bark, in No. 20 powder, 1, with 60 p. c. alcohol, 0 5, and percolate with that menstruum so as to produce 20 of tincture. Dose: ½ to 1 fl. dr.

Tinctura Quininæ.—Dissolve quinine hydrochloride, 2, in tincture of orange, 100. Dose: ½ to 1 fl. dr.

Tinctura Quininæ Ammoniata.—Dissolve quinine sulphate, 1, in a mixture of solution of ammonia, 10, and 60 p. c. alcohol, 90, Set aside for 3 days and filter. Dose: ½ to 1 fl. dr.

Tinctura Rhei Composita.—The saffron is omitted and 60 p. c. alcohol is ordered instead of proof spirit, whilst one-tenth part by volume of the preparation must be glycerin. The solid ingredients are moistened with one-ninth part of the alcohol and percolated with more of that menstruum until the required volume is obtained. After 48 hours, the percolate is filtered and the glycerin added. Dose: ½ to 1 fl. dr., for repeated administration; 2 to 4 fl. dr. for a single administration.

Tinctura Sabinæ.—Omitted.

Tinctura Scillæ.—Macerate bruised squill, 4, in 60 p. c. alcohol, 20. Dose 5 to 15 minims.

Tinctura Senegæ.—Moisten senega root, in No. 40 powder, with 60 p. c. alcohol, 4, and percolate with that menstruum so as to produce 20 of tincture. Dose ½ to 1 fl. dr.

Tinctura Sennæ Composita.—The quantity of senna is increased by three-fifths, and 45 p. c. alcohol is used instead of proof spirit. Macerate only. Dose: ½ to 1 fl. dr., for repeated administration; 2 to 4 fl. dr., for a single administration.

Tinctura Serpentariæ.—Moisten serpentary rhizome, in No. 40 powder, 4, with 70 p. c. alcohol, 4, and percolate with that menstruum so as to produce 20 of tincture. Dose: ½ to 1 fl. dr.

Tinctura Stramonii.—Moisten stramonium leaves, in No. 20 powder, 4, with 45 p. c. alcohol, 4, and percolate with that menstruum so as to produce 20 of tincture. Dose: 5 to 15 minims.

Tinctura Strophanthi.—Pack strophanthus seeds, in No. 30 powder, 0·5, in a percolator, moisten with one-fourth the volume of 70 p. c. alcohol, and set aside for 48 hours. Then pour on successive quantities of the alcohol, allowing percolation to proceed slowly, until the total volume of percolate measures 10 fluid parts. Filter, and add sufficient alcohol to produce 20 of tincture. Dose: 5 to 15 minims.

Tinctura Sumbul.—Macerate bruised sumbul root, 2, in 70 p. c. alcohol, 20. Dose: ½ to 1 fl. dr.

Tinctura Tolutana.—Dissolve balsam of tolu, 2, in 90 p. c. alcohol, 16; then filter and pass sufficient alcohol through the filter to produce 20 of tincture. Dose: ½ to 1 fl. dr.

Tinctura Valerianæ.—Omitted.

Tinctura Valerianæ Ammoniata.—Macerate valerian rhizome, in No. 40 powder, 4, in a mixture of solution of ammonia, 2, and 60 p. c. alcohol, 18. For each pint of menstruum add oil of nutmeg, 30 minims, and oil of lemon, 20 minims.

Tinctura Veratri Viridis.—Omitted.

Tinctura Zingiberis.—Moisten ginger, in No. 40 powder, 2, with 90 p. c. alcohol, 2, and percolate with that menstruum so as to produce 20 of tincture. Dose: ½ to 1 fl. dr.

Tinctura Zingiberis Fortior.—Omitted.

Trochisci.—In each of the various formulæ for lozenges the quantities are specified for one lozenge only. There are four official bases for lozenges, and the materials ordered for those must, in every instance, be mixed with 500 times the quantity of drug ordered for a single lozenge. *Fruit basis*: Make into a paste refined sugar, in fine powder, 15·5 ounces, and gum acacia, in powder, 300 grains, with mucilage of gum acacia, 1·25 fluid ounce, and black currant paste of commerce, 2 ounces, previously softened with boiling distilled water. Use additional distilled watered if necessary, and after dividing the mass dry the lozenges in a hot air chamber at a moderate temperature. *Rose basis*: Refined sugar, in fine powder, 17·5 ounces; gum acacia, in powder, 300 grains; mucilage of gum acacia, 5 fluid drachms; official rose water, *q.s.* Proceed as in the case of fruit basis. *Simple basis*: Refined sugar, in fine powder, 17·5 ounces; gum acacia, in powder, 300 grains; mucilage of gum acacia, 1·25 fluid ounce; distilled water, *q.s.* Proceed as in the case of fruit basis. *Tolu basis*: Having dissolved what salts of alkaloids may be ordered in distilled water, 3 fluid drachms, mix the solution intimately with refined sugar, in fine powder, 17 ounces, and gum acacia, in powder, 300 grains. Then, thoroughly incorporate any other drugs ordered, together with tincture of balsam of tolu, 3 fluid drachms. Make into a paste with mucilage of gum acacia, 1·25 fluid ounce, and distilled water, *q s.* Then proceed as in the case of fruit basis.

Troschiscus Acidi Benzoici.—Benzoic acid, ½ grain, with fruit basis.

*__Trochiscus Acidi Carbolici.__—Phenol, 1 grain, with tolu basis.

Trochiscus Acidi Tannici.—Tannic acid, ½ grain, with fruit basis.

Trochiscus Bismuthi Compositus.—Bismuthoxy carbonate, 2 grains; heavy magnesium carbonate, 2 grains; precipitated calcium carbonate, 4 grains, with rose basis.

Trochiscus Catechu.—Catechu, 1 grain, with simple basis.

*__Trochiscus Eucalypti Gummi.__—Eucalyptus gum, 1 grain, with fruit basis.

Trochiscus Ferri Redacti.—Reduced iron, 1 grain, with simple basis.

*__Trochiscus Guaiaci Resinæ.__—Guaiacum resin, 3 grains, with fruit basis.

Trochiscus Ipecacuanhæ.—Ipecacuanha root, in powder, ¼ grain, with fruit basis.

*__Trochiscus Krameriæ.__—Extract of krameria, 1 grain, with fruit basis.

*__Trochiscus Krameriæ et Cocainæ.__—Extract of krameria, 1 grain; cocaine hydrochloride, 1/20th grain, with fruit basis.

Trochiscus Morphinæ.—Morphine hydrochloride, 1/36th grain, with tolu basis.

Trochiscus Morphinæ et Ipecacuanhæ.—Morphine hydrochloride, 1/36th grain; ipecacuanha root, in powder, 1/12th grain, with tolu basis.

Trochiscus Opii.—Omitted.

Trochiscus Potassii Chloratis.—Potassium chlorate, 3 grains, with rose basis.

Trochiscus Santonini.—Santonin, 1 grain, with simple basis.

Trochiscus Sodii Bicarbonatis.—Sodium bicarbonate, 3 grains, with rose basis.

Trochiscus Sulphuris.—Precipitated sulphur, 5 grains; acid potassium tartrate, in powder, 1 grain; refined sugar, 8 grains; gum acacia, in powder, 1 grain; tincture of orange, 1 minim; mucilage of gum acacia, 1 minim. Mix the tincture of orange with the powders, and add the mucilage to form a suitable mass. Dry in a hot-air chamber at a moderate temperature.

†__Unguenta.__—In India and the Colonies more or less indurated lard, prepared suet, yellow beeswax, or white beeswax may be employed in the preparation of ointments, but the official proportion of the active ingredients must in all cases be maintained.

Unguentum Acidi Borici.—Boric acid, in very fine powder, carefully sifted, 1; white paraffin ointment, 9.

Unguentum Acidi Carbolici.—Dissolve phenol, 0·5, in glycerin, 1·5, and add white paraffin ointment, 10·5.

Unguentum Acidi Salicylici.—Salicylic acid in powder, 10, white paraffin ointment, 490.

Unguentum Aconitinæ.—Rub aconitine, 10, with oleic acid, 80, and gently warm until solution is effected; then add lard, 140.

Unguentum Antimonii Tartarati.—Omitted.

***Unguentum Aquæ Rosæ.**—Melt together white beeswax, 1·5, spermaceti, 1·5, and almond oil, 9. Pour the mixture into a warmed mortar and add undiluted rose water, 7, gradually with constant trituration. Next add oil of rose, 8, minims, to each 19 ounces, and continue the trituration until cold.

Unguentum Atropinæ.—Rub atropine, 10, with oleic acid, 40, and gently warm until solution is effected ; then add lard, 450.

Unguentum Belladonnæ.—Evaporate liquid extract of belladonna, 2, on a water-bath until it is reduced to one-eighth of its original bulk ; then add benzoated lard, 2·25. Each 100 parts of this ointment should contain 0·6 part of the alkaloids of belladonna root.

Unguentum Calaminæ.—Omitted.

Unguentum Cantharidis.—Cantharides, bruised, 1 ; benzoated lard, 10. Melt the lard, add the cantharides, and digest at about 49° C. for 12 hours. Strain through calico, press the residue gently, and stir the ointment until cold.

***Unguentum Capsici.**—Capsicum fruit, bruised, 6 ; spermaceti, 3 ; olive oil, 22. Digest on a water-bath for 1 hour, occasionally stirring, strain, and cool, without stirring.

Unguentum Cetacei.—Melt together spermaceti, 10, and white beeswax, 4, with almond oil, 36 ; add coarsely powdered benzoin, 1, and apply heat for 2 hours, frequently stirring the mixture. Then remove from the source of heat, strain, and stir until cold.

Unguentum Chrysarobini.—Formula unaltered.

***Unguentum Cocainæ.**—Rub cocaine, 20, with oleic acid, 80, and gently warm until solution is effected ; then add lard, 400.

Unguentum Conii.—Evaporate conium juice, 2, to one-eighth its original volume, at a temperature not exceeding 60° C. ; then add hydrous wool fat, 0·75, and mix by trituration.

Unguentum Creosoti.—Add creosote, 1, to a melted mixture of hard paraffin, 4, and white, soft paraffin, 5 ; stir until cold.

Unguentum Elemi.—Omitted.

Unguentum Eucalypti.—Add oil of eucalyptus, 1, to a melted mixture of hard paraffin, 4, and white soft paraffin, 5 ; stir until cold.

Unguentum Gallæ.—Galls, in very fine powder, 1 ; benzoated lard, 4. Mix by trituration.

Unguentum Gallæ cum Opio.—Gall ointment, 925 ; opium, in very fine powder, 75. Mix by trituration.

Unguentum Glycerini Plumbi Subacetatis.—Glycerin of lead subacetate, 1 ; white paraffin ointment, 5.

Unguentum Hamamelidis.—Liquid extract of hamamelis, 0·25 ; hydrous wool fat, 2·25.

Unguentum Hydrargyri.—Formula unaltered.

Unguentum Hydrargyri Ammoniati.—Ammoniated mercury, 1 ; white paraffin ointment, 9

Unguentum Hydrargyri Compositum.—Mix yellow beeswax, 6 ; olive oil, 6 ; and mercury ointment, 10 ; with the aid of heat. Add camphor, in flowers, 3, and triturate until cold.

Unguentum Hydrargyri Iodidi Rubri.—Mercuric iodide, in fine powder, 20 ; benzoated lard, 480.

Unguentum Hydrargyri Nitratis.—Dissolve mercury, 1, in nitric acid, 3, without the aid of heat, agitating gently from time to time. Then heat together lard, 4, and olive oil, 7, on a sand-bath, so that the mixture, when transferred to a heated stoneware jar capable of holding ten times the quantity, shall have a temperature of about 143° C. Add the cold mercurial solution very gradually, stirring constantly to promote disengagement of the fumes. After frothing has ceased the mixture should have a temperature of not less than 93° C. Stir until cold, when the ointment should be firm in consistence and have a pale lemon colour.

Unguentum Hydrargyri Nitratis Dilutum.—Mercuric nitrate ointment, 1 ; yellow soft paraffin, 4.

***Unguentum Hydrargyri Oleatis.**—Mercuric oleate, 1 ; benzoated lard, 3.

***Unguentum Hydrargyri Oxidi Flavi.**—Yellow mercuric oxide, in very fine powder, 1 ; yellow soft paraffin, 49.

Unguentum Hydrargyri Oxidi Rubri.—Red mercuric oxide, in very fine powder, 1 ; yellow paraffin ointment, 9.

Unguentum Hydrargyri Subchloridi.—Mercurous chloride, 1 ; benzoated lard, 9.

Unguentum Iodi.—Triturate, in a glass or porcelain mortar, iodine, 1, potassium iodide, 1 ; and glycerin, 3. Then add lard, 20, gradually.

Unguentum Iodoformi.—Iodoform, in fine powder, 1, yellow paraffin ointment, 9.

***Unguentum Paraffini.**—Hard paraffin, 3 ; soft paraffin, 7. Melt together in a shallow evaporating dish, and triturate constantly as the mixture cools. When this preparation is used as the basis of white ointments, let the soft paraffin be white ; but for coloured ointments, use yellow soft paraffin. The proportions of hard and soft paraffins in the ointment may be modified to meet the exigencies of climate and prevailing temperature.

Unguentum Picis Liquidæ.—Formula unaltered.

Unguentum Plumbi Acetatis.—Lead acetate, in fine powder, 20 ; white paraffin ointment, 480.

Unguentum Plumbi Carbonatis.—Lead carbonate, in fine powder, 1 ; white paraffin ointment, 9.

Unguentum Plumbi Iodidi.—Lead iodide, in fine powder, 1 ; yellow paraffin ointment, 9.

Unguentum Potassæ Sulphuratæ.—Omitted.

Unguentum Potassii Iodidi.—Dissolve potassium iodide, 50, and potassium carbonate, 3, in distilled water, 47 by weight ; then mix the solution, gradually, with the benzoated lard, in a slightly warmed mortar.

Unguentum Resinæ.—Melt resin, in powder, 8, and yellow beeswax, 8 ; then add olive oil 8, and lard, 6, strain, and stir until cold.

Unguentum Sabinæ.—Omitted.

Unguentum Simplex.—Omitted.

Unguentum Staphisagriæ.—Crush stavesacre seeds, 2, and digest with benzoated lard, 8·5, on a water-bath, for two hours ; then strain and press through calico, add yellow beeswax, 1, heat gently to dissolve, and stir until cold.

Unguentum Sluphuris.—Sublimed sulphur, finely sifted, 1 ; benzoated lard, 9.

Unguentum Sulphuris Iodidi.—Triturate sulphur iodide, 20, and glycerin, 20, in a slightly warmed mortar, until a smooth paste results ; then gradually add benzoated lard, 460, and stir until cold.

Unguentum Terebinthinæ.—Omitted.

Unguentum Veratrinæ.—Rub veratrine, 10, with oleic acid, 40, and gently warm the mixture until solution is effected ; then add lard, 450.

Unguentum Zinci.—Zinc oxide, finely sifted, 3, benzoated lard, 17. Melt the lard at a low temperature, and add the oxide gradually, stirring the mixture constantly until cold.

Unguentum Zinci Oleatis.—Dissolve zinc sulphate, 2, in distilled water, 4 ; also dissolve hard soap, in shavings, 4, in distilled water, 40. Mix the two solutions, collect the precipitated zinc oleate, wash with hot distilled water until free from sulphate, then dry on a water-bath, mix with an equal weight of melted soft paraffin, and stir until cold.

Vapores.—All omitted.

Vinum Aloes.—Omitted.

Vinum Antimoniale.—Strength unaltered, but one-twentieth part of the sherry is replaced by water, in which the tartarated antimony is to be dissolved before mixing with the wine. Dose : 10 to 30 minims ; as an emetic, 2 to 4 fl. dr.

Vinum Aurantii.—Strength unaltered.

Vinum Colchici.—Strength unaltered, but the colchicum corm to be macerated as directed for tinctures.

Vinum Ferri.—Formula unaltered.

Vinum Ferri Citratis.—The iron and ammonium citrate is dissolved in enough orange wine to produce one pint.

Vinum Ipecacuanhæ.—Liquid extract of ipecacuanha, 1, sherry, 19. Mix, set aside for 48 hours, then filter. Dose : 10 to 30 minims, as an expectorant ; 4 to 6 fl. dr., as an emetic.

Vinum Opii.—Omitted.

Vinum Quininæ.—Dissolve quinine hydrochloride, 1, in orange wine, 437·5, set aside, and filter if necessary.

Vinum Rhei.—Omitted.

Vinum Xericum.—Should contain not less than 16 p. c. by volume of ethyl hydroxide.

Pharmaceutical Transactions.

BRITISH PHARMACEUTICAL CONFERENCE.

A meeting of the Ulster Executive Committee of this body was held in 10, Garfield Chambers, Royal Avenue, Belfast, on Wednesday, March 30, at 11.30 a.m. There were present Messrs. J. C. C. Payne, J.P. (Chairman), S. Gibson, J. Tate, J. Guiler, T. Moffatt, J. Acheson, W. J. Rankin, and R. W. McKnight. The minutes of the previous meeting having been read and confirmed, Mr. Payne reported that the deputation, consisting of Sir J. H. Haslett, Mr. McKnight and himself, had waited on the Lord Mayor, and asked him to receive the delegates to the Conference at the Queen's College, Belfast, on August 9, and that he had graciously consented to do so. It was decided to give the Conference delegates an excursion on August 11: Train to Larne, thence by cars along the coast; through the Glens of Antrim to Parkmore, returning by train from Parkmore Station. This trip will give the delegates an opportunity of seeing some of the most beautiful scenery in the world. For those who may wish to visit the Giant's Causeway on Friday, August 12, an arrangement will be made with the manager of the Northern Counties Railway to bring them at considerably reduced fares to Portrush, the tickets being available for return until the Monday following. The Committee, in making these arrangements, considered that a one day's excursion to the Causeway would not be entirely satisfactory, as only about two hours could be spent in exploring the district, and as there is so much to be seen, it could not be done in that time. The Glens of Antrim Excursion will, it is hoped, arouse a keen interest in the delegates to see more of the beautiful province, and induce them to spend a long holiday in the district. Messrs. H. McNeill, Ltd., have secured the contract for catering for the party. Dinner will be served at Garron Tower Castle, which will then be open as an hotel. Tea will be served in the Glens of Antrim.

DEWSBURY AND DISTRICT CHEMISTS' ASSOCIATION.

A meeting of the above Association was held on Monday, April 4, in the Town Hall, Dewsbury, Mr. A. Foster, President, in the chair.—The time was devoted to formulating the rules of the Association and electing members. Councillor S. Ward (Batley Carr) and Mr. R. Broadhead (Batley) were elected members of the Council, and it was also resolved to hold the meetings monthly and on the first Monday in the month.

BRADFORD AND DISTRICT CHEMISTS' ASSOCIATION.

The first annual dinner of this Association was held at the Great Northern Victoria Hotel, on Tuesday, April 5, when there was a moderate attendance to do justice to the occasion. Several of the members were absent on account of there being an important Masonic meeting, or the dinner would have been more successful from a numerical point of view. Those gentlemen whose good fortune it was to be present were highly pleased with the arrangements made, and thoroughly enjoyed themselves. Mr. Waddington, one of the vice-presidents, occupied the chair, in the unavoidable absence of Mr. Dunn, the President, being supported by Mr. Silson (Treasurer) and Mr. Pickard (Secretary). After the repast, the tables having been cleared, the following toast-list was disposed of:—"The Queen and Royal Family," proposed by Mr. A. H. Waddington, and drunk with musical honours; "The Pharmaceutical Society," proposed by Mr. J. A. Mitchell, and responded to by Mr. F. A. Wilcock; "The Bradford and District Chemists' Association," proposed by Mr. Russell (Southport), and replied to by Mr. S. N. Pickard, Hon. Sec.; "Kindred Associations," coupled with "The Visitors," proposed by Mr. J. M. Newbould, and responded to by Messrs. Worfolk (Ilkley), and Eckroyd (Keighley); "The Trade and City of Bradford," proposed by Mr. Briggs (Sowerby Bridge), and replied to by Mr. R. W. Silson; "Mr. Silson," proposed by Mr. A. H. Waddington, to which Mr. Silson replied; "The Chairman" (Mr. Waddington), proposed by Mr. Pickard (with musical honours), and suitably responded to by Mr. Waddington. —The drinking of the toasts was interspersed with music, in which Messrs. Russell, Hanson, and Silson took part, and a most successful and enjoyable evening was spent, the party dispersing shortly after 12 p.m.

PHARMACEUTICAL SOCIETY OF IRELAND.

The monthly meeting of the Council was held on Wednesday, the 6th inst., at 67, Lower Mount Street, Dublin. The President, Mr. R. J. Downes, was in the chair, and the other members of Council present were the Vice-President (Mr. Beggs), the Hon. Treasurer (Mr. Grindley); and Messrs. Wells, Montgomery (Belfast), Baxter (Coleraine), Porter, Bernard, Conyngham, Kelly, Sullivan (Waterford), Hayes, Simpson, and Ryan. Letters from Mr. A. L. Donan were read in reference to his functions as Examiner, and it was decided that the President and one or two members of the Council should have an interview with Mr. Donan. The District Inspector of the Royal Irish Constabulary at Aughnacloy reported that in obedience to an order of the Queen's Bench Division, the magistrates there had increased a fine of £1, imposed on Robert Galbraith for unlawfully selling laudanum, to £5, with costs of the appeal.—Mr. Bernard: Has he appealed to the Lord Lieutenant yet?—President: No, not that we have heard.—Mr. Wells remarked that in another case the judges of the Queen's Bench had said that they did not know where the Lord Lieutenant got his power of reducing penalties.—President: They were referring to a Revenue case.—A letter from Mr. R. McKnight, of Belfast, stated that he had become connected with a limited company; and as he had been co-opted a member of the Council as having no connection with such companies, he thought it right now to resign his seat on the Council. The consideration of the letter was reserved until the next meeting.—Other business having been disposed of, the Council adjourned.

GLASGOW PHARMACEUTICAL ASSOCIATION.

At a Council meeting of this Association, held on Wednesday, the 30th ult., at their rooms in West Regent Street, reference was made to a letter on the Pharmacy Acts Amendment Bill in one of the trade journals, by Mr. A. McKellar (a member of the Council of the local Association).—Mr. Sutherland said he should like an explanation from Mr. McKellar in writing this letter in his private capacity, ascribing apathy to the local Association, of which he was then a member of Executive.—Mr. McKellar replied that his intentions were honest in this matter, but he was asked by Mr. Gibbons, of Manchester, to ascertain what action might be taken with members of Parliament in Glasgow to support the opposition. He also referred to the apathy at a previous meeting of the Association in Glasgow. He now admitted that tactically he was in error in writing the letter referred to. He had withdrawn his opposition to the Bill, and had also written to Mr. Cross, asking him to withdraw his opposition.—Mr. Sutherland further asked Mr. McKellar if he had any communication with Mr. Cross prior to this meeting.—Mr. McKellar said he had interviewed Mr. Cross before the meeting, and had given him information about the Bill. Mr. McKellar said he would formally withdraw his opposition by writing to the trade journals to that effect. —This matter was again referred to by Mr. Moir at a meeting held on the 5th inst.—Mr. McKellar said he had written to the journals* explaining his opposition to the Bill, and had also communicated with Mr. Cross, who replied that he could not withdraw his opposition until he knew what the Government Poisons Bill would do for the agricultural interests. Mr. McKellar said he had also communicated with Mr. Caldwell, M.P., and Dr. Tanner, M.P.

Examination of Peru Balsam.—Hirschsohn proposes the following tests for balsam of Peru:—(1) The balsam mixed with half its weight of calcium hydrate and heated for half an hour on the water bath should not give a firm mass. (Absence of turpentine, resin, Canada balsam, copaiba balsam, storax, alcohol, Siam or Sumatra benzoin, and tolu balsam.) (2) One volume of balsam mixed with four volumes of acetic acid of 80 to 82 per cent. should give an opalescent or only slightly turbid solution, from which no oily drops should separate in about two hours. (Absence of resin oil, copaiba balsam, gurjun balsam, and fatty oils.) (3) The petroleum ether extract of the balsam (1 balsam, 5 petroleum ether), shaken with an equal volume of a diluted aqueous copper acetate solution (1 per mille), should not be coloured bluish-green or green. (Absence of resin, turpentine, Canada balsam, resin oil, copaiba balsam, storax, fatty oils, and tolu balsam). (4) The residue on evaporating the petroleum ether extract covered with hydrochloric acid of 1·19 sp. gr., should not be coloured. (Absence of gurjun balsam.)—*Zeit. d. Allg. oest. Apoth. Ver.*, li., 525.

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* No such letter, signed by Mr. McKellar, has been sent to the *Pharmaceutical Journal*. [*Ed. P.J.*]

EXTRACTS FROM CONSULAR REPORTS.

A New Item of Export appears in the Cherbourg Custom House returns for 1897, which show that 311 tons, or 76,383 gallons of fresh milk were shipped to England during the months of October, November, and December.

The Sale of Drugs in Las Palmas.—Membership of the Spanish Pharmaceutical Society and special permission is required for the sale of certain drugs and medicines in Las Palmas. The wholesale drug trade is principally worked through agents in Barcelona, but German houses have of late increased their business by sending out price-lists in Spanish weight and metric currency.

British Phosphates have had the preference of intelligent agriculturists in the Italian provinces, because they were recognised to contain phosphoric acid soluble in water, while those imported from Belgium and France contain phosphoric acid only soluble in citrate. The English product is, however, likely to have to compete with a composition manufactured by Signor Angelo Scaini, of Udine, who claims to have succeeded in manufacturing superphosphates soluble in water similar to those of English make, which also contain a quantity of azote.

The Export Duty on Boracic Acid, it is alleged, has caused the boracic products manufactured in Italy to suffer considerably. A project has, therefore, been presented to the Italian Parliament for the abolition of the export duty and the imposition of a duty on the importation of foreign borax and refined boracic acid, which are now admitted free of duty and are chiefly imported from England.

Living British Plants and Bulbs are not allowed to enter Italy without certain formalities are gone through, which, if neglected, frequently result in the plants decaying before reaching their destination. It appears that in consequence of Great Britain not having joined the Berne International Convention, the Customs authorities have no power to permit the introduction of British plants and bulbs. Consul de Zuccato suggests that exporters should therefore ascertain beforehand whether, on their arrival at destination, accompanied by a proper certificate of origin, they might be cleared.

Drugs, Chemicals, and Colours imported into Servia during 1896 amounted to £52,197, about £2000 higher than in 1895. The principal distribution of this trade was: Austria-Hungary, £33,277, and Germany, £11,647. The British trade consisted chiefly of soda, ammonia and varnish, valued at £2237. Chemicals and drugs of various sorts came to £10,226, a falling-off of £4355, and made-up medicines and chemical preparations to £12,468. The value of dyes was £15,542, of which £5980 represented raw colours. For the first nine months of 1897 the importation of drugs, chemicals, and colours was valued at £39,575.

The Imports of Chemicals used in the manufacture of fertilisers at Charleston, S.C., during the year ending August 31, 1897, amounted to 107,828 tons, valued at $810,941, as against 58,938 tons, valued at $433,400, during the corresponding period of the previous year, an increase of 48,890 tons, value $377,541.

Phosphate Rock is found along the margins of most of the navigable rivers in South Carolina and also in the beds of the rivers. The phosphate rock discovered in Tennessee has, during the last few years, been a strong competitor of the Carolina and Florida product, from which, however, it varies greatly, being darker in complexion and denser; also its analysis does not run uniformly, often differing considerably in the same deposit.

Thermal Medicinal Springs occur in the Cape Bon Peninsula to the east of the town of Tunis. The temperature of the hot springs of the Jerid ranges from 90° to 200° F., the water being considered efficacious for nervous diseases, for rheumatic affections, and certain skin complaints.

Rich Deposits of Phosphates are said to exist in Tunisia, those round Gafsa being estimated to amount to 30,000,000 tons, and are about to be worked by a railway between Gafsa and Sfax, by means of which it is hoped that 300,000 tons annually may be put on the market.

LETTERS TO THE EDITOR.

The British Pharmacopœia, 1898.

Sir,—In your issue last week you informed the drug trade, with I presume some semblance of official authority, that the British Pharmacopœia, 1898, would not be published for at least three weeks. Yet on April 9, 1898, a certain wholesale firm, a member of which is one of the Pharmacopœia Committee of the Pharmaceutical Society of Great Britain, issued a "Price-list of New and Altered Preparations, British Pharmacopœia, 1898 (ready for delivery next week)." Furthermore, the same firm is publishing "A Short Guide to the British Pharmacopœia, 1898 (ready on April 14)." Now, I hereby protest, (1) personally on the want of fair-play and justice in conduct of this description, and (2) on behalf of wholesale chemists generally on commercial grounds, *i.e.*, on being handicapped in their business to the extent they will be by this firm getting such a very considerable start of others. I may say that I was deeply incensed on seeing this price-list last night, and doubtless many more have the same feelings, more especially those connected with the wholesale trade. How any firm, apart altogether from motives of right and justice, but with even the most rudimentary idea of the "eternal fitness of things" could take advantage (as has been done) of the position which circumstances, fortuitous or otherwise, have placed them in, to steal a march on their trade competitors passes my comprehension. The General Medical Council is a body exceedingly jealous of the honour of members of the medical profession, and visits heavily any lapses from the straight path. It is to be hoped it is as jealous of the honour of those pharmacists who are temporarily associated with it, but over whom, unfortunately, it has no jurisdiction. The Council of the Pharmaceutical Society has such jurisdiction.

Leith, April 12, 1898. George Coull.

Sir,—Like your correspondent "Quidam," I had a copy of the Pharmacopœia interleaved during my pre-examination days, and found same of exceeding value; in fact, I have rendered my copy of the 1885 work a veritable pharmaceutical gold mine and true *vade mecum* for all time. "Quidam's" suggestion, that the publishing authorities should issue a quantity of interleaved copies of the Pharmacopœia, now in embryo, is a good one, and I hope his suggestion may be taken up and acted upon.

Belfast, April 5, 1898. Samuel Hogg.

OBITUARY.

Leicester.—On April 4, Thomas Leicester, Chemist and Druggist, Burslem (Staffs.). Aged 75.

Taylor.—On April 4, William Reay Taylor, Chemist and Druggist, Middlesbrough. Aged 56. Mr. Taylor had been a member of the Pharmaceutical Society since 1870, and had carried on the business of a chemist in Linthorpe Road for about thirty-six years. Although not a "public man," he was very widely known and was held in high esteem by all who knew him.

Barlow.—On April 5, Samuel Barlow, Pharmaceutical Chemist, Darlington. Aged 78. Mr. Barlow has been a member of the Pharmaceutical Society since 1853.

Stafford.—On April 6, William Stafford, Pharmaceutical Chemist, Gloucester. Aged 89. Mr. Stafford carried on business as a chemist in Northgate Street for nearly sixty years, retiring about five years ago. He was first elected a member of the Gloucester Corporation as long ago as 1853 and was the High Sheriff in 1877, and Mayor in 1889.

Gorrie.—On April 9, Daniel Gorrie, Pharmaceutical Chemist Edinburgh, at his residence, 2, Cameron Terrace. Aged 42.

Leal.—On April 10, Alexander Leal, Chemist and Druggist, Edinburgh, late of Lauder.

COMMUNICATIONS, LETTERS, etc., have been received from

Messrs. Anderson, Barker, Bayley, Bonn, Bristow, Campbell, Cherry, Copestake, Cora, Currie, Davidson, Davison, Evans, Ferguson, Gadd, Gillmour, Greenish, Harries, Hebb, Hill, Hogg, Horsfield, Jones, Lander, McKnight, Marshall, Mason, Payne, Pickard, Reynolds, Richardson, Russell, Smith, Stanley, Stroud, Thomson, Todd, Vizer, Ward.

Pharmacy and the Allied Sciences.

A REVIEW OF CURRENT WORK.

Pilocarpine and Pilocarpidine.

In reference to the different views put forward by Hardy and Camels, Knudsen, Petit, and Polonovski as to the relation of the alkaloids of jaborandi, Merck has already shown that the base to which Harnack gave the name of pilocarpidine is not convertible into pilocarpine by methylation, and that the isomer it yields differs from pilocarpine in being insoluble in water (*P. J.*, lviii., 161, 466) Further investigation of the subject has also led Merck to the conclusion that pilocarpine and pilocarpidine are not, as Petit and Polonovski consider, isomeric, but entirely different in composition. He suggests that the discrepancies have arisen by the name pilocarpidine being given to different bases by the several chemists and not confined to that first described by Harnack as having a composition represented by the formula $C_{10}H_{14}N_2O_2$ (*Ann. Chem.*, 238, p. 230). On repeating the experiments of Petit and Polonovski and heating pilocarpine hydrochloride for some time to a temperature of 200° C., Merck obtained similar results, the product having lower rotatory power and the gold or platinum salts lower melting points. But when pilocarpidine hydrochloride (Harnack) was subjected to the same treatment it underwent similar change, though that should not have been the case if the inferences of Petit and Polonovski were correct. Hence it is inferred that the substance to which they give the name ipilocarpidine is merely pilocarpine more or less altered. On subjecting pilocarpine hydrochloride to the action of strong hydrochloric acid, by which treatment Hardy and Calmels state that it is convertible into a salt of pilocarpidine, Merck was equally unsuccessful in obtaining that result (*Bull. Soc. Chem.*, xlviii., p. 234). The effect of long-continued boiling with water is stated by Hardy and Calmels to result in conversion of pilocarpine into pilocarpidine, according to the equation—

$$\left.\begin{matrix} C_{11}H_{16}H_2O_2 \\ H_2O \end{matrix}\right\} = \left\{\begin{matrix} C_{10}H_{14}N_2O_2 \\ CH_3OH \end{matrix}\right.$$

but on repetition of the experiment no indication of such a change could be detected.—*Archiv der Pharmacie*, ccxxxvi., p. 141.

Strophanthin and Strophanthidin.

Further information respecting strophanthin and strophanthidin have been obtained by F. Feist that differs in many respects from the results of other observers. Strophanthin was obtained in the form of a partly crystalline mass, absolutely free from nitrogen and having no reducing action on Fehling's solution. In a 1 per cent. aqueous solution it was optically inactive, a distinction from Arnaud's strophanthin. It absorbs water freely, but yields up the greater part of it over sulphuric acid or at a gentle heat. Strophanthin which has been dried over sulphuric acid melts at 105°, and corresponds in composition more closely to the formula $C_{32}H_{48}O_{16}$ than to Fraser's formulæ $C_{16}H_{28}O_8$ and $C_{20}H_{24}O_{10}$. Strophanthin yields very little, if any, glucose on hydrolysis, but gives, in addition to strophanthidin, a white crystalline substance of the formula $C_{13}H_{24}O_{10}$, melting at 207°, and a sugar of unknown composition. Strophanthidin has the formula $C_{23}H_{28}O_7 + 1\frac{1}{2}H_2O$. It dissolves in concentrated sulphuric acid, giving a pale brick-red colour, but is precipitated white on dilution. It gives no insoluble picrate, does not reduce Fehling, and only slowly decolorises bromine or sodium permanganate. The derivatives are mostly amorphous and have high melting points. Strophanthidin is certainly a benzene derivative. It is converted by boiling caustic alkalies into two yellow crystalline compounds of the formula $C_{20}H_{30}O_5 + 1\frac{1}{2}H_2O$, m. p. 294°, and $C_{24}H_{30}O_5$, m. p. 198°·5, respectively. By the action of bromine strophanthidin gives $C_{39}H_{51}Br_5O_{10}$, m. p. 126°, and $C_{39}H_{31}Br_{11}O_4$, m. p. 160° (*Ber.*, 31, 534). L. Kohn and V. Kulisch have also been investigating strophanthin, but they are inclined to accept Arnaud's formula, $C_{31}H_{48}O_{19}$, and to strongly doubt the correctness of Fraser's view of the glucosidal nature of strophanthin, as, although on hydrolysis the solution reduced Fehling, they could obtain no characteristic reaction for glucose.—*Ber. Pharm. Ges.*, xxxi., 514, through *Apot. Zeit.*, xiii., 232.

Uric Acid and the Murexide Reaction.

It is known that starch granules containing urine no longer gives the iodide of starch reaction. D. Vitali (*Boll. Chim. farm.*, xxxvii., 65) finds that the reason of this phenomenon is due to the reducing action of uric acid. The iodine acts as an indirect oxidising medium, being changed into hydriodic acid whilst the uric acid is oxidised to alloxan. The formation of hydriodic acid is shown if a small quantity of iodine is added to potassium urate. The solution also contains alloxan, and this, on evaporating the solution to dryness, is reduced to alloxantin, which gives the murexide reaction.—*Chem. Zeit. Rep.*, xxii., 81.

Margarine.

Differences of opinion seem to be the chief result elicited from several correspondents in reply to editorial questions as to the best course to be followed in dealing with the addition of margarine to butter and with its detection. It has been suggested that a "latent" colouring matter, such as phenol-phthalein, should be an enforced addition to margarine, or 10 per cent. of sesame oil, either of which lends itself to ready detection.—*Chem. Zeit.*, xxii., 267.

De-emetinised Ipecacuanha.

Ipecacuanha de-emetinised, presumably free from all alkaloids, is advocated by Dr. Owen F. Paget, Honolulu, as a specific for acute and chronic dysentery. A patient was cured of all blood and discharge, from which he had suffered for over a year, in twenty-four hours; 10 grains of the drug were given every four hours.—*Brit. Med. Journ.*, April 16.

Proteolytic Enzyme of Nepenthes.

The nature of the fluid secreted in the pitchers of *Nepenthes* has been carefully investigated by Professor S. H. Vines, the species chiefly examined being *N. mastersiana*. He has definitely determined that the digestive powers of this fluid are due to the action of a true proteolytic enzyme in the presence of an acid, and not merely to the presence of bacteria. The liquid will digest fibrin in the presence of 1 per cent. hydrocyanic acid; active glycerin extract can be prepared from the pitcher-tissue. The enzyme is clearly allied to the peptic group, and is apparently tryptic in its action. The proteid-product of digestion appears to be not peptone, but deuterc-albumose. One peculiarity of the enzyme is its great stability; it is antiseptic and resists decomposition.—*Annals of Botany*, 1897, p. 563.

Phalline.

Professor Kobert applies the term phalline to the poisonous substance present in *Amanita phalloides*. It is a tox-albumin, and causes, when present even in very minute quantities, dissolution of the red corpuscles of the blood, followed by the liberation of certain ferments. The same substance has been detected also in other species of the same genus, viz., in *Amanita virescens, viridis, citrina, virosa, mappa, recutita*, and *porphyria*.—*Trans. Brit. Mycol. Soc.*, 1897, p. 27.

RADIOGRAPHY WITH TESLA'S APPARATUS.

BY T. MALTBY CLAGUE,
Pharmaceutical Chemist.

In certain quarters this method of working has been pronounced impracticable; in others it has met with faint praise, but eighteen months' experience of it in hard practical work has convinced me that its advantages far outweigh its drawbacks, and that where an alternating current such as that so commonly supplied for domestic lighting is available, it is the method which should be adopted.

The trouble and messiness of a battalion of primary cells, or the difficulty of recharging secondary batteries, are such as to deter many from work, and to render very laborious the efforts of those who do attempt it. These form only a part of the reasons in favour of using the method of working now under consideration. There are yet to be named the absolute freedom from dangerous shocks and the amount of control in the spark length obtainable. Of these dangerous shocks there are few workers who do not stand in dread such as interferes with comfortable working, for who that has had a few thousand volts from an induction coil through some portion of his physical economy can feel perfect freedom when in proximity to secondary wires; and to be able to graduate one's voltage to suit any vacuum tube whatever by the mere turning of a milled head of a screw is an immense advantage, for then there is no heating of a tube to bring its vacuum down to the power of the battery, and the vagaries of the tube through the lowering of the vacuum if it heats, or the raising of the vacuum by the prolonged passage of current during an exposure can each be corrected by the operator, who is guided by the colour of his tube or by the cryptoscope which he keeps at hand. The apparatus which I have used is made by Messrs. Miller and Wood, of Gray's Inn Road, W.C., and first some attempt must be made to give an idea of its construction and working. The current supplied by the Electric Lighting Company in my case is an alternating one, and the rate of alternation is one hundred cycles per second, that is one hundred positive impulses and one hundred negative impulses per second. The street voltage is 2000, but a step-down transformer 20 to 1 delivers it to the wires in the building at 100 volts. As the current is already alternating no make and break is necessary, and a wall plug and flexible wire leads it at once to the primary winding L L, and P in Fig. 2.

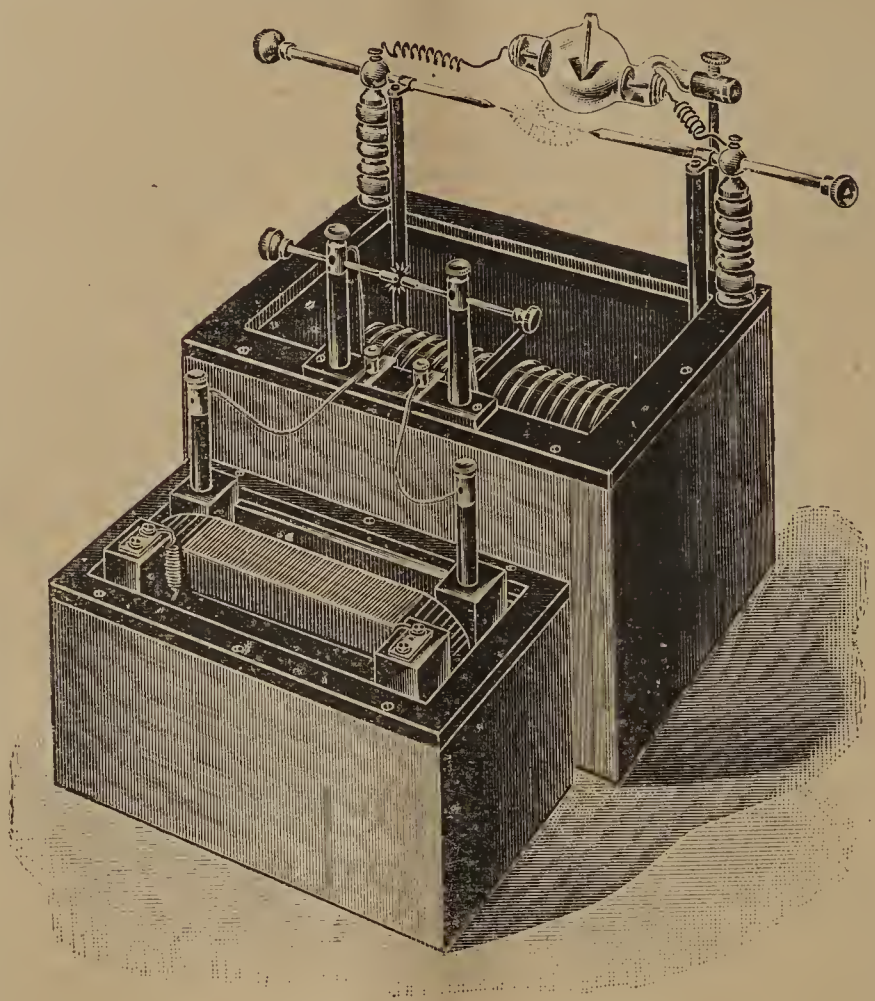


Fig. 1.

The Step-up Transformer.

I found it an advantage to have a small three-way switch put on to the front of the apparatus, two pieces of mahogany, four brass screws, and a piece of thin spring brass, sufficed to make this. The object of the three connections is to enable one to send the current through the whole, or a large or smaller part of the primary, and so vary the voltage obtained from this portion of the apparatus from 3500 to 8000 volts.

A reference to Fig. II. will show the working; I. is a core of soft iron wire, the bundle being about an inch and a half in diameter and the form like that of Faraday's ring transformer, of which it is simply a modification. From L through the primary winding P to La the current passes, magnetising the core I. Round the lower side of the quadrangular core the secondary winding of the transformer is wound, and this receives induced currents of the higher tension named from the core and delivers them at the secondary terminals T T. The whole of this transformer is enclosed in a cell of glass or earthenware and a mahogany case; the former is filled with mineral oil to the level of the primary winding.

From the secondary terminals the current is led to the

Tesla Apparatus.

proper, and becomes, so far as this apparatus is concerned, the primary current by induction to produce a secondary of enormous voltage. Follow the wire leading from the right hand side of the step up transformer (Fig. II) by the aid of the illustrations. L (Fig. III.) connects by a heavy copper wire to the primary winding P (Fig. III.), and collaterally to the condenser at the right (alternate plates, of course). The primary winding consists of nine or ten turns of copper wire, nearly an eighth of an inch thick, and from it the lead is on to the right hand side of the spark gap which stands above the box, and on the side nearest to the observer in the illustration (Fig. I.).

The lead from La (Fig. III.) is to condenser and back to spark gap (left hand pillar).

The condenser consists of nine pairs of sheets of tinfoil, separated by thin glass plates all standing on edge and totally immersed in oil like the primary and secondary. The secondary consists of a coil of fine copper wire supported inside the primary and connected to the terminals, where the discharging rods are shown. No core is used.

The most interesting part of this apparatus, because of the part it plays in producing the modification of the current which has rendered Tesla's work so unique, is the spark gap. Two zinc caps are carried on brass screw rods, and can be made to approach and recede from each other, and so modify the distance which the spark must leap before it can complete the circuit—that is the primary circuit of the Tesla (Fig. III.), or secondary of the step-up transformer (Fig. II.) The milled heads actuating the rods which pass through the upright pillars furnish the control necessary. When the zinc caps are near to each other a small tension suffices to enable the current to leap the gap, and a spark stream at the further discharging pillar of an eighth of an inch can easily be maintained. By separating the caps the ultimate spark may be increased at will, and so a voltage readily secured and

efficiently controlled which will accomplish the work in hand. And now our current is ready for work, and may be led to Geissler tube, Crookes tube, or any other experimental apparatus. The strangest feature about the current is that its oscillation has been enormously increased by the passage through apparatus and over spark gap, and possesses the interesting properties of the high tension, high frequency currents. Foremost, perhaps, is the fact of their harmlessness.

While a spark, several inches in length, is being delivered, a quick grasping of the discharging rod will not give any shock, but the person grasping it becomes an interesting centre of study ; he picks up a vacuous tube and throughout it is filled with a phosphorescence which ranges in colour from purple to pale greenish blue according to vacuum ; he takes hold of a Geissler tube and its lovely play of colours is induced by his grasp ; a dozen people and a dozen tubes alternated, the end persons each grasping a terminal, form a striking and lovely spectacle, and the light

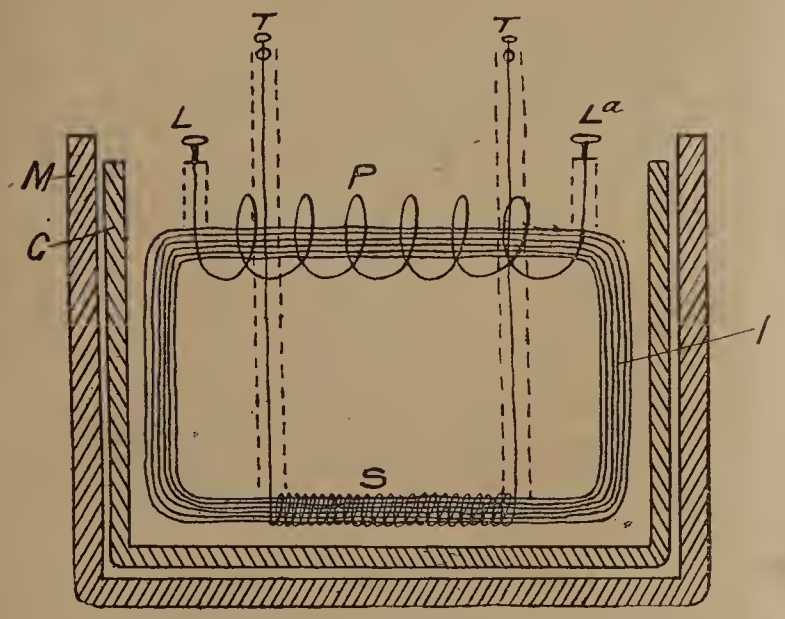


Fig. 2.

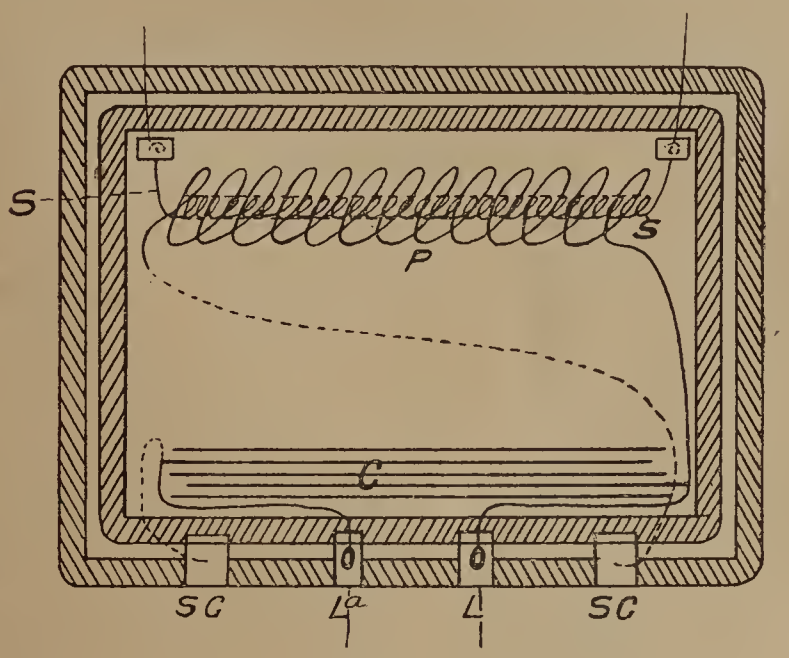


Fig. 3.

given off from the tubes is sufficient to read by. Long wand-like tubes are very effective.

Many other experiments in fluorescence, deflagration, etc., are veritably at the operator's finger ends.

But it is with the working of Crookes tube and its modifications and Röntgen rays that we are concerned, and here the first obvious difference which awaits us is the superior penetrative power of the high frequency current. A tube which requires a six-inch spark from an induction coil of the Ruhmkorf pattern will work well with a two and-a-half inch spark from the Tesla, and so an apparatus giving an 8-inch spark stream will drive any tube to be met with, and is far beyond the requirements of Röntgen ray work as at present practised.

In conclusion, a few hints on practical working may be useful. In connecting up tubes great care should be exercised in avoiding any projection of wire ends towards the tube, as this leads to perforation. Tubes should be chosen which have a long distance between the outside terminals so that outside sparking over may be avoided ; it is always dangerous to the tube. If the tube is found to spark over, it may have its bare terminals protected by a mixture of equal parts of pitch and paraffin wax made into a column an inch thick and as long as necessary. The spark rods should be used as a safety valve. It is much better to begin work with a tube of a moderate degree of exhaustion. One requiring a 2-inch spark from an induction coil will do admirable work in delineating the skeletons of small mammals, snakes, and fishes, and work will run the vacuum up quite soon enough in most cases. If not, a blank run for an hour or two just below its best working current will raise the vacuum greatly and yield a tube which will show a backbone or a heart or liver of a portly patient on a good screen.

A point of great importance is that the full current at which work is to be done should never be turned on at once, and if for any reason the current is turned off the spark gap should be lessened before re-starting. Neglect of this precaution is ruinous to tubes.

To my mind, a pharmacist is from his knowledge of physics and his frequent acquaintance with the technique of photography better qualified than any other man to take up this work, and his natural position as the henchman of the surgeon and the physician points to him as the one to whom the work legitimately belongs. The mere novelty of the thing is over, and now that the interfering amateur who does the work for nothing is out of the way, an adequate remuneration for this work, which requires special knowledge, should be obtained by those of us who engage in it.

Formulæ for "Rubber" Plasters.—*Oxide of Zinc "Rubber" Plaster* : Heat a mixture of olive oil, oxide of zinc, and water for some hours until saponified, then wash the mass out with lukewarm water, press out, and add 30 pints of dammar resin to every 100 parts. This resin must always be in proportion to the prescribed quantity of oxide of zinc or the respective quantity of lanolin or zinc ointment. Spread the substance obtained on linen. Greater adhesiveness is obtained by adding 6 to 10 of well-cleaned Para caoutchouc. *Resorcin "Rubber" Plaster* : Melt resin and yellow wax, add lanolin and soap, and heat for an hour on the water bath. Add the necessary quantity of resorcin. *Salicylic Acid Plaster* : This is prepared in a similar manner. *Tar "Rubber" Plaster* : Melt 20 parts of lead plaster, 1 part of yellow wax, and 1 part of common resin ; add to this mixture 3 parts of juniper tar. Another prescription is, Japanese wax, dammar resin, tallow, and juniper tar. *Iodoform "Rubber" Plaster* : Add 10 of iodoform to the prepared plaster ; the odour of the iodoform will not be noticeable.—*Pharm. Centralh.*, xxxviii., 511.

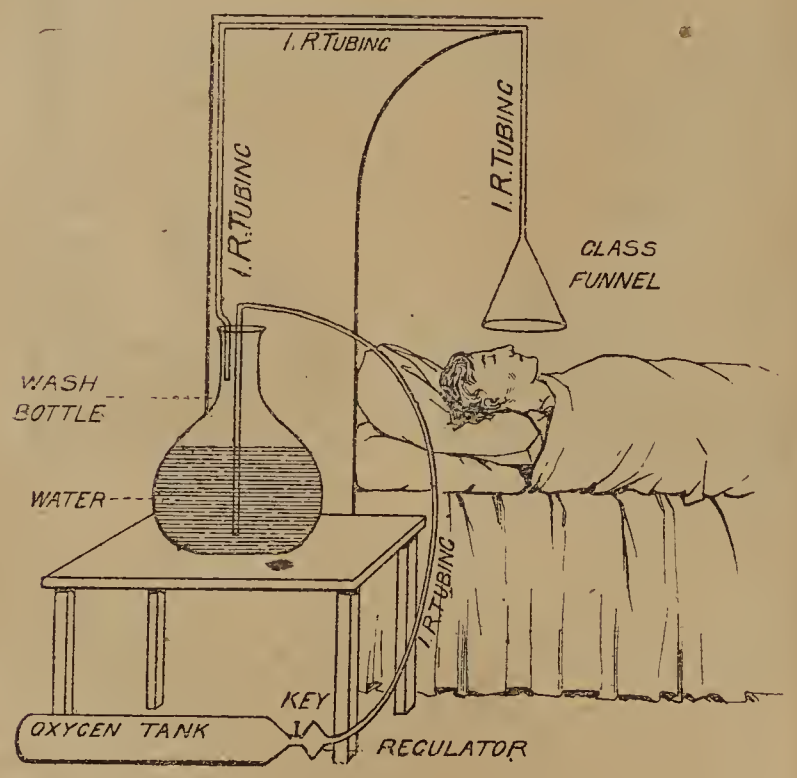
AN APPARATUS FOR ADMINISTERING OXYGEN.*

BY GEORGE LUNAN.

The use of oxygen as a remedial agent is undoubtedly extending. There are frequent inquiries by medical practitioners, and by the general public, by direction of the former, for the apparatus necessary to administer it. The present time is probably the most opportune for dispensing chemists deciding whether they are to control the sale of oxygen for medicinal purposes or to leave it in the hands of dealers in limelight requirements.

Possibly many of you may think that the demand will never be so great in your district as to warrant taking an interest in the subject. My experience is decidedly in favour of giving the subject consideration, for the future I am persuaded will find oxygen as an inhalant in greatly extended use. There is no one better fitted to sell oxygen than the dispensing chemist, from the fact that he is now rightly regarded as specially trained to protect the public from anything inferior or deleterious required for medical purposes.

So long as oxygen was in use for limelight only it did not possess any interest for him, but now that it is required as a remedial



agent it is a matter of great importance to him. Although compressed oxygen as supplied at present is suitable for inhalation, as far as I have been able to determine, no one knows how soon we may have it on the market containing such impurities as carbonic anhydride, sulphurous anhydride, or even nitrous and nitric oxides. There is nothing special or original in the apparatus shown, but it is a practical method of exhibiting oxygen for the purpose of inhalation. The tank is screwed to the regulator in the ordinary way, and the latter connected by rubber tubing to a large wash-bottle containing water. In use the gas is then conveyed through more tubing to a convenient position over the patient's mouth, where it is allowed to diffuse by aid of a glass funnel attached to the tubing, as shown in the illustration. All that is necessary when the apparatus has been conveniently placed is to use the key sufficiently to allow the oxygen to bubble slowly through the wash-bottle.

*Read at an Evening Meeting of the Pharmaceutical Society (North British Branch), on Wednesday, April 20.

AN INCOMPATIBLE STRYCHNINE MIXTURE.*

BY J. RUTHERFORD HILL.

The following mixture was brought under my notice the other day by one of our associates, Mr. John Johnstone :—

℞. Potass. Iodid	ʒii.
Liquor Strychninæ	ʒiv.
Infus. Quassiæ ad	ʒvi.
	M.

Sig.—A teaspoonful in water thrice daily.

It was written by an eminent physician, and is an instance of the well-known incompatibility of strychnine solutions with potassium iodide. There is, in a few minutes, particularly on shaking, an abundant separation of fine crystals. I should hardly have brought the matter forward were it not for the information supplied to me in connection with it. The dispenser drew the attention of the prescriber to the incompatibility, who said he had it specially dispensed by a pharmacist to assure himself that it was not incompatible, and the mixture so dispensed had been standing in his room for a week and showed no signs of a deposit. He further said it was a favourite prescription, and had frequently been dispensed by pharmacists without any complaint. The dispenser was able to prove to the prescriber that the mixture could not be dispensed as written without a precipitate of a dangerous kind being formed. Ultimately the difficulty was got over by dispensing the strychnine and potassium iodide in separate bottles and instructing a dose to be taken from each. But the fact that the mixture had been frequently dispensed without any question seems to justify calling attention to the circumstance.

The mixture and the precipitate were examined with a view to ascertain exactly what happens. First of all, what was the precipitate? It might be strychnine hydrochloride salted out by the potassium iodide. Some of it was separated and tested, with the result that it was undoubtedly strychnine hydriodide. This was to be expected, considering the insolubility of the hydriodide, as indicated in a subsequent note. After allowing the mixture to stand for six hours, the strychnine remaining in the clear supernatant liquid was determined by washing out with chloroform. The mixture, to begin with, contained 2·223 grains of strychnine in solution. At the end of six hours only 0·372 grain remained in solution and 1·851 grain had been precipitated. That is to say, five-sixths of the strychnine had been precipitated. Even then precipitation was still going on slowly. After two days, the free hydriodic acid had begun to decompose, and reddish-brown acicular or columnar crystals began to separate. These are the same crystals that form when solution of iodine is added to a solution of strychnine. The quantity was too small for examination. They are heavier than the hydriodide crystals, and are probably the tri-iodide of strychnine mentioned by Bauer ('American Pharmaceutical Association Proceedings,' 1875, page 419). In this way almost the entire quantity of strychnine is precipitated. It almost seems as if the precipitate had been filtered out by some of the dispensers, or it may have been dispensed, labelled, and wrapped up before the precipitation took place.

An attempt was made to prevent precipitation by the addition of rectified spirit, and there was less precipitation after adding ʒss., and still less after adding ʒi., but to add more would have been therapeutically inadvisable. Mr. Duncan has made some experiments, and finds that glycerin retards precipitation better than alcohol, but I think the safest and only satisfactory method is to have two separate solutions.

* Read at an Evening Meeting of the Pharmaceutical Society (North British Branch), on Wednesday, April 20.

STRYCHNINE HYDRIODIDE.*

BY J. RUTHERFORD HILL.

When investigating the precipitate formed in the incompatible strychnine mixture referred to in my previous note, it became necessary to inquire as to the nature and properties of strychnine hydriodide. On referring to the usual authorities, practically no definite information could be found.

A quantity of the hydriodide was prepared by dissolving strychnine in excess of hot, freshly-prepared hydriodic acid. The fine silky acicular crystals, which separated on cooling, were collected on a filter, washed, and re-crystallised from rectified spirit.

The pale straw-coloured crystals so obtained are flatter and less distinctly acicular than those obtained from the hot acid aqueous solution. The latter crystals are of a colour very like tannic acid. When re-crystallised from water, the crystals retain their acicular character more than those from rectified spirit, and they are larger and less coloured than the first crop. The constitution of the salt appears to be the same, however, in both cases.

The character which most attracted my attention was the comparative insolubility of the salt in water. While the hydrochloride is soluble 1 in 35·5 of water and the hydrobromide 1 in 55, I found as the mean of three determinations that 1 part of strychnine hydriodide requires for solution 309 parts of water, and the solubility may therefore be put in round numbers as 1 in 310 parts of water at 15·5° C. I have not yet determined the solubility in rectified spirit.

The percentage of hydriodic acid in the salt was determined by decinormal soda solution, using phenol-phthalein as indicator. Owing to the small quantity of material only one careful titration could be made, and it indicated 24 per cent. The percentage of strychnine was determined by adding ammonia and washing out with chloroform. One careful determination gave 66 per cent. The water of crystallisation was determined by heating a weighed quantity of the salt to 110° C., ultimately raised to 120° C. The mean of three determinations indicated 7·93 per cent.

A salt having the formula $C_{21}H_{22}N_2O_2HI,2H_2O$ requires—

	per cent.		per cent.
Strychnine	67	found	66
Hydriodic Acid	25·7	,,	24
Water	7 23	,,	7·93

The solution of the salt in water is neutral, but after standing for two days there are slight indications of decomposition. The salt itself seems quite stable, and the above formula seems to indicate its true constitution. Some crystals prepared from a hot dilute alcohol solution gave, on drying at 120° C., 3·85 per cent. of water. A salt of the formula $C_{21}H_{22}N_2O_2HI\cdot H_2O$ requires 3·75 per cent. and it would seem possible that there may be two kinds of crystals, but the quantity was too small to determine this point.

Treatment of Trachoma with Solutions of Iodine.—E. A. Nesnamoff recommends the following treatment, which brings about healing in two to three weeks. An application is made two or three times with a 1 to 2 per cent. solution of iodine. It does not produce great irritation. This is followed by a 1 per cent. solution of iodine in white vaseline oil, the eye having previously been dried with a pad of absorbent cotton. Only in obstinate cases is the following ointment necessary :—Iodi., 2 or 3 grammes ; ol. vasel. alb , 100 grammes ; ether to produce complete solution. The author finally observes that iodine in vascline oil is one of the best remedies for inflammation of the lachrymal sac.—*Munich Med. Woch.*, xliv., 1358.

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* Read at an Evening Meeting of the Pharmaceutical Society (North British Branch), on Wednesday, April 20, 1898.

SELECTED FORMULÆ.

Sticky Fly-Papers.

The following proportions are given for preparing "sticky" fly-papers :—

Resin	550	500	650	600	500
Linseed Oil	350	300	—	—	—
Castor Oil	—	—	350	300	340
Honey	100	200	—	100	—
Glycerin	—	—	—	—	160

Melt together and smear on paper while warm. The addition of strong decoctions of pepper or quassia chips or emetic tartar to the honey kills the flies quicker.—*Pharm. Centralh.*, xxxviii., 448.

Applications for Chapped Hands.

(1) Lanolin, 900 grammes ; liquid vaseline, 25 grammes ; vanillin, 5 centigrammes. (2) Distilled water, 10 ; levulose, 1 ; perfume as required. (3) Alcohol, 90 per cent., 80 ; glycerin, 35 ; rose water, 30 ; salol, 2. The last two lotions should be applied after washing the hands in tepid water with non-irritant soap, and drying. The lotion is applied to the backs of the hands and allowed to dry on. (4) Zinc oxide, 13 ; glycerin, 45 ; rub together, and add lanolin, 40. To be applied at night.—*Bull. Gén. de Thérap.*, cxxiii., 189, after *Rev. de Thérap.*

Unna's Preparations for the Hair.

Borochloroform Alcohol : Boric acid, 1 ; alcohol, 100 ; chloroform, 5. *Acetic Sublimate Solution* : Acetic acid, 1 ; Van Swieten's solution, 100. (Van Swieten's solution is composed of corrosive sublimate, 1 ; alcohol, 10 ; water, 990). *Ichthyol Salicylic Soap* : Ichthyol, 10 ; salicylic acid, 5 ; soap basis, 85. *Iodine Sublimate Solution* : Mercuric chloride, 2 ; glycerin, 100 ; tincture of iodine, 900. *Croton Oil Salve Pencil* : Croton oil, 10 ; lanolin, 5 ; yellow wax, 5. *Ung. Chrysarobin. Comp.* : Chrysarobin, 5 ; ichthyol, 5 ; salicylic acid, 2 ; fat, 30 ; vaselin, 58.—*Pharm. Central.*, xxviii., 840.

Malt Extract.

A practical recipe for the production of malt extract, according to Fellerer (*Sudd. Apoth. Zeitung*, 1897, No. 88), is as follows :—1 kilo of malt is broken up and mixed with 1500 C.c. of water of 50° C. and 10 drops concentrated hydrochloric acid. The mash must be kept for two hours at a temperature of 45° C., after which 3500 C.c. of water at 65° C. is added. After two hours, during which time the temperature must be kept at 60° (not more), it is strained, the liquid filtered through coarse cloth and evaporated *in vacuo*. Malt extract prepared in this way is darker than the usual preparation in the market (which are often clarified by means of albumin), but is sweet and pleasant to the taste. If a lighter colour is desired, the temperature should not be allowed to rise above 45° to 50° C. : this has, however, the disadvantage of producing an extract of less sweetness. The hydrochloric acid aids the diastasic action very materially.—*Pharm. Zeit.*, xlii., 897.

Colours for Liqueurs, Confectionery, and Foods.

Red.—(*a*) Mix cochineal, 6, with chalk, 2, and rub well together, then add gradually alcohol, 95 per cent., 12, and finally water, 15 ; set aside for a time, then filter. (*b*) Dissolve carmine, 2, in solution of potash, 12, and dilute with water to make 100. *Yellow.*—(*a*) Use safflower either as an extract or as a tincture. (*b*) Yellow berries extracted with alcohol. *Green.*—(*a*) Extract of saffron, 1·20 with solution of indigo. The colour is improved by a few drops of chloroform. (*b*) Tincture of saffron with solution of indigo carmine mixed with an equal volume of glycerin. (*c*) Chlorophyll in alcoholic solution—*Pharm. Zeit.*, xlii., 515.

The British Pharmacopœia, 1898.

The Vegetable Materia Medica of the Work.

THE botanical names of plants yielding drugs official in the 1898 Pharmacopœia have, with a few exceptions, been brought into accordance with the 'Index Kewensis,' and many of the illustrations referred to have been selected from more readily accessible works than hitherto. In some cases alterations of the official name have been made for which there is no evident reason, such as *Ipecacuanhæ radix* for *Ipecacuanha*, and *Cascarilla* for *Cascarillæ cortex*, and *Linum* for *Lini semina*. The wording of the descriptions, and of the characters and tests, has, in the majority of cases, been modified, so as to more carefully limit the quality of drugs to be used. Details concerning the more important microscopical characters of drugs have been added, and in over twenty instances the limit of ash has been given, apparently with the view of assisting in the detection of adulteration of powdered drugs. It will be noted also that, except in a very few cases, the geographical source of the drug is not stated. This has apparently been done in order that each colony may use drugs grown there, instead of importing them. It is, in fact, a step towards the introduction of an Imperial Pharmacopœia. There are a few apparent inconsistencies in the adoption of names and of botanical sources or of particular varieties of drugs, a possible explanation of which has been offered in some cases, and where an explanation does not seem possible, the alterations have simply been pointed out.

ACACIÆ GUMMI must be insoluble in 90 per cent. alcohol. One part of the gum, dissolved in an equal weight of water, should not form a glairy mucilage, nor, after admixture with more water, yield a gummy deposit on standing. The translucent viscid solution feebly reddens litmus. With solution of borax it gives a more or less translucent white jelly; is not precipitated by a solution of lead acetate; is not coloured blue or brown by a small quantity of solution of iodine (absence of starch or of ordinary dextrine of commerce), nor bluish black by test solution of ferric chloride (absence of tannic acid); and does not give a red precipitate when boiled with solution of potassio-cupro tartrate (absence of certain sugars). The ash of gum acacia should not exceed 4 per cent. of its weight. Gum arabic is thus limited to the finest qualities, and the use of gums like the Australian varieties, containing tannin, or of gums like that of Sennaar, which gives a glairy mucilage, is excluded, and the adulteration of powdered gum is now precluded by several of the tests.

ACONITI FOLIA.—Omitted.

ACONITI RADIX is to be collected in autumn. Internally the root is whitish and starchy. It is crowned with the remains of an undeveloped bud. It must not be hollow or spongy, and must not retain any portions of the stem. The transverse section exhibits a thick parenchymatous cortex and large stellate pith with about seven projecting angles; the groups of vessels are small and few in number. These directions exclude Japanese and German aconite roots, and confine the drug to fully matured roots. It is one of the few instances in which geographical source is limited.

ALOE BARBADENSIS is obtained from *Aloe vera*, Linn., *Aloe chinensis*, Bak., 'Bot. Mag.,' plate 6301, and probably other species. The opaque variety, examined under the microscope, exhibits numerous minute crystals embedded in a transparent mass. The powder imparts a crimson colour to nitric acid, and when treated with sulphuric acid and the vapour of nitric acid, should yield only a slight bluish-green, not a bright blue colour (absence of Natal aloes). Barbados aloes is almost entirely soluble in alcohol (90 per cent.) diluted with half its volume of water; not more than 30 per cent. should be insoluble in cold water. The words Curaçao and Barbados are spelt correctly in the new edition. Very little aloes now comes from Barbados, and the term both in this case and in that of Socotrine aloes is evidently retained as a convenience to prescribers. The percentage of matter insoluble in water and alcohol limits the official articles to the carefully prepared drug.

ALOE SOCOTRINA is the dried juice, usually more or less viscid and brownish-yellow, but when dried, hard, dark brown, or nearly black, breaking with a dull waxy uneven fracture; taste nauseous and bitter. Zanzibar aloes is usually imported in liver-brown masses. Fracture dull, waxy, but nearly smooth and even It has a characteristic odour and a nauseous and bitter taste. Both varieties are opaque, even in small splinters, exhibit when examined under the microscope numerous minute crystals embedded in a transparent mass, and impart to nitric acid a reddish or yellowish-brown colour. If the vapour of nitric acid is blown over the powder, previously mixed with sulphuric acid, no blue coloration is produced (absence of Barbados and Natal aloes). Socotrine and Zanzibar aloes are almost entirely soluble in alcohol (90 per cent.); diluted with half its volume of water; about 50 per cent. should be soluble in water. Dose of both aloes 2 to 5 grains. The description here is not so carefully worded as it might be. The words "nearly black" applied to Socotrine aloes seem to permit the use of the inferior, badly-prepared drug, and the statement that both varieties are opaque even in small splinters is not true of fine qualities of the Zanzibar drug. The nitric acid test is very necessary, as a good deal of the so-called Socotrine aloes of commerce gives a crimson colour with that acid, and is evidently not the true drug. The solubility test should prevent the use of very bad samples of the true drug.

AMMONIACUM is the gum resin exuded from the flowering and fruiting stem of *Dorema ammoniacum*, D. Don., and probably other species ('Trans. Linn. Soc.', ser. 2, Bot., vol. iii., pl. 23 to 25). The nodular masses vary in size from $\frac{1}{4}$ inch to an inch ($\frac{1}{2}$ to $2\frac{1}{2}$ Mm.) in diameter. The following test is given: If a small fragment be heated to redness in a dry test-tube the contents of the tube, after cooling, yield with boiling water a solution which, when largely diluted with water and made alkaline with solution of ammonia, does not exhibit a blue fluorescence (distinction from asafetida and galbanum). Dose, 5 to 15 grains. The umbelliferone test seems hardly necessary to distinguish this drug from asafetida and galbanum, for no one familiar with drugs could possibly confound either the odour, taste, or appearance of these gum resins.

AMYGDALA DULCIS.—The place of exportation is not mentioned. The testa is cinnamon brown, thin and rough. The seed is exalbuminous, and contains two large plano-convex, oily cotyledons.

AMYLUM.—Illustrations of the plants yielding official starch are added (Bentl. and Trim., 'Med. Pl.,' vol. iv., plates 291 to 296). Rice starch is without evident hilum or striæ. Starch should be free from granules other than those described.

ANETHI FRUCTUS.—The dried fruit of *Peucedanum graveolens*, Benth. and Hook. f. The mericarps are usually freed from the pedicel, and 1/12th to 1/8th inch (2-3 Mm.) broad, very strongly compressed dorsally. The dorsal ridges are inconspicuous, but the lateral are prolonged into paler brown wings. Each mericarp exhibits in transverse section six vittæ. The mention of the presence of six vittæ can scarcely be called a character, since it occurs in several of the official umbelliferous fruits. There is no test given to exclude Indian dill, the fruits of *Peucedanum sowa*, although the oil is known to differ in constitution from that of *P. graveolens*.

ANISI FRUCTUS.—The illustration of Berg and Schmidt is replaced by that of Bentl. and Trim., 'Med. Pl.,' vol. ii., plate 122. The fruit is described as ovoid in form, somewhat laterally compressed, and rough from the presence of short bristly hairs, and the breadth 1/12th inch (2 Mm.) is given. The number of ridges is omitted, and the vittæ are said to be numerous. The taste is aromatic instead of spicy. Anise is frequently sold in powder, and a limit of ash would have been a useful test, as the fruit varies exceedingly in quality and in freedom from extraneous matter. A ready test, indicating the absence of conium, would have been an advantage, for although the mention of numerous vittæ indicate

its absence, it is not without some trouble and expenditure of time that such a test can be applied.

Anisi Stellati Fructus is omitted.

Anthemidis Flores.—The dried expanded flower-heads of *Anthemis nobilis*, collected from cultivated plants. They are about ½ to ¾ inch (12 to 20 Mm.) in diameter, hemispherical in shape, white or pale buff in colour. The involucre is composed of several rows of oblong bracts with membranous margins; the bracts on the receptacle are concave, blunt, narrow, and scaly, and the florets are mostly ligulate and white. The description implies that only double chamomile flowers are to be used. No mention is made of the single chamomile flowers of commerce.

Araroba represents the chrysarobinum of the B.P. 1885, before purification. It is described as a substance found in cavities in the trunk of *Andira araroba*, Aguiar., freed as much as possible from fragments of wood, dried and powdered. The powder varies in colour from brownish-yellow to umber-brown. It should yield to hot chloroform not less than 50 per cent. of a substance which, on evaporating the chloroform from the filtrate and drying and powdering the residue, should have the character of chrysarobin. Allowance is evidently made here for the inferior quality of the drug, which is the only kind said to be obtainable in commerce. Good araroba freed from wood should yield considerably more than 50 per cent. of matter soluble in hot chloroform.

Armoraciæ Radix is to be collected from cultivated plants, which are not now required to be of British origin. It is marked at the crown, where it is somewhat enlarged, with closely approximated semi-amplexicaul leaf-scars.

Arnica Rhizoma.—The description is practically unaltered. The rhizome is horizontal, curved, the leaf-scars are amplexicaul, and the rootlets brittle, and the remains of the stem and leaves are hairy. The transverse section exhibits a number of resin-ducts near the inner margin of the cortex.

Asafetida is obtained from the root of *Ferula fœtida*, Regel. ('Trans. Linn. Soc.,' ser. 2, Bot., vol. iii., pl. 12 to 14). It should be in rounded or flattened tears, usually varying in size from ½ to 1 inch (12 to 25 Mm.) in diameter, or in masses of agglutinated tears, dull yellow in colour, darkening by keeping. When fresh the tears are usually tough at ordinary temperature, but become hard in cold weather. Not less than 50 per cent. should be soluble in alcohol (90 per cent.). If a small fragment be heated to redness in a dry test tube, the contents of the tube after cooling yield with boiling water a solution which, when largely diluted and made alkaline with solution of ammonia, exhibits a blue fluorescence. In the spelling of this word there is somewhat of the "straining at a gnat." In Murray's 'New English Dictionary' it is spelt asafœtida, and there are more instances given of the usc of "œ" than "e," and if this return to the original Latin spelling were carried out logically, a very large number of both Latin and English words would have to be altered. The question of classically correct spelling is a very vexed one, and it is wiser to follow general usage as a rule rather than pedantry. In other Pharmacopœias it is spelt with "œ." Asafetida in the tear is evidently intended to be used, as the ash in lump asafœtida is rarely below 14 and often nearer 40 or even 60 per cent.

Aurantii Cortex Recens (New).—The fresh outer part of the pericarp of *Citrus aurantium*, var. *Bigaradia*, Hook. f., Bentl. and Trim. 'Med. Pl.' vol. i., plate 50. Characters:—Externally deep orange-red, or red in colour and generally rough and glandular. On its inner face there should only be a very small amount of the white spongy portion of the pericarp. It has a pleasant aromatic odour and bitter taste.

Aurantii Cortex Siccatus.—The rind is obtained from *Citrus aurantium*, var. *Bigaradia*, Hook. f. It is in thin strips, of which the surface is rough. On its inner surface there should be only a very small amount of the white spongy portion of the pericarp. The botanical name here given is not strictly speaking the proper one, according to the rules accepted by most botanists. Linnæus called the bitter orange *Citrus aurantium*, regarding it as the type and the sweet orange was a var. *B. Citrus vulgaris*, Risso, is a much earlier name than the one by Hooker here given, and is followed in most pharmacopœias, and it is difficult to understand on what grounds the present name has been adopted, unless for the purpose of bringing in the name *Bigaradia*, familiar to pharmacists as applied to oil of neroli (Bigarade).

Balsamum Peruvianum.—One volume is soluble in 1 volume of alcohol (90 per cent.), but on the further addition of two more volumes turbidity occurs. It is stated that the tests given in the B.P., 1885, are to detect copaiba and resins, and the latter part of the test, *i.e.*, heating the mixture of lime and balsam, is to detect the presence of castor oils or other fatty oils, and that shaking with an equal bulk of water is to detect the presence of ethylic alcohol. The following additional tests are given:—About 40 per cent. of resin should separate when 1 part of balsam is treated with 3 parts of carbon bisulphide, and the clear supernatant liquid should be of a pale brown colour, with only a slight fluorescence (absence of gurjun balsam). If 5 grammes of the balsam be shaken with 5 C.c. of a solution of sodium hydroxide, of specific gravity 1·16, and then washed with three sucessive quantities (each of 15 C.c.) of purified ether, and the ether removed, the residue, dried cautiously, until the loss in two weighings at five minutes' interval does not exceed 1 Cgrm., should weigh between 2·85 and 3 grammes. To this weighed residue add 20 C.c. of normal volumetric alcohol solution of potassium hydroxide, with 40 C.c. of alcohol (90 per cent.). Saponify under a reflux condenser for one hour, then determine the amount of alkali uncombined by means of trituration with the volumetric solution of sulphuric acid. The amount of residue above specified should combine with from 11·9 to 12·8 C.c. of the normal volumetric alcoholic solution of potassium hydroxide (presence of a sufficient proportion of cinnamein). Dose, 5 to 15 minims. The amount of uncombined alkali may be determined in the usual way by means of titration with the volumetric solution of sulphuric acid. Dose 5 to 15 minims.

Balsamum Tolutanum.—A balsam obtained by making incisions in the trunk of *Myroxylon toluifera*. The following test is added:—If 5 grammes are gently warmed with two successive portions of 25 and 10 C.c. of carbon bisulphide, the solution should yield, when evaporated to dryness, not less than one-third of its weight of potassium hydroxide for its saponification (presence of a sufficient proportion of benzoates and cinnamates). Dose, 5 to 15 grains. The statement that the crystals contained in the balsam, as seen under a microscope, are cinnamic acid, is omitted, possibly because benzoic acid is also present in the drug.

Belæ Fructus.—Omitted.

Belladonnæ Folia.—The fresh leaves and branches to which they are attached are to be collected when the plant is in flower. They are glabrous, or nearly so. The corolla is gamopetalous, campanulate, and of a dingy purple colour. The transverse section of the leaf exhibits bicollateral vascular bundles. The mesophyll contains numerous cells filled with very minute crystal of calcium oxalate. The microscopical test should be useful to distinguish the broken leaves from those of stramonium and henbane.

Belladonnæ Radix.—The root collected in the autumn and dried. The geographical source is not now given. Characters and tests: In nearly cylindrical pieces entire or longitudinally split, varying in diameter from about ⅜ to ¾ of an inch (10 to 20 Mm.), and usually from 6 inches to a foot (15 to 30 C.m.) or more in length. Externally it is of a pale greyish-brown colour, and is finely wrinkled longitudinally. The transverse fracture is short. Internally the root is whitish and starchy. Within and mostly near the cambium ring are numerous scattered groups of vessels and fibres, which should not exhibit a prominently radiate arrangement. Most of the parenchymatous cells contain small compound starch grains, and some are filled with numerous very minute crystals of calcium oxalate. The description is here very carefully worded, evidently with the view of excluding old and woody roots containing less alkaloid, and of ensuring a more uniform and active preparation.

Benzoinum.—Known in commerce as Siam and Sumatra benzoin. The mode of obtaining it from the tree is omitted. In curved or flat tears varying in size, but seldom exceeding 2 inches (5 C.m.) in length and ½ inch (12 Mm.) in thickness, yellowish or reddish-brown externally, milky white internally, or in masses composed of tears more or less closely agglutinated, owing to the presence of a reddish-brown translucent or greyish-brown opaque resinous substance. Siam benzoin recalls the odour of vanilla, and Sumatra benzoin that of storax. It is almost entirely soluble in alcohol of 90 per cent. Only the finest qualities will conform to the test of almost entire solubility in alcohol of 90 per cent. It would perhaps have been an advantage if the drug had been limited to the Siam benzoin in tears for medicinal use only, as it is by far the purest, and has a distinctive vanilla odour.

Buchu Folia.—The dried leaves of *Barosma betulina*, Bart. and Wendl., Bentl. and Trim., 'Med. Pl.,' vol. i., pl. 45. The leaves are rhomboid-obovate in outline, rigid, when slightly moist cartilaginous. The surface is glabrous and somewhat warty, the margin usually sharply denticulate. The transverse section exhibits an epidermis whose cells contain yellow spherocrystals; the inner

walls of these cells are thick and rich in mucilage. The restriction of the drug to the variety containing the largest quantity of the antiseptic, diosphenol, is a decided advantage. The term warty is scarcely applicable to the leaves as there are no warts present on them.

Calumbæ Radix.—*Jateorhiza columba*, Miers. In the wood the vessels are arranged in narrow, radially elongated groups. The parenchymatous tissue is largely developed, and contains numerous starch grains, mostly simple, with excentric hilum. The old spelling is here retained, but in the spelling of the botanical name the 'Kew Index' is followed. The native name of the drug, kalumb, was, however, originally spelt with an "a." It should be remembered that in most other Pharmacopœias the word is spelt with an "o."

Cambogia is to be obtained from *Garcinia hanburii* (Hook. f. Bentl. and Trim., 'Med. Pl.,' vol. i., pl. 33). Alcohol of 90 per cent. is used in ascertaining its solubility. When the iodine test is applied the colour should not become distinctly green (absence of more than a trace of starch). When incinerated it should not yield more than 3 per cent. of ash. Dose ½ to 2 grains. The drug varies much in purity, and the ash test is a useful addition.

Camphor is described as a white crystalline substance (Bentl. and Trim., 'Med. Pl.,' vol. iii., pl. 222). In transparent pieces of tough consistence, also in rectangular tablets, or in pulverulent masses known as flowers of camphor. Sp. gr. about 0·995. It is soluble in 700 parts of water, in about 1 part of alcohol (90 per cent.), in ¼ part of chloroform and in 4 parts of olive oil. Very soluble in ether. It forms a liquid when triturated with chloral hydrate, menthol, phenol, and thymol. Dose 2 to 5 grains. The illustration of the plant is one of the worst that could have been chosen, and is veryinferior to either Berg's or Koehler's.

Canellæ Cotex is omitted.

Cannabis Indica.—In compressed, rough, dusky green masses (Bentl. and Trim., 'Med. Pl.,' vol. iii., pl. 231). The upper leaves are simple, alternate, and tripartite; the lower are opposite and digitate, and consist of five to seven linear-lanceolate leaflets with distantly serrated margins. The fruit is one-seeded and supported by an ovate-lanceolate bract. Both leaves and bracts bear external oleo-resinous glands and one-celled curved hairs, the bases of which are enlarged and contain cystoliths. The use of the Bombay drug is evidently intended by the word "compressed," since the Calcutta drug is in more or less cylindrical pieces. This difference in shape should be noted, since the Calcutta drug, which is rarely imported, is much more powerful than that of Bombay.

Cantharides.—*Cantharis vesicatoria*, Latr. Brandt and Ratzeburg, vol. ii., tab. xviii., figs. 1, 2, 3. Reference to illustrations of the animals yielding animal products are given in the new B.P., except in the cases of the common domestic animals.

Caoutchouc (New).—The prepared milky juice of *Hevea brasiliensis*, Muell. Arg. (Collins, 'Report on Caoutchouc,' plate 1), and probably other species. Known in commerce as Pará rubber. In elastic masses or sheets of varying thickness, brownish-black externally, and mottled with a pale tint internally, insoluble in water, ethylic alcohol, alkaline solutions, or dilute acids, soluble in chloroform, oil of turpentine, carbon bisulphide, benzol, and petroleum spirit. When heated to about 257° F. (125° C.) it melts, remaining soft and adhesive after cooling. Odour characteristic, somewhat empyreumatic. Nearly tasteless. The term mottled is scarcely characteristic of Pará rubber, which gradually shades off into a paler tint internally.

Capsici Fructus.—*Capsicum minimum*, Roxb. Bentl. and Trim., 'Med. Pl.,' vol. iii., plate 188. Sometimes attached to a five-toothed inferior calyx and long, straight, slender peduncle. Pericarp leathery, containing ten to twenty seeds, either loose or attached to a thin reddish dissepiment. On incineration capsicum should not yield more than 6 per cent. of ash. The botanical name here given is an earlier one of *C. fastigiatum*. No geographical source is given, although it has recently been shown that some varieties, *e.g.*, Japanese, are much less pungent than others, such as those of Sierra Leone. The ash test is evidently intended to detect impurities in the powder.

Cardamomi Semina.—Bentl. and Trim., 'Med. Pl.,' vol. iv., plate 267. The seeds are about 1/8 inch (3 Mm.) in length and the same in thickness, enclosed in a thin and colourless membranous aril. Incinerated they should not yield more than 4 per cent. of ash. The percentage of ash would detect the presence of pericarps in powdered cardamoms, which in commerce often occur in the powder, the seeds yielding 2 to 4 and the pericarps 10 to 13 per cent. of ash.

Carui Fructus.—The fruit is about 1/25th of an inch (1 Mm.) broad, glabrous. Taste agreeable, aromatic. Incinerated it should not yield more than 8 per cent. of ash.

Caryophyllum.—Bentl. and Trim., 'Med. Pl.,' vol. ii., pl. 112. About 5/8ths of an inch long (15 Mm.). The calyx teeth are thick, rigid, and patent, and the petals imbricated. Incinerated, cloves should not yield more than 8 per cent. of ash. The well-known tests for detecting clove stalks and clove fruits in the powder by means of the stone cells in the former and starch grains in the latter are not given.

Cascara Sagrada.—Official in the B.P., 1885, under the name *Rhamnus purshiani cortex*. Sargent, Silva, vol. ii., pl. 62. In channelled or nearly flat pieces, frequently about 4 inches (10 Cm.) long and about 1/16th of an inch (1½ Mm.) thick. It possesses a nearly smooth purplish-brown cork marked with scattered transversely elongated lenticels, usually more or less covered with patches of silvery-grey lichen, and when these are removed the exposed cork is of a brownish-red colour. The inner surface has faint transverse corrugations. The taste is nauseous and persistent. This drug is now placed under the vernacular name instead of under the botanical name as in the last edition.

Cascarilla.—This is the new name for *Cascarillæ cortex* of the B.P., 1885, Bentl. and Trim., 'Med. Pl.,' vol. iv., plate 238. The outer layer consists of a dull brown or dark grey longitudinally wrinkled cork frequently marked with small longitudinal and transverse cracks, and more or less completely covered with silvery-grey patches spotted with minute black dots. It easily separates, disclosing a brownish or dark grey layer marked with longitudinal and transverse furrows. The transverse section exhibits under a lens a dark reddish-brown secondary cortex traversed by thin whitish medullary rays, but no groups of sclerenchymatous cells. Taste aromatic and bitter. The object of leaving out the word cortex in the case of this drug only is not clear, and is not consistent with the alterations made elsewhere, as under jaborandi.

Cassiæ Pulpa.—The remarks concerning the pulp obtained separately are omitted.

Catechu.—Bentl. and Trim., 'Med. Pl.,' vol. ii., plate 139. The cubes are porous and friable. Almost entirely soluble in boiling water. Seventy per cent. should be soluble in alcohol (90 per cent.). It should not yield more than 5 per cent. of ash when incinerated. Dose, 5 to 15 grains.

Cera Flava.—Brandt and Ratzeburg, 'Med. Zool.,' vol. ii., tab. xxiv. It should not yield more than 3 per cent. to cold alcohol (90 per cent.), nor more than 50 per cent. to cold ether. The reason for the test given in the B.P., 1885, is now stated, viz., to prove the absence of fatty acids, resin, and Japan wax. Sp. gr. 0·960 to 0·970; melts at 144·5 to 147° F. (62·5 to 63·9° C.). Five grammes of beeswax melted in and mixed with boiling alcohol (90 per cent.), with gentle heat, should require for neutralisation not less than 1·6 C.c. of normal alcoholic volumetric solution of potassium hydroxide, using phenol-phthalein as an indicator. Upon the further addition of 20 C.c. of the volumetric solution, and well boiling for one hour under a reflux condenser, not less than 6·2 nor more than 6·8 C.c. should be found to have combined with the beeswax, as shown by the titration of the uncombined alkali with volumetric solution of sulphuric acid. If 5 grammes of beeswax are heated for fifteen minutes with 25 grammes of sulphuric acid to 320° F. (160° C.), and the mixture diluted with water, no solid wax-like body should separate (absence of paraffin). Beeswax should not yield the characteristic reactions with the test for starch.

Cerevisiæ Fermentum.—Omitted.

Cetaceum.—Brandt and Ratzeburg, 'Med. Zool.,' vol. ii., tab. ix., fig. 3. Nearly insoluble in cold alcohol (90 per cent.). Melting point, 114°·8 to 122° F. (46° to 59° C.). 0·2 gramme dissolved by the aid of a water-bath in 20 C.cm. of alcohol (90 per cent.), 2 drops of solution of phenol-phthalein being added, should not require more than 1 drop of volumetric solution of sodium hydroxide to produce a permanent red colour (limit of acidity). Boiled with alcohol (90 per cent.), and the mixture cooled, and filtered, should not afford a flocculent precipitate on the addition of water (absence of stearic acid).

Cetraria is omitted.

Chirata.—*Swertia chirata*, Ham., Bentl. and Trim., 'Med. Pl.,' vol. iii., pl. 183. Collected when in flower. The description of the root is omitted. Stem slightly winged and much branched above, brown or purplish-brown. Branches slender, elongated, decussate. Leaves

opposite, glabrous, entire, with three to seven lateral veins. Fruit superior, bicarpellary, unilocular.

Chrysarobin.—A substance obtained from araroba by extracting with hot chloroform, evaporating to dryness, and powdering. It consists chiefly of a definite chemical substance also known as chrysarobin, but contains a varying proportion of chrysophanic acid. Colour light brownish-yellow. Entirely soluble in hot chloroform, almost entirely in hot alcohol (90 per cent.), partially soluble in petroleum spirit. In solution of potassium hydroxide it partially dissolves and assumes a deep brownish-red colour. Heated with access of air it melts, giving off yellow fumes, and when incinerated does not leave more than 1 per cent. of ash.

Cinchonæ Cortex omitted.

Cinchonæ Rubræ Cortex.—Bentl. and Trim. 'Med. Pl.,' vol. ii., plate 142. The longitudinal ridges are most marked in the branch bark, with numerous warts running into ridges in the larger pieces; in some varieties furnished with numerous transverse cracks which have not thickened edges. This description suggests that quilled bark, and not shavings, are official. The numerous transverse cracks evidently indicate that Jamaica bark, which is derived from the variety *subpubescens*, may be used.

Cinnamomi Cortex.—Bentl. and Trim. 'Med. Pl.,' vol. iii., plate 224. The iodine test is omitted.

Cocæ Folia.—The dried leaves of *Erythroxylon coca*, Burck., and its varieties (*P. J.* [ser. 3], vol. xxii., p. 818, plate, and 'Bot. Mag.' plate 7334). The leaves imported from Bolivia vary usually from 1½ inch to 3 inches (3 to 7 in.) in length, and from 1 to 3 inches (25 to 30 Mm.) in breadth. They are brownish-green in colour, oval, entire and glabrous, the upper surface bearing a distinct ridge above the midrib, and on either side of it a curved line is almost always distinctly seen. The midrib itself is prolonged into a minute horny apiculus, which, however, is frequently broken off. Most of the epidermal cells on the under surface are seen in transverse sections to project in the form of small papillæ. The slightly bitter taste is succeeded by a sensation of numbness. They should be free from mildew. The leaves imported from Peru are somewhat smaller, narrower, and more fragile than those imported from Bolivia; they are pale green in colour and do not exhibit a prominent ridge above the midrib on the upper surface, nor such distinct curved lines on either side of it on the under surface. The referring of plants so distinct in form, texture, and structure of leaf, as well as in habit of growth, as the Peruvian and Bolivian coca, to one species is difficult to understand, since their distinctive features were carefully pointed out some years ago by the Dutch botanist, Burck. (*P. J.* [3], xxii., p. 817), and the authorities at Kew recognised that the Peruvian form is distinct from the typical plant of Lamarck by giving it a varietal name. The leaves so rapidly lose alkaloid when exposed to air and moisture that the requirements demanded are very necessary. The illustration given in the 'Bot. Mag.' is that of *E. novo-granatensis*, Morris. As a matter of fact the leaves of typical *E. coca*, Lam., are not obtainable in commerce. The commercial leaves are those of *E. bolivianum*, Burck., and *E. novo-granatensis*, Morris.

Coccus.—The dried fecundated female insect. Brandt and Ratzeburg, 'Med. Zool.,' vol. ii., tab. xxvi. Reared on *Nopalea coccinellifera*, Salm-Dyck, 'Mart. Fl. Bras.,' vol. iv., pt. ii., tab. lx., and on other species of *Nopalea*. Incinerated with free access of air it should not yield more than 6 per cent. of ash. The limit of ash given in the last edition was 1 per cent.; the allowance for impurities is, therefore, a very liberal one.

Colchici Cormus.—Collected in early summer. Dose: 2 to 5 grains.

Colchici Semina.—Minutely pitted. The endosperm is oily; its cells are seen in transverse section to have thickened walls with large pits.

Colocynthidis Pulpa.—Only traces of fixed oil should be removed from it by ether. It yields, when dried at 212° F. (100° C.) and incinerated, at least 9 per cent. of ash (indicating absence of seeds). It is very difficult to remove the seeds completely from the pulp when dealing with large quantities. The B.P. test for ash allows for the presence of about 10 per cent. of seeds, which seems to be reasonable.

Conii Folia.—Odour resembling that of mice. The ultimate divisions of the leaves terminate in smooth colourless horny points. These serve to distinguish the leaf from that of *Æthusa Cynapium*, which, however, from growing in different situations from hemlock, is less likely to be mixed with it than the hairy leaves of species of *Chærophyllum*, which grow in similar places.

Conii Fructus.—The endosperm is deeply grooved on the commissural surface.

Copaiba.—The sp. gr. varies from 0·916 to 0·993. The test that after removal of the volatile oil the rasidue is hard and easily rubbed to powder, is explained as indicating the absence of fixed oils. The volatile oil should be present to the extent of at least 40 per cent. and should rotate the plane of a ray of polarised light from 28° to 34° to the left (absence of African copaiba) and should not boil under 482° F. (250° C.). Two drops dissolved in 20 parts of carbon bisulphide and a drop of cooled mixture of equal parts of nitric and sulphuric acid added, a transient violet colour is not produced (absence of gurjun balsam). Four drops of copaiba carefully added to a mixture of half an ounce of glacial acetic acid with four drops of nitric acid, should not afford a reddish or purple colour (absence of gurjun balsam).

Coriandri Fructus.—Primary ridges wavy and inconspicuous, secondary ridges straight and more prominent.

Crocus.—Dried saffron, incinerated with free access of air, does not deflagrate, and yields about 7 per cent. of ash. It should not lose more than 12·5 per cent. of moisture when dried at 212° F. (100° C.)

Cubeba Fructus.—'Kew Bullctin,' Dec., 1887, p. 3. Nearly globular, sometimes depressed at the base, Pericarp abruptly prolonged at the base into a slender stalk, which is about one and a half times the length of the globular portion; within it is a single seed attached by the base. A transverse section of the pericarp exhibits two layers of sclerenchymatous cells, one near the outer the other near the inner surface, those of the latter being radially elongated. The crushed fruit imparts a crimson colour to sulphuric acid (presence of cubebin). Dose 30 to 60 grains. The words "sometimes depressed at the base" might have been omitted, as this is a feature of small immature fruits.

Cusparіæ Cortex.—The dried bark of *Cusparia febrifuga*, D.C. Four to five inches (10 to 12 Cm.) long and about an inch (25 Mm.) wide and 1/12 inch (2 Mm.) thick. A transverse section exhibits numerous cells filled with acicular crystals of calcium oxalate and small oil glands, but seldom any sclerenchymatous tissue other than small isolated groups of bast fibres.

Cusso.—*Brayera anthelmintica*, Kunth. The inner whorl of calyx segments is curved inward over the young fruit, and shrivelled.

(*To be continued.*)

CORRECTIONS TO FORMER NOTES.

The British Pharmacopœia, 1898.—The following is a list of misprints and omissions that have been noted in the summary of the new B.P. formulæ and processes, published last week. Though not material except in some three or four instances, they are all indicated in order that readers may mark their copies accordingly, and so prevent any risk of error. This is the more necessary, since the summary is being largely utilised—in accordance with the idea with which it was compiled—as a guide in the preparation of the new and altered galenicals. All the corrections are embodied in the reprints referred to on page 398.

Ext. Aloes Barb.—Delete the word "evaporated" from line 2.
Ext. Belladonnæ Liq.—For "not" in line 15 read "next."
Ext. Opii.—The dose should read "¼ to 1 grain."
Ext. Sarsæ Liq.—Delete the sentence beginning on line 6.
Liq. Hydrogenii Perox.—Read "peroxide" after "hydrogen."
Podophylli Resina.—For "distilled" in line 2, read "alcoholic."
Spirit. Ætheris Co.—Delete the word "with" from line 3.
Spirit. Rectificatus.—For "of" in line 2, read "for."
Syr. Sennæ.—Read "20 p. c. alcohol," not "90 p. c.," in line 1.
Tinct. Jalapæ.—The quantity of jalap powder is 4 parts.
Tinct. Kino.—For "not" in line 2 read "rub."
Tinct. Quininæ Ammon.—Read quinine sulphate, "2," not "1."
Pil. Saponis Co.—The dose should read "2 to 4 grains."
Syr. Zingiberis.—Read "ginger, in fine powder, 0·5," not "1."
Tinct. Lobeliæ Æth.—The percolate should measure 20 parts.
Tinct. Pruni Virgin.—The quantity of alcohol is 12·5 parts.
Tinct. Senegæ.—The quantity of senega root is 4 parts.
Ung. Aconitinæ.—Read lard "410," not "140."
Ung. Potassii Iodidi.—The quantity of lard is 400 parts.

The following paragraph was also inadvertently omitted:—

Pilula Scammonii Composita.—The strong tincture of ginger and rectified spirit are replaced by an equal volume of the new tincture of ginger. Dose: 4 to 8 grains.

THE CHEMICAL MATERIA MEDICA OF THE NEW B.P.

THE chemistry of the Pharmacopœia presents many features of novelty which have been introduced in conformity with modern usage and scientific advance. But even a cursory review of these changes conveys the impression that in some instances they represent theoretical or writing-desk science, rather than practical acquaintance with the subjects referred to. In defining substances corrected data are given for many of the physical characters, and the nomenclature now used by chemists to indicate constitution has been adopted in some instances. Thus the alkalies and analogous substances are now termed hydroxides; alcohol is named ethyl hydroxide; but the principle is not extended to ammonia or to carbolic acid, which is now distinguished by the name phenol, or to water, for which the familiar name is retained without any reference to its chemical constitution. The acids are now described as hydrogen salts, and in some instances their constitution is illustrated by formulæ, the other salts of particular acid radicles being distinguished according to the metal or base they contain, as sodium acetate, calcium acetate, atropine sulphate, and so on. These innovations apply only to the vernacular names, and not to the Latin titles, of which the new names are synonyms rather than translations.

The literature of chemistry and chemical technology being now so readily accessible, descriptions of the sources of official chemical substances and the modes of preparing them are to a great extent rendered superfluous in a Pharmacopœia: consequently those details have been in many instances omitted, though perhaps less completely than was desirable. Thus, for example, the information that sulphuric acid is produced by the combustion of sulphur or that ammonium bromide may be formed by neutralising hydrobromic acid with solution of ammonia appears to be scarcely necessary or quite consistent with the knowledge of chemistry presupposed by the description of acids as hydrogen salts. In connection with most chemical substances, the characters and tests by which they may be identified and their freedom from impurity determined, are described more fully either in the several paragraphs or by reference to methods of testing for particular substances given in the Appendix in order to save repetition. In both cases the descriptions given are likely to prove as insufficient for instructing the inexperienced as they would be superfluous for the practical chemist.

For the purposes of volumetric testing the metric system has been adopted in the manner that has become customary with analysts, the solutions being made up to the volume of one kilogramme of water at 15°·5 C., sub-divided into one thousand parts described as cubic centimetres. This is entirely a conventional proceeding, and though vessels graduated in that manner are suitable for the purpose in view, they are not really metric measures. Thus, for instance, a flask gauged to measure one kilogramme of water at 15°·5 C. is not strictly speaking a "one-litre flask," though it is so described and the one-thousandth part of its capacity is something more than a millilitre. Any other convenient volume than that of a kilogramme of water at 15°·5 C. might be adopted for making volumetric solutions, and for subdivision in gauging and graduating vessels for volumetric analysis and the practical advantage of taking the volume of a kilogramme of water at 15°·5 C. consists in its being a definite standard. There is, however, some reason to regret that the use of volumetric solutions made up to the volume of ten thousand grain measures has now been officially superseded by solutions that are to be measured in nominal cubic centimetres, since the grain is a unit that is, in many respects, very well adapted for medical and pharmaceutical purposes, and is preferable to the gramme or its volume equivalent.

In the definitions of the several mineral acids there has been but little alteration. In the cases of the hydrobromic, hydrochloric, hydrocyanic, phosphoric, sulphurous, chromic, citric, tartaric, and tannic acids processes of preparation are omitted. The melting point of phenol is given somewhat higher, 102° F. (38°·8 C.), and the boiling point lower, 359°·6 F. (182° C.). Under the head of citric acid a new test is described as giving indications of the presence of tartaric acid which is not calculated to inspire confidence. The specific gravity of oleic acid is changed to 0·890-0·910. The melting point of salicylic acid is now given as 312°·8 to 314°·6 F. (156° to 157° C.).

The dilute acids are unaltered, and they continue to lack the convenient uniformity in strength which obtains in these preparations according to the United States Pharmacopœia.

One of the first omissions noticeable in the new Pharmacopœia is ACETUM, its place being supplied by diluted acetic acid, which is very appropriately ordered to be used in the preparation of the several official vinegars. Some of the more doctrinaire public analysts will probably lament the removal of the official definition as a loss of one of the landmarks of their order. The adoption of a similar proceeding in regard to the official wines, and the substitution of dilute alcohol as a medium in place of sherry or the still more questionable orange wine, would probably be beneficial so far as concerns the uniformity and general character of the preparations.

ACONITINE is defined as an alkaloid having the formula $C_{33}H_{45}NO_{12}$, but no authority is given for the doubtful statement. The process of preparation has been wisely omitted, and the melting point is given as 372°·2 to 374° F. (189° to 190° C.)

The formula now given for ALOIN from Barbados aloes is $C_{16}H_{16}O_7 3H_2O$.

APOMORPHINE HYDROCHLORIDE is now stated to be soluble in 50 parts of water and to be more soluble in alcohol of 90 per cent. If the salt imparts an emerald-green colour to 100 parts of water after shaking the mixture it is to be rejected.

ARAROBA is now described as crude chrysarobin, soluble in hot chloroform to the extent of not less than 50 per cent.

CHRYSAROBIN is described as a substance obtained from araroba by extracting with hot chloroform, evaporating to dryness, and powdering. Chrysarobin so obtained would be a crude product, not comparable with commercial chrysarobin of good quality. This is another instance in which wisdom would have been shown by the omission of a method of preparation.

ATROPINE is described as melting between 239° to 240° F. (115° to 115°·5 C.), soluble in 300 parts water, freely soluble in alcohol, ether, or chloroform.

The characters of ATROPINE SULPHATE are more fully described, and its melting point is given as 361°·4 F. (183° C.)

COCAINE is described as melting at 204°·8 to 208°·4 F. (96° to 98° C.), the hydrochloride as melting at 356° to 366°·8 F. (180° to 186° C.), and not readily soluble in ether. Several tests are described, but the one recommended by Maclagan, which gives the most useful indication of purity, is not mentioned.

For detecting in CODEINE the presence of morphine a strong solution of the hydrochloride acidulated is to be tested with ferric chloride and very dilute potassium ferricyanide, without giving a blue colour.

CODEINE PHOSPHATE is described as a crystalline salt soluble in four parts of water and less soluble in alcohol.

ELATERIN in described as sparingly soluble in alcohol, and readily soluble in chloroform.

GLYCERIN is described as a trihydric alcohol having the formula $C_3H_5(OH)_3$ of 1·26 specific gravity, and an improved mode of testing for arsenic is given.

HOMATROPINE HYDROBROMIDE is described as the salt of an alkaloid prepared from tropine.

HYOSCINE HYDROBROMIDE, $C_{17}H_{21}NO_4HBr3H_2O$, is described as the crystalline salt of an alkaloid existing in hyoscyamus leaves and yielding a gold salt melting at 388°·4 F. (198° C.).

SCOPOLAMINE HYDROBROMIDE is given as a synonym of this salt.

HYOSCYAMINE SULPHATE, $(C_{17}H_{23}NO_3)_2 2H_2O$, the salt of another alkaloid existing in hyoscyamus leaves and possibly in other solanaceous plants. Melting point 402°·8 F. (206° F.), distinguishable from atropine by the crystalline form of the gold salt deposited from solution in boiling water acidulated with hydrochloric acid.

The processes of preparing morphine acetate and morphine hydrochloride are omitted, and the salts are described as compounds of an

alkaloid obtained from opium. Morphine tartrate is now official in place of the sulphate.

Betanaphthol, $C_{10}H_7OH$, is described as melting at 251°·6 F. (122° C.), and tests are given for ascertaining the absence of the corresponding alpha compound.

Phenacetin.—The solubility in alcohol (90 per cent.) is given as 1 in 20.

Phenazone.—The melting point is now given at 235°·4 F. (113° C.).

Physostigmine Sulphate introduced in place of the alkaloid.

Picrotoxin described as melting at 378° F. (192°·2 C.).

Pilocarpine Nitrate, $C_{11}H_{16}N_2O_2HNO_3$, described as a white crystalline powder slightly soluble in cold alcohol.

In addition to the quinine salts hitherto official acid quinine hydrochloride, $C_{20}H_{24}N_2O_2 2HCl 3H_2O$, is now introduced and described as a white crystalline powder soluble in less than its own weight of water.

Salol, or phenyl-salicylate, $C_6H_4{\cdot}OH{\cdot}COO{\cdot}C_6H_5$, is described as melting at 107°·6 to 109°·4 F. (42° to 43° C.).

Sulphonal, described as dimethyl-methane-diethyl-sulphone, melting point 258° F. (125°·5 C.).

Terebene is described as a mixture of dipentene and other hydrocarbons obtained by the action of sulphuric acid on turpentine oil. Specific gravity ·862 to ·866, non-rotatory, and distilling between 312°·8 and 356° F. (156° and 180° C.).

In place of processes for making ether, acetic ether, absolute alcohol, and chloroform, the definitions of these substances are accompanied by statements of tests by which the absence of various probable impurities may be ascertained. The specific gravity of absolute alcohol is given more correctly as 0·794 to 0·7969. In the definition of chloroform the specific gravity is now given as 1·490 to 1·495, and the boiling point between 140° and 143°·6 F. (60° to 62° C.).

Creosote is defined as a mixture of guaiacol, creosol, and other phenols; the specific gravity not less than 1·079 and distilling between 392° and 428° F. (200° to 220° C.).

Spirit of Nitrous Ether is to have a specific gravity of 0·838 to 0·842, and the proportion of nitric oxide it is to yield is not to be much less than five times its volume, even after being kept for some time. A solution of ethyl nitrite in a mixture of absolute alcohol and glycerin has also been introduced, which is to contain not less than 2·5 per cent. by weight of ethyl nitrite after being kept, or five-sixths of the original amount.

There are now three kinds of official Paraffin, the solid melting at 130° to 135° F. (54°·4 to 57°·2 C.); the soft paraffin melting at 96° to 102° F. (35°·5 to 38°·9 C.), and free from smell when heated to 120° F.; and liquid paraffin of 0·885 to 0·890 specific gravity, boiling point not less than 689° F.

The application of chemical treatment in the preparation of extracts, etc., with the object of regulating their medicinal potency as measured by the amount of certain constituents of the drugs represented, may fairly be regarded as the first step towards the eventual abolition of galenical preparations that may become possible as well as desirable whenever the action of drugs and medicinal agents is sufficiently well understood. This method of standardising has now been extended to preparations of belladonna and ipecacuanha, so far as determination of the total alkaloid of those drugs is an indication of the therapeutic strength of their preparations, and in the case of nux vomica an improvement has been introduced in the standardising of the extract on the basis of a definite amount of strychnine.

Iron and Quinine Citrate is required to contain 15 per cent. of alkaloid, as ascertained from the weight of the residue (dried at 120° C.) from the ether solution of the precipitate produced by ammonia in a solution of the citrate. This "precipitate" is to be almost entirely soluble in a little "purified" ether, and when neutralised by sulphuric acid it should answer to the characters of and tests for quinine sulphate.

The test for Starch in Catechu by the iodine reaction is now wisely omitted, as the ordinary test for starch is not applicable to catechu, but it would have been as well to have been more definite than merely to state that catechu should not afford any characteristic reactions with the tests for starch.

Pepsin is directed to be tested by what is essentially the method of the United States Pharmacopœia, and by this test it should dissolve 2500 its weight of hard-boiled white of eggs. The test occupies 6 hours, and is a very tedious one. The old B.P. test modified as to shaking, as described in the Journal, gives results in 30 minutes, that are in every way satisfactory when the operation is intelligently performed. The chief requirement was to raise the proteolytic standard of pepsin to 200 or 250, which would be about equal to 2400 to 3000 under the new directions.

The synonym of Spiritus Ætheris Nitrosi is now given as sweet spirit of nitre, a definition that will help to nullify the defence, formerly urged in many prosecutions under the Food and Drugs Act, that the old sweet spirit of nitre is not the same thing as spirit of nitrous ether.

The botanical characters of Coca Leaves are minutely described, but no mention is made as to the amount of alkaloid that they should contain, or if any, though the amount of alkaloid in coca leaves may vary from 0 to $1\frac{3}{4}$ per cent.

Liquid Extract of Ipecacuanha is to be prepared by extraction with alcohol of 90 per cent.; the marc is then to be mixed with 10 per cent. of lime, and the percolation with alcohol continued. After concentrating by distillation, and determining the amount of alkaloids in the final product, it is to be diluted with 90 per cent. alcohol so as to contain 2 to $2\frac{1}{4}$ grains of the alkaloids in 110 minims or 2 to $2\frac{1}{4}$ grammes in 100 C.c.

Pilocarpine Nitrate is vaguely described as the nitrate of an alkaloid obtained from jaborandi leaves. The characters and tests are not sufficient to discriminate between this nitrate and other nitrates shown to be obtainable from jaborandi. It would have been better to prescribe a fixed melting point so as to exclude an admixture of pilocarpidine nitrate, or salts of other bases.

In the Opium Test the use of morphinated water for washing the crystals is introduced and the crystals of morphine are to be titrated. The weight of pure anhydrous morphine indicated by the titration plus 0·104 gramme—representing the average loss of morphine during the process (from 10 grammes of opium)—should amount in total to 1 gramme, that is to say to a total of not less than 0·95 gramme, and not more than 1·05 gramme, corresponding to about 10 per cent. of anhydrous morphine in the dry powdered opium. It will be noticed that a correction is now made for the solubility of morphine and it is implied that the crystals so obtained will contain no impurity such as lime that would be likely to neutralise the sulphuric acid in the titrating operation.

The test for the purity of Quinine Sulphate has been altered, but it is still only an empirical test. It consists in dissolving 4 grammes of the quinine sulphate in 120 C.c. of boiling water, then cooling the solution to 50° C. only, and filtering. This would leave so much quinine salt in solution that the presence of cinchonidine would be to a very considerable extent masked, and rendered unrecognisable at a later stage.

The next step in the process—reducing the solution to 10 C.c., and shaking with 10 C.c. of "purified" ether and 5 C.c. of solution of ammonia—is still more unsatisfactory, on account of the large quantity of solvent that is directed to be used—sufficient to dissolve and retain in solution a considerable quantity of cinchonine even without the assistance of the superabundance of quinine introduced in the first stage of the test. It is stipulated that the crystals separating from ether should not amount to more than 0·12 gramme—that is to say, 3 per cent. of the sulphate tested. Under the conditions prescribed 0·12 gramme of crystals separated will represent only a fraction of the cinchonidine present, and the point naturally suggested is how much cinchonidine would be passed by this test. It is questionable, therefore, whether it would not have been better to have retained the old stipulation that "sulphate of quinine should not contain much more than 5 per cent. of sulphates of other cinchona alkaloids."

Resorcin as a Local Anæsthetic.—Vialle obtained very favourable results in the treatment of a very painful case of stomatitis of the lips, following a rash. The patient was a child of five years. The lips were swollen, coloured blue, and crusted over with black spots. Every movement caused such pain that the patient could not even be induced to take liquid nourishment. The author prescribed frequent irrigation of the mouth with lime water, and painting with resorcin in 1 to 6 aqueous solution. The resorcin only produced a brief burning sensation, and then remained on the lips for a considerable time as a white powder. The paintings were carried out five to six times a day. The first application greatly alleviated the pain, and all suffering entirely disappeared after the fourth dressing, the exudation ceasing after two days, a regular buccal desquamation taking place. The urine gave characteristic reactions for resorcin in a few hours.—*Journ. für Zahnheil*, xii., No. 34, 1.

NOTICES OF BOOKS.

'THE LATIN GRAMMAR OF PHARMACY,' by Joseph Ince (London: Baillière, Tindall and Cox. 5*s.*), has reached its seventh edition, which comes in the now familiar yellowish cover, with such improvements as have been found possible in connection with a book that hardly admitted of improvement. Mr. Ince, however, has found it necessary to re-construct and considerably enlarge the original grammar, sections illustrating every variety of medical formulæ have been introduced, an English-Latin vocabulary has been added, and the work has now become a veritable compendium of Latin medicine and pharmacy. In view of the growing ignorance of Latin amongst medical men and pharmacists, this new edition of a classical text-book should be cordially welcomed, the more especially as there is no better work on the subject extant.

'A SHORT GUIDE TO THE NEW BRITISH PHARMACOPŒIA,' by John C. Umney (London: Wright, Layman and Umney. 1*s.*) is the next best account of the changes to be effected by the work commented on, to the articles now appearing in the *Pharmaceutical Journal*, and it is nothing short of marvellous how a book so free from errors could have been produced so shortly after the 1898 Pharmacopœia was rendered accessible to the public. Within less than a week—which included Good Friday, a Sunday, and a Bank Holiday—the author managed to produce as exhaustive an account of the new B.P. as is possible in the space occupied, and there is no doubt the pamphlet will prove exceedingly useful to anyone who may have occasion to refer to it.

'PRACTICAL RADIOGRAPHY,' by A. W. Isenthal and H. Snowden Ward, F.R.P.S. (London: Dawbarn and Ward. 2*s.* 6*d.* net), is not a new book, but the fact that the earlier edition appeared when the subject of which it treats was less than six months old, has rendered it necessary to re-write it completely. It is now a well-printed, well-illustrated, and exact historical record of the subject, containing very full descriptions of the numerous forms of apparatus used in radiography, whilst manipulation is not neglected, and the varied applications of the so-called X-rays are fully treated of. No one who is interested in or working at the subject of radiography can afford to be without the book, nor having purchased it is he likely ever to regret having done so.

THE 'DICTIONARY OF NATIONAL BIOGRAPHY' is nearing completion, and two supplementary volumes of the work are to be issued. As our readers are doubtless aware, the biographies of living persons are not inserted in that work, but in order to include the names of those persons whom death has qualified for admission during the progress of the publication, extra volumes are required. The first part of a list of names intended to be inserted contains, amongst many others, those of Robert Bentley and Henry Bowman Brady.

THE 'REVUE DES MÉDICAMENTS NOUVEAUX,' by C. Crinon (Paris: Rueff et Cie. 4 francs), is an excellent little book of its class, and the fifth edition now before us is no whit behind its predecessors in regard to details respecting novel medicaments. Its four hundred pages are crammed with useful information concerning new remedies, and a translation of the book should have a wide sale in this country.

ALCOHOLIC MENSTRUA OF THE NEW PHARMACOPŒIA.

BY F. C. J. BIRD.

The strength of the standard alcohol of the Pharmacopœia having been increased by the revisers of the new edition from 56 o. p. to 58 o. p., chemists and druggists will shortly be faced with the necessity of requiring to convert rectified spirit of either strength into alcohol of various degrees of dilution. To facilitate matters the following table is published, as it gives the approximate quantities (sufficiently exact for all practical purposes) of rectified spirit 56 o. p., or alcohol 90 per cent., and water, required to form either 1 gallon or 1 litre of the alcoholic menstrua of the new Pharmacopœia. If the proportions requisite to produce a given bulk of diluted alcohol, after contraction has taken place, are known, further measurement is unnecessary, and generally the method of dilution to a unit volume will be found more convenient than the addition of water to a unit volume of strong alcohol, as indicated officially.

Menstrua, B.P., 1898.	Spt. Rectificatus (56 o. p.), B.P. 1885.		Spt. Rectificatus (Alcohol, 90 p. c.), B.P. 1898.		Product, Sp. Gr., and Proof Strength.		
	S.V.R., 56 o. p.	Water.	Alcohol, 90 p. c.	Water.	Product.	Sp. Gr.	Proof Degs.
Alcohol, 90 p. c. .	142¼ f.oz. 889 C.c.	18 f. oz. (absol'te alcohol) 112 C.c. (absol'te alcohol)			1 gall. 1000 C.c.	·834	40 o. p.
Alcohol, 90 p. c., 7 vol. Water, 1 vol.	144¾ f.oz. 903 C.c.	17¼ f. oz. 108 C.c.	142½ f.oz. 889 C.c.	19½ f. oz 123 C.c.	1 gall. 1000 C.c.	·864	40 o. p.
Alcohol, 70 p. c. .	126¼ f.oz. 789·2 C.c.	36½ f. oz. 228·5 C.c.	12[illegible]f.oz. 777·7 C.c.	38¾ f. oz. 241·6 C.c.	1 gall. 1000 C.c.	·890	22 5 o. p.
Alcohol, 60 p. c. ..	108¼ f.oz. 676·4 C.c.	55½ f. oz. 346·3 C.c.	106¾ f.oz. 666·6 C.c.	57¼ f. oz. 357·3 C.c.	1 gall. 1000 C.c.	·913	5·5 o. p.
Alcohol, 45 p. c. .	81¼ f. oz. 507·5 C.c.	83 f. oz. 518·4 C.c.	80 f. oz. 500 C.c.	84¼ f. oz. 526·6 C.c.	1 gall. 1000 C.c.	·943	21 u. p.
Alcohol, 20 p. c., 2 vol. Alcohol, 45 p. c., 1 vol.	53½ f. oz. 334 C.c.	109¾ f.oz. 686·3 C.c.	52¾ f. oz 328·8 C.c.	110¾ f.oz. 692 C.c.	1 gall. 1000 C.c.	·966	49 u. p.
Alcohol, 20 p. c. ..	36 f. oz. 225·5 C.c.	126 f. oz. 787·3 C.c.	35 f. oz. 222·2 C.c.	126½ f.oz. 791 C.c.	1 gall. 1000 C.c.	·976	65 u. p.

The above calculations are based on a percentage of 88·7 by volume of alcohol in Spiritus Rectificatus, B.P. 1885, and in the table the quantities of alcohol and water required to produce 1 gallon of the required dilute spirit are first given, the quantities required to produce 1 litre being given below. The special mixture of 20 per cent. alcohol (2 vols.) and 45 per cent. alcohol (1 vol.) is that required in the preparation of Liquor Senegæ Concentratus.

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THE GENERAL MEDICAL COUNCIL AND THE BRITISH PHARMACOPŒIA.

In view of censorious comments that have been made with regard to the manner in which the officials of the General Medical Council have carried into effect the desire of that body to do all that was possible to disseminate full information regarding what is novel in the British Pharmacopœia, 1898, in advance of the publication of that work, it seems desirable that the *Pharmaceutical Journal*, as representative of all that is best in British pharmacy, both as a profession and as a trade, should acknowledge the great debt of gratitude which the craft owes, in this matter, to the governing body of the medical profession. Whether with sufficient reason or not, there is a wide-spread impression that the moment a new pharmacopœia is advertised in the London, Edinburgh, and Dublin Gazettes, the work at once replaces the edition formerly in use, and its formulæ and processes become authoritative. Assuming that to be the case, it is not difficult to conceive that inconvenience might easily arise if no inkling of the changes authorised by a new pharmacopœia could be obtained until the book was actually published. That being so, no one can reasonably object to our tendering grateful thanks, on behalf of the whole pharmaceutical body, for the very great service rendered by permitting the contents of the new Pharmacopœia to be made public well in advance of the date when the book will become authoritative. In taking that step the medical authorities were probably influenced by representations made to them by the President of the Pharmaceutical Society, and also by the Editor of this Journal, some months ago, long before the idea had been mooted publicly. But, be that as it may, the effect is the same, the General Medical Council has granted a considerable boon to pharmacists, and they should be grateful inasmuch as they have been enabled to profit thereby.

Regarding the time of distribution of the advance copies sent to the press, it cannot be denied that considerable inconvenience was caused by the fact that the volumes were delivered just on the eve of the Easter holidays, and though at most that was probably due to an error of judgment, those who suffered in consequence look back with no pleasanter recollections on that account to the interference with what is usually a period of rest from toil. So far as can be gathered, the press copies were despatched on Wednesday afternoon of Good Friday week, and the letters announcing the fact —stated to have been sent off by the same post—arrived at their destination the same evening. Journals, therefore, which went to press on Thursday afternoon, had some twelve hours or more in which to prepare advance notices for publication the same week. Unfortunately, in one or two instances, even that brief space of time was not available, for those journals had already gone to press when the book arrived. The conductors of those organs have our deepest sympathy in the matter, and we are cordially at one with them in thinking that this is one of the things that might have been better done otherwise. Such brief intervals of rest from their labours as journalists usually enjoy should not be thoughtlessly encroached upon, and we fail to see that anyone would have suffered disadvantage had the delivery of advance copies of the 1898 Pharmacopœia been more conveniently arranged. As matters were, directly after the publication of the general review of the book in our issue of April 9, the holidays intervened, and not until the following Tuesday could any portion of our summary published last week be got into type. Accordingly, the time available for composing and correcting the article was only forty-eight hours, and it is wonderful, under the circumstances, how few inaccuracies crept into the twelve pages of matter bristling with facts and figures. After all, however, this is but a minor grievance, and it is only aired now—for the journalist is extremely patient and long-suffering—because it may serve, in some degree, as an apology for certain shortcomings in our presentation of facts concerning the new national medicine book, which were painfully obvious to those responsible for the conduct of the Journal, if not so evident to readers.

The moral of the whole question appears to be that there is a great deal of unnecessary secrecy observed with regard to the work of pharmacopœia revision in this country. That revision is public work, and it does not appear unreasonable to suggest that the outcome of the revisers' labours should be made public without any delay. Whenever a decision is arrived at on any matter of principle in connection with the Pharmacopœia, or with regard to any formula or process, there is surely no reason to keep that decision secret for months or years. Indeed, were a monthly or quarterly report issued to the press by the revisers, showing what progress had been made, the result would be to secure the thorough trial and criticism of all proposed new or altered formulæ and processes, in a way that would be to the advantage of all concerned. The long drawn out and detailed criticism that now, on the publication of a new pharmacopœia, overwhelms the world of pharmacy like a second deluge, would spend itself in advance of publication, and the result would be the issue of a pharmacopœia embodying the united wisdom and skill of the world of pharmacy for the time being. Another suggestion is that if an annual or biennial addendum to the Pharmacopœia were published by the General Medical Council, and if successive reprints of the book incorporated all the additions and alterations suggested by experience, there would never be any need for such a great wrench as is caused by an almost entire upheaval of the practice of prescribers and dispensers once in every ten or fourteen years. Failing that, let us have a revised pharmacopœia every five years at least, and let the task of revision be so supervised as to secure the indispensable assistance of pharmaceutical as well as medical authorities, while eliminating all possibility of affording trade advantages which may be considered unfair.

ANNOTATIONS.

THE BRITISH PHARMACOPŒIA (1898) SUMMARY published last week was naturally printed under difficulties, owing to the pressure caused by the Easter holidays, and several obvious misprints crept into the details of the formulæ and processes there given. There were few of any importance, but, for the sake of accuracy, a list of all that seem worth noticing is printed on page 404, in order that copies of the Journal may be duly corrected. In response to requests by readers, the subject matter of the above-mentioned article on the preparations of the new Pharmacopœia has now been carefully revised and reprinted in a suitable form for distribution by chemists amongst their medical friends. Single copies of the book will be sent post free on receipt of 4*d.* in stamps, whilst for quantities the price will be 3*s.* per dozen, 18*s.* per hundred, or £7 10*s.* per thousand. Orders should be sent without delay, addressed to the Publishers, Pharmaceutical Journal, 5, Serle Street, Lincoln's Inn, London, W.C.

THE ALCOHOL STRENGTHS OF THE NEW B.P. continue to attract the attention of many readers, who are naturally anxious to know how they may readily convert their existing stocks of rectified spirit into alcohol of lower percentage. The table compiled by Mr. F. C. J. Bird, whose work can at all times be thoroughly depended upon, and printed at page 386, should therefore prove extremely useful at the present time. In any case the simpler plan would appear to be first to reduce the rectified spirit, whether 56 o. p. or stronger, to 70 per cent. alcohol (s. g. 0·890). This can then readily be reduced to 60, 45, or 20 per cent. alcohol by adding the required volume of water, thus :—

100 vols. of 70 p. c. alcohol + 22·60 distilled water = 60 p. c. alcohol.
100 vols. ,, ,, + 74·29 ,, = 45 ,,
100 vols. ,, ,, + 324·75 ,, = 20 ,,

In the following useful table, published by Mr. J. C. Umney, the original percentages by volume of alcohol are placed at the head of the columns, and those to which they are required to be reduced are indicated in the first column, the quantity of water to be added to 1 litre being first given, and then the quantity to be added to 1 gallon :—

	90 p. c.	70 p. c.	60 p. c.	45 p. c.
70 p. c.	310 C.c. 49·5 fl. oz.			
60 p. c.	536 C.c. 86 fl. oz.	175 C.c. 28 fl. oz.		
45 p. c.	1053 C.c. 168 fl. oz.	577 C.c. 92 fl. oz.	344 C.c 54 fl. oz.	
20 p. c.	3558 C.c. 568 fl. oz.	2525 C.c. 404 fl. oz.	2014 C.c. 322 fl. oz.	1250 C.c. 200 fl. oz.

If it be desired to produce a definite volume of some weaker alcohol from 56 o p spirit, the quantity of the latter required in each case will be approximately as given in the following table, the quantities given being based on those in Mr. Bird's more elaborate table at page 396.

78·92 vols. 56 o p. alcohol + 22·85 distilled water = 100 of 70 p c alcohol
67 64 vols. ,, ,, + 34 63 ,, ,, = 100 of 60 ,, ,,
50·75 vols. ,, ,, + 51 84 ,, ,, = 100 of 45 ,, ,,
22·55 vols. ,, ,, + 78 73 ,, ,, = 100 of 20 ,, ,,

Of course, the water to be added need not be measured ; all that is necessary being to measure the required volume of 56 o.p. spirit and add sufficient water to make the product measure 100 volumes, but that will necessitate waiting for the mixture to cool to 15°·5 C. before the volume can be finally adjusted. To raise the strength of 56 o.p. spirit to 90 per cent. by volume, it will probably be found most convenient to mix it with about an equal volume of 60 o. p. spirit, and then adjust. In all cases, it should be needless to say, the strength ought to be finally adjusted after cooling and determining the specific gravity of the mixture at 15° 5 C , unless the exact quantities required to produce a definite result are known.

THE MAJOR EXAMINATION RESULTS (London) published last week were about the usual average (*vide* Dr. Stevenson's report, p. 348), but yet far from what they ought to be. The larger proportion of failures at this examination usually occurs amongst students who have not been educated at the Pharmaceutical Society's School, and the present occasion is no exception to that rule, as the following table clearly shows :—

	Candidates.	"Square" Men.	Other Candidates
Candidates examined ..	39	17	22
,, failed	18	3	15
,, passed	21	14	7
Percentage of passes ..	53·8	82·3	31·8

These figures afford conclusive evidence of the advantage to candidates of a systematic college course of instruction, and the non-successful would do well to note that fact.

TICKETS FOR THE ANNUAL DINNER of the Members of the Pharmaceutical Society and their friends, to be held on Tuesday, May 17, are now ready, and Mr. Richard Brembridge, Secretary to the Annual Dinner Committee, will be glad to hear as early as possible how many will be required by those intending to be present, and the names of the gentlemen for whom they are intended. It will assist the Committee and ensure friends being seated together if the Secretary is instructed what to do in the matter, but he stipulates that applications for tickets, accompanied by remittances, must be in his hands not later than Saturday, May 14, in order to enable him to make the necessary detailed arrangements. The price of the tickets is one guinea each.

WIRELESS TELEGRAPHY, so-called, has been the subject of experiments in the Solent during the last few months. two stations having been fitted up under the direction of Signor Marconi, one at Bournemouth and the other at Alum Bay in the Isle of Wight. Between those places, which are about 14½ miles apart, regular communication has been maintained without the use of any intervening connecting wires, so the *Times* reports, whilst on occasion an even greater distance has been traversed, for with portable instruments temporaily set up on the cliffs at Swanage it has been found possible to communicate with the station at Alum Bay, nearly 18 miles away. Signor Marconi is now making the necessary arrangements for exchanging signals with Cherbourg, a distance of some 60 miles. The instruments employed consist externally of a tall mast, some 120 feet high, from which depends a metallic conductor, which is either a simple wire or a narrow strip of ordinary wire netting. The transmitter consists of an induction coil capable of giving an 8-inch or 10-inch spark, an appropriate battery, and a key to control the current. The receiving instrument consists of a coherer, a relay, and a Morse printer. The coherer, which detects the presence of the electric waves that travel through space from the sending station, is a short piece of glass tubing into which are sealed two silver pole-pieces. Between these there is a narrow space containing silver and nickel filings, and the whole is exhausted of air so as to prevent oxidation of the filings and consequent impairment of th eirconductivity. These pole-pieces are included in an electrical

circuit with the relay and a single cell, and in addition, one of them is connected with the external conductor and the other with the earth. Normally the coherer does not conduct a current. But by virtue of some action which is not yet fully understood, under the influence of an electric wave this condition is altered, and a current enabled to pass through the filings between the pole-pieces. The armature of the relay is then attracted and the Morse printer or other suitable receiving instrument brought into action An electrical tapper keeps the coherer in a state of constant vibration, and breaks down its conductivity as soon as established.

The Method of Working is for the operator to connect his outside conductor with his induction coil, at the same time disconnecting it from the coherer. Then by means of the key he puts his coil into operation for long and short periods, corresponding to the dashes and dots of the Morse code, thus exciting in the outside conductor groups of electric waves. Some of these fall upon the outside conductor at the receiving station, and convert the coherer there into a conductor; the relay circuit is immediately closed and the Morse instrument begins to print. Of course, during the transmission of one dash the circuit of the coherer is made and broken many times, but the printing instrument treats the quick succession of short currents as a single long one. The rate at which messages are sent in this way is not very great, but according to the *Times* report no efforts have been made to attain speed. The intention has rather been to demonstrate that signals can be sent with accuracy and certainty over a considerable distance without conducting wires. It is stated that experiments have also been carried out between Alum Bay and a ship cruising about between the Isle of Wight and Swanage. In every case communication was easily maintained, whether the ship was moving forwards or backwards or swinging round. Nor was the working of the apparatus adversely affected by bad weather. On the contrary it seemed to act most freely in fog, rain, or wind, and was at its worst on fine, clear, still days. Secrecy is easily observed in this new system of telegraphy, for two stations cannot telegraph across space to each other unless their apparatus is syntonised.

We regret to record the death of Dr. Georg Dragendorff, formerly Professor in the University of Dorpat, who has been an Honorary Member of the Pharmaceutical Society since 1875.

A Somewhat Belated Suggestion is published by Dr. Hooper, of the Surrey Dispensary, in last week's *Lancet*, where he expresses the hope that the new Pharmacopœia will recognise all the drugs and preparations that physicians can possibly require, so that they need never prescribe anything that is not official in the B.P. So far as its contents are concerned, the 1898 Pharmacopœia is now an accomplished fact, and it appears somewhat late in the day to suggest what it should or should not contain. But the idea expressed is excellent, and if all medical men were only reasonable, they would have no difficulty in finding all they require amongst the official remedies. As it is, however, those who know their business properly will find what they need there; others may or may not—probably not. With Dr. Hooper's further suggestion, that physicians should be careful not to prescribe out-of-the-way things they know little or nothing about, chemists will cordially agree. It is decidedly unreasonable that dispensing chemists should be expected to purchase unusual synthetic remedies and proprietary preparations generally, in original packages, at fancy prices, and then have the bulk of the material left on their hands. Yet such is only too frequently the result of prescribing by imperfectly trained medica practitioners who derive their therapeutic information from pamphlets sent to them by the makers of proprietary preparations. The more, therefore, the wiser members of the profession insist upon this and kindred facts the greater will be the advantage to everyone legitimately concerned—prescribers, dispensers, and patients, though it is to be feared that the inventors of new remedies and concocters of ready-made therapeutics will not confirm this view.

"The Indiscriminate Sale of Poisons" is the heading to a *Daily News* report of a recent inquest at Bermondsey Town Hall, touching the death of a young man who had committed suicide by taking a quantity of phosphorous paste. In the course of the case, Mr. E. N. Wood, the Deputy Coroner, asked the chemist who sold the poison what restrictions are placed upon the sale of it. The chemist explained that there are none, except that it has to be labelled "Poison." In the latter respect he was wrong, as was also the Coroner, who insisted that the chemist ought to have put his name and address on the package, and advised him to do so in future, lest he might get into trouble. As a matter of fact, phosphorus and its preparations are not poisons in the eye of the law, and the chemist ought to have been commended for labelling the paste "Poison," rather than blamed for not doing something else that the law does not require. Nor do we agree with the Coroner's remark that the present Pharmacy Act is very inefficient, though he may be right in suggesting that there is no reason whatever why persons purchasing any kind of poison should not give their names and addresses, as that might mean very great protection for the public.

Why Gregory's Powder should ever be compounded with magnesium carbonate instead of magnesia, except on the mistaken score of cheapness, it is difficult to see, for the carbonate has never been recognised as an ingredient of the powder in this country. It is to be regretted, therefore, that several Sunderland chemists should have attempted to "improve" upon the composition of a B.P. preparation by an unwarranted substitution. In a similar case in the London district, some months ago, the magistrate held that the article sold was not to the prejudice of the purchaser, and on that technical ground the case was dismissed. That experience should have operated as a warning to others, and in the present instance, the Sunderland chemists, who have been less fortunate, have little reason to complain of the magnitude of the fines imposed. For the future they will act wisely to conform to established usage, and make all pharmacopœial preparations in strict accordance with the official formulæ, leaving improvement and modification to the Pharmacopœia revisers.

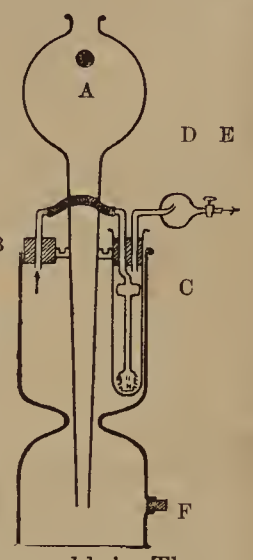
The Adulteration of Food-Stuffs has influenced the Public Health Committee of St. Pancras Vestry to recommend that the Sale of Food and Drugs Bill introduced into Parliament by the President of the Local Government Board should be amended and brought into line with the recommendations of the Select Committee of the House of Commons. In the opinion of the Vestry committee the Bill introduced by Mr. Kearley seems much more adequate than the Government measure, but the committee does not approve of the minimum penalty clauses which appear in both Bills. It would seem improbable that any Bill that can be drafted will commend itself to everyone concerned. Meanwhile, however, the law remains as it was, and only a few busybodies are troubled thereat, whilst the public does not suffer appreciably, if at all, in consequence.

NOVEL APPLIANCES,

PHARMACEUTICAL AND CHEMICAL.

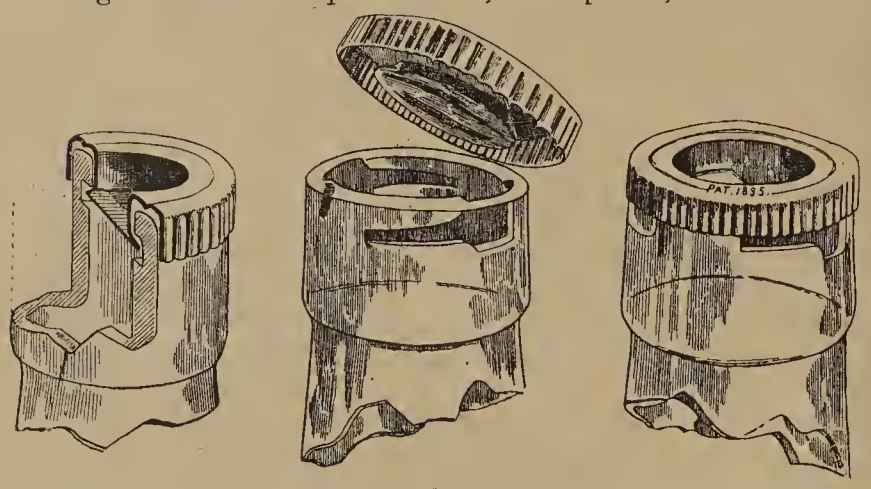
Gas Generator for Laboratory Use.

The apparatus figured is a combination of Kipp's gas generator with the addition of a washing or drying flask constructed so as to make it impossible for the fluid used for washing or drying to be splashed or carried over with the gas. The acid is poured into the bulb funnel, the generated gas passing through the exit tube B into the washer C, any splashing from this being prevented by the splash trap D. When the cock E is closed the pressure inside the apparatus forces the liquid into A until it is removed from contact with the generating material. The exit F serves for the removal of spent liquid. The apparatus is in use at the Royal Chemical Laboratory at Erlangen, where it is chiefly used for reducing oxide of copper. The compactness of the apparatus and the ease with which it may be filled or emptied are apparent from the illustration here given. It is made by R. SCHREIBER, Frauenwald in Thur.—*Chemiker Zeitung.*



Practical Closures.

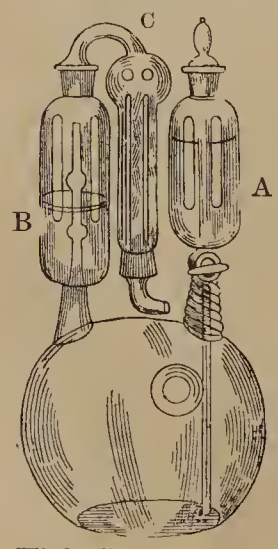
The device here illustrated is intended for use for bottles containing drugs, dietetic articles, and hygroscopic substances. The fittings are made in lacquered metal, nickel plated, or in aluminium

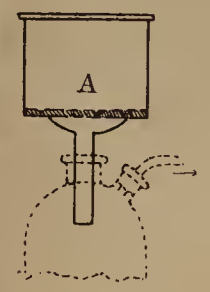


as required. It is claimed that the stopper may be replaced as often as required, and that it is more easy to remove than a tight-fitting cork, is perfectly air- and gas-tight and germ-proof.

Carbonic Acid Apparatus.

Kohn has devised a convenient and compact apparatus for the determination of CO_2, which is a generator combined in a convenient manner with tubes for washing and drying the gas evolved. When the carbonate is decomposed by HCl no provision is made for the absorption of the vapours of that acid either in the Schrötter or Bunsen apparatus, or in the modification of Christomanos of the latter. The apparatus of Kohn consists of an acid funnel A fitted with a glass tap for the gradual introduction of the acid to the carbonate. A tube B containing concentrated sulphuric acid, by means of which moisture is retained, and a further tube, C, filled with pumice saturated with anhydrous cupric sulphate, which retains any trace of HCl, and the issuing gas is pure CO_2. This apparatus may prove useful in other instances besides the determination of CO_2. The apparatus is made in England by C. E. MULLER, 148, High Holborn.—*Chemiker Zeitung.*





A Modified Suction Filter.

In this modification of the ordinary filter pump funnel, which is the invention of Dr. Ackermann, the perforated bottom plate A is removable, so that it can be readily taken out and covered with filter paper or other material. This will be a great improvement on the form at present in use, particularly in those cases where it is desired to recover a fine adherent precipitate, which, in the usual form of funnel, is often difficult to accomplish.—*Pharmaceutical Review.*

New Tablet Machines.

The tablet machines figured below are constructed by KILIANI AND CO., of Berlin. In the first the weighed material is filled into the hollow cylinder (A), a concave die being first inserted, which rests on a moveable plate (B) at the bottom of the cylinder. The material is then inserted and pressure applied by means of the

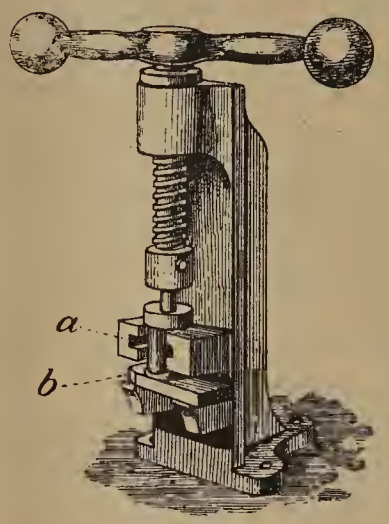


Fig. 1.

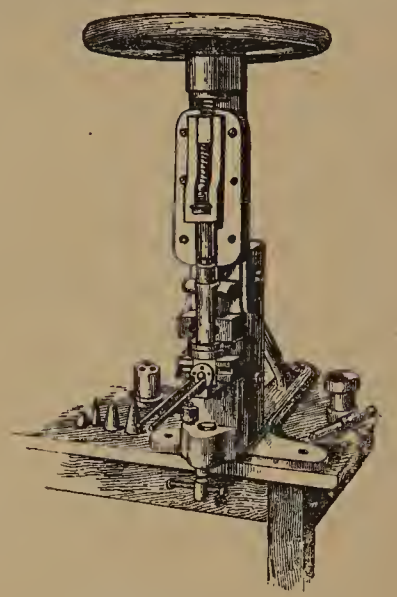
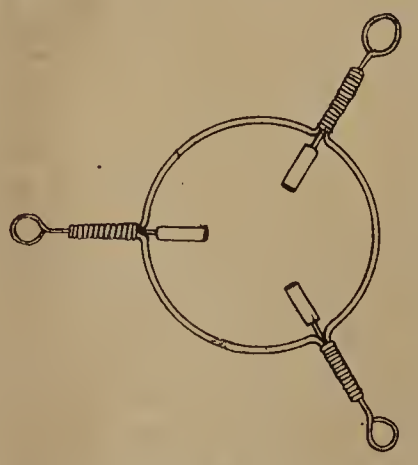


Fig. 2.

screw. This is then reversed, the movable plate turned outwards, and the tablet forced out with another turn of the screw. Several tablets may be compressed at one time by dropping in between each charge a doubly concave die. The second figure represents a more complicated machine constructed on the same principle, with which it is possible to make several tablets at a time, or to pipe pill mass, or squeeze suppositories.



Adjustable Crucible Holder.

In this apparatus the crucible hangs in the space between three clay rods that are fastened to wires. These wires can be moved so that the space between the points can be increased or diminished at pleasure, and thus furnish room for crucibles of various sizes. Although this device is extremely simple, it will probably be found of great use in the laboratory, and will obviate the necessity for three or four sizes of the old-fashioned triangle.—*Pharm. Review.*

Reyer's Combination Laboratory Bracket.

This useful clamp with rings is so constructed that it can be attached to any shelf or rod. It should prove very useful in the pharmacy or analytical laboratory, where room is generally valuable. The fact that the rings may be readily attached to any support allows of their application in fitting up many forms of apparatus. The rings form admirable supports for percolators. By placing several percolators one over the other a very effective successive percolation may be effected.

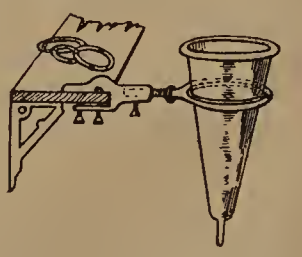


Table of Thermometric Equivalents

According to the Centigrade, Fahrenheit, and Réaumur Scales.

C.°	F.°	R.°	C.°	F.°	R.°	C.°	F.°	R.°	C.°	F.°	R.°
100.5556	213	80.4444	118.3333	245	94.6667	135.5556	276	108.4444	153.3333	308	122.6667
101	213.8	80.8	118.75	245.75	95	136	276.8	108.8	153.75	308.75	123
101.1111	214	80.8889	118.8889	246	95.1111	136.1111	277	108.8889	153.8889	309	123.1111
101.25	214.25	81	119	246.2	95.2	136.25	277.25	109	154	309.2	123.2
101.6667	215	81.3333	119.4444	247	95.5556	136.6667	278	109.3333	154.4444	310	123.5555
102	215.6	81.6	120	248	96	137	278.6	109.6	155	311	124
102.2222	216	81.7778				137.2222	279	109.7778			
102.5	216.5	82				137.5	279.5	110			
102.7778	217	82.2222				137.7778	280	110.2222			
103	217.4	82.4	120.5556	249	96.4444	138	280.4	110.4	155.5556	312	124.4444
103.3333	218	82.6667	121	249.8	96.8	138.3333	281	110.6667	156	312.8	124.8
103.75	218.75	83	121.1111	250	96.8889	138.75	281.75	111	156.1111	313	124.8889
103.8889	219	83.1111	121.25	250.25	97	138.8889	282	111.1111	156.25	313.25	125
104	219.2	83.2	121.6667	251	97.3333	139	282.2	111.2	156.6667	314	125.3333
104.4444	220	83.5556	122	251.6	97.6	139.4444	283	111.5556	157	314.6	125.6
105	221	84	122.2222	252	97.7778	140	284	112	157.2222	315	125.7778
			122.5	252.5	98				157.5	315.5	126
			122.7778	253	98.2222				157.7778	316	126.2222
105.5556	222	84.4444	123	253.4	98.4	140.5556	285	112.4444	158	316.4	126.4
106	222.8	84.8	123.3333	254	98.6667	141	285.8	112.8	158.3333	317	126.6667
106.1111	223	84.8889	123.75	254.75	99	141.1111	286	112.8889	158.75	317.75	127
106.25	223.25	85	123.8889	255	99.1111	141.25	286.25	113	158.8889	318	127.1111
106.6667	224	85.3333	124	255.2	99.2	141.6667	287	113.3333	159	318.2	127.2
107	224.6	85.6	124.4444	256	99.5556	142	287.6	113.6	159.4444	319	127.5556
107.2222	225	85.7778	125	257	100	142.2222	288	113.7778	160	320	128
107.5	225.5	86				142.5	288.5	114			
107.7778	226	86.2222				142.7778	289	114.2222			
108	226.4	86.4				143	289.4	114.4			
108.3333	227	86.6667	125.5556	258	100.4444	143.3333	290	114.6667	160.5556	321	128.4444
108.75	227.75	87	126	258.8	100.8	143.75	290.75	115	161	321.8	128.8
108.8889	228	87.1111	126.1111	259	100.8889	143.8889	291	115.1111	161.1111	322	128.8889
109	228.2	87.2	126.25	259.25	101	144	291.2	115.2	161.25	322.25	129
109.4444	229	87.5556	126.6667	260	101.3333	144.4444	292	115.5556	161.6667	323	129.3333
110	230	88	127	260.6	101.6	145	293	116	162	323.6	129.6
			127.2222	261	101.7778				162.2222	324	129.7778
			127.5	261.5	102				162.5	324.5	130
110.5556	231	88.4444	127.7778	262	102.2222	145.5556	294	116.4444	162.7778	325	130.2222
111	231.8	88.8	128	262.4	102.4	146	294.8	116.8	163	325.4	130.4
111.1111	232	88.8889	128.3333	263	102 6667	146.1111	295	116.8889	163.3333	326	130.6667
111.25	232.25	89	128.75	263.75	103	146.25	295.25	117	163.75	326.75	131
111.6667	233	89.3333	128.8889	264	103.1111	146.6667	296	117.3333	163.8889	327	131.1111
112	233.6	89.6	129	264.2	103.2	147	296.6	117.6	164	327.2	131.2
112.2222	234	89.7778	129.4444	265	103.5556	147.2222	297	117.7778	164.4444	328	131.5556
112.5	234.5	90	130	266	104	147.5	297.5	118	165	329	132
112.7778	235	90.2222				147.7778	298	118.2222			
113	235.4	90.4				148	298.4	118.4			
113.3333	236	90.6667				148.3333	299	118.6667			
113.75	236.75	91				148.75	299.75	119			
113.8889	237	91.1111	130.5556	267	104.4444	148.8889	300	119.1111	165.5556	330	132.4444
114	237.2	91.2	131	267.8	104.8	149	300.2	119.2	166	330.8	132.8
114.4444	238	91.5556	131.1111	268	104 8889	149.4444	301	119.5556	166.1111	331	132.8889
115	239	92	131.25	268.25	105	150	302	120	166.25	331.25	133
			131.6667	269	105.3333				166.6667	332	133.3333
			132	269.6	105.6				167	332.6	133.6
115.5556	240	92.4444	132.2222	270	105.7778	150.5556	303	120.4444	167.2222	333	133 7778
116	240.8	92.8	132.5	270.5	106	151	303.8	120.8	167.5	333.5	134
116.1111	241	92.8889	132.7778	271	106.2222	151.1111	304	120.8889	167.7778	334	134.2222
116.25	241.25	93	133	271.4	106.4	151.25	304.25	121	168	334.4	134.4
116.6667	242	93.3333	133.3333	272	106.6667	151.6667	305	121.3333	168.3333	335	134.6667
117	242.6	93.6	133.75	272.75	107	152	305.6	121.6	168.75	335.75	135
117.2222	243	93.7778	133.8889	273	107.1111	152.2222	306	121.7778	168.8889	336	135.1111
117.5	243.5	94	134	273.2	107.2	152.5	306.5	122	169	336.2	135.2
117.7778	244	94.2222	134.4444	274	107.5556	152.7778	307	122.2222	169.4444	337	135.5556
118	244.4	94.4	135	275	108	153	307.4	122.4	170	338	136

Table of Thermometric Equivalents

According to the Centigrade, Fahrenheit, and Réaumur Scales.

C.°	F.°	R.°	C.°	F.°	R.°	C.°	F.°	R.°	C°.	F.°	R.°
170.5556	339	136.4444	188.3333	371	150.6667	205.5556	402	164.4444	223.3333	434	178.6667
171	339.8	136.8	188.75	371.75	151	206	402.8	164.8	223.75	434.75	179
171.1111	340	136 8889	188.8889	372	151.1111	206.1111	403	164.8889	223.8889	435	179.1111
171.25	340.25	137	189	372.2	151.2	206.25	403.25	165	224	435.2	179.2
171.6667	341	137.3333	189.4444	373	151.5556	206.6667	404	165.3333	224.4444	436	179.5556
172	341 6	137.6	190	374	152	207	404.6	165.6	225	437	180
172.2222	342	137.7778				207.2222	405	165.7778			
172.5	342.5	138				207.5	405.5	166			
172.7778	343	138.2222				207.7778	406	166.2222			
173	343.4	138.4	190.5556	375	152.4444	208	406.4	166.4	225.5556	438	180.4444
173.3333	344	138.6667	191	375.8	152.8	208.3333	407	166.6667	226	438.8	180.8
173.75	344.75	139	191.1111	376	152.8889	208.75	407.75	167	226.1111	439	180.8889
173.8889	345	139.1111	191.25	376.25	153	208.8889	408	167.1111	226.25	439.25	181
174	345.2	139.2	191.6667	377	153.3333	209	408.2	167.2	226.6667	440	181.3333
174.4444	346	139.5556	192	377.6	153.6	209.4444	409	167.5556	227	440.6	181.6
175	347	140	192.2222	378	153.7778	210	410	168	227.2222	441	181.7778
			192.5	378.5	154				227.5	441.5	182
			192.7778	379	154.2222				227.7778	442	182.2222
175.5556	348	140.4444	193	379.4	154.4	210.5556	411	168.4444	228	442.4	182.4
176	348.8	140.8	193.3333	380	154.6667	211	411.8	168.8	228.3333	443	182.6667
176.1111	349	140.8889	193.75	380.75	155	211.1111	412	168.8889	228.75	443.75	183
176.25	349.25	141	193.8889	381	155.1111	211.25	412.25	169	228.8889	444	183.1111
176.6667	350	141.3333	194	381.2	155.2	211.6667	413	169.3333	229	444.2	183.2
177	350.6	141.6	194.4444	382	155.5556	212	413.6	169.6	229.4444	445	183.5556
177.2222	351	141.7778	195	383	156	212.2222	414	169.7778	230	446	184
177.5	351.5	142				212.5	414.5	170			
177.7778	352	142.2222				212.7778	415	170.2222			
178	352.4	142 4				213	415.4	170.4			
178.3333	353	142.6667	195.5556	384	156.4444	213.3333	416	170.6667	230.5556	447	184.4444
178.75	353.75	143	196	384.8	156.8	213.75	416.75	171	231	447.8	184.8
178.8889	354	143.1111	196.1111	385	156.8889	213 8889	417	171.1111	231.1111	448	184.8889
179	354.2	143.2	196.25	385.25	157	214	417.2	171.2	231.25	448.25	185
179.4444	355	143.5556	196.6667	386	157.3333	214.4444	418	171.5556	231.6667	449	185.3333
180	356	144	197	386.6	157.6	215	419	172	232	449.6	185.6
			197.2222	387	157.7778				232.2222	450	185.7778
			197.5	387.5	158				232.5	450.5	186
180.5556	357	144.4444	197.7778	388	158.2222	215.5556	420	172.4444	232.7778	451	186.2222
181	357.8	144.8	198	388.4	158.4	216	420.8	172.8	233	451.4	186.4
181.1111	358	144.8889	198.3333	389	158.6667	216.1111	421	172.8889	233.3333	452	186.6667
181.25	358.25	145	198.75	389.75	159	216.25	421.25	173	233.75	452.75	187
181.6667	359	145.3333	198.8889	390	159.1111	216.6667	422	173.3333	233.8889	453	187.1111
182	359.6	145.6	199	390.2	159.2	217	422.6	173.6	234	453.2	187.2
182.2222	360	145.7778	199.4444	391	159.5556	217.2222	423	173.7778	234.4444	454	187.5556
182.5	360.5	146	200	392	160	217.5	423.5	174	235	455	188
182.7778	361	146.2222				217.7778	424	174.2222			
183	361.4	146.4				218	424.4	174.4			
183.3333	362	146.6667				218.3333	425	174.6667			
183.75	362.75	147				218.75	425.75	175			
183.8889	363	147.1111	200.5556	393	160.4444	218.8889	426	175.1111	235.5556	456	188.4444
184	363.2	147.2	201	393.8	160.8	219	426.2	175.2	236	456.8	188.8
184.4444	364	147.5556	201.1111	394	160.8889	219.4444	427	175.5556	236.1111	457	188.9
185	365	148	201.25	394.25	161	220	428	176	236.25	457.25	189
			201.6667	395	161.3333				236.6667	458	189.3333
			202	395.6	161.6				237	458.6	189.6
185.5556	366	148.4444	202.2222	396	161.7778	220.5556	429	176.4444	237.2222	459	189.7778
186	366.8	148.8	202.5	396.5	162	221	429.8	176.8	237.5	459.5	190
186.1111	367	148.8889	202.7778	397	162.2222	221.1111	430	176.8889	237.7778	460	190.2222
186.25	367.25	149	203	397.4	162.4	221.25	430.25	177	238	460.4	190.4
186 6667	368	149.3333	203.3333	398	162.6667	221.6667	431	177.3333	238.3333	461	190.6667
187	368.6	149 6	203.75	398.75	163	222	431.6	177.6	238.75	461.75	191
187.2222	369	149.7778	203.8889	399	163.1111	222.2222	432	177.7778	238.8889	462	191.1111
187.5	369.5	150	204	399.2	163.2	222·5	432.5	178	239	462.2	191.2
187.7778	370	150.2222	204.4444	400	163.5556	222.7778	433	178.2222	239.4444	463	191.5556
188	370.4	150.4	205	401	164	223	433.4	178.4	240	464	192

PHARMACEUTICAL SOCIETY.

EXAMINATIONS IN LONDON.

April, 1898.

MINOR EXAMINATION.

Candidates examined	310
,, failed	207
,, passed	103

Allen, William Frederick.
Averill, Cecil Hanson.
Bailey, Edward Arthur.
Barton, Harold.
Baylis, Arthur Edward.
Beckwith, Ernest.
Bennion, Richard.
Bidie, Francis William.
Biffin, Frank.
Blake, Ernest Alfred.
Boyes, William Cotnam.
Brewer, Philip James.
Brown, William Ritchie.
Browne, Henry Charles.
Cain, John.
Chandler, Richard Walter.
Chapman, Frank.
Checketts, Mary.
Churchill, Lionel Arthur.
Clement, William Henry.
Clunas, John.
Collins, Samuel Morrison.
Corney, Alfred Ernest.
Coulton, Arthur William.
Davies, William John.
Dolman, Thomas Tustin.
Duncan, Robert.
Dyson, Joshua.
Elliott, Frederick William.
Ellis, William Frederick.
Fawcett, Frank Dalby.
Franklin, Arthur Cawte.
Fullerton, David Noble.
Gale, George Thomas.
Garnett, John Benbow.
Greatrex, Ernest James McWilliam.
Harrison, John Duffin.
Henshaw, William Herbert.
Hoare, Austin.
Hodgson, John Edward.
Hughes, Ernest James.
Hunter, William John.
Jasper, William.
Johnson, Cornelius Trim.
Jones, George Maurice.
Jones, Thomas.
Jordan, Herbert Emlyn.
Key, Harry.
Kluge, Herman James.
Lavcrack, Clyve Cordukes.
Lawrence, Edmund William.
LeDain, Nicholas John Fleming.
Lord, Walter.
McIntosh, John William.
McKenzie, James.
Manning, Henry Reginald.
Manson, Stanley James David.
Masson, Hedley George.
Middleton, Frank.
Moore, Thomas Henry.
Moorhouse, George Henry.
Morgan, Alfred Houlston.
Newey, Walter.
Oliver, John.
Partridge, Sydney John.
Percival, Thomas Henry.
Phillips, Ivor Reginald.
Pimm, William Robinson.
Platt, George.
Plumb, Alfred.
Pollard, Evelyn William.
Powell, Harold.
Pryor, Sydney Hildyard.
Pugh, John James Edgar.
Purdic, Percy Wilfred.
Pye, Harry.
Riley, Stanley.
Ritchie, David French.
Robbins, Robert William
Smith, Ernest Hartmann.
Scholefield, Samuel George Cutler.
Smalley, Robert.
Stevenson, Charles Harry.
Steward, Charles Alfred.
Swift, Herbert Henry.
Tarry, William Clarence.
Tew, Arthur Wilson.
Topping, Edmund.
Trunchion, Herbert Fawdon.
Veon, Samuel Ernest Markey.
Waddington, Frederick Pollard.
Waldby, Harold.
Walton, John.
Walton, Ralph.
Webster, Bertram.
White, Gilbert.
Whysall, George Ernest.
Wilson, Thomas Ellick.
Withington, Henry Martin.
Wooler, Frederic William.
Worrall, Harry.
Wrather, Thomas Edward.
Yeo, John Henry Arthur.

FIRST EXAMINATION.

Certificates by approved examining bodies were received from the undermentioned in lieu of the Society's Examination :—

Arnold, Stanley ; Southsea.
Baker, Cyril Henry ; London.
Blundell, Nellie Muriel Kate ; Caterham.
Cart, John T. ; Shrewsbury.
Clowes, George D. K. ; Manchester.
Crawford, Ernest ; Manchester.
Cromack, Vincent ; Blackpool.
Cross, Ernest Llewellyn ; Shrewsbury.
Davies, John Meurig ; Southwark.
Goodwin, Frederic James ; Balham.
Griffiths, Evan ; St. Davids.
Haslegrave, Edward Ernest ; Wakefield.
Hawkins, Philip ; Hilderthorpe.
Hines, Frank Gladstone ; Ipswich.
Husbands, Herbert Henry ; Edinburgh.
Jones, John Richard ; Rhyl.
Keeton, Percy ; North Leverton.
Kemish, Arthur ; Cambridge.
Kirby, Francis Benson ; Bristol.
Lanham, Hedley George ; Bristol.
Lewis, Edward Davies ; Cardiff.
Lewis, George Walter ; Kidderminster.
Ling, Herbert James ; Diss.
Marshall, William B. ; Liverpool.
Morris, Willliam David ; Clapham.
Nicholson, George France ; Whitehaven.
Overton, Percy John S. ; Liverpool.
Power, James ; Manchester.
Priest, William ; Huddersfield.
Richards, John ; London.
Spanton, George Furley ; Ramsgate.
Tavernor, Joseph Stafford ; Leicester.
Taylor, Samuel ; Southport.
Walker, John Philip ; Shipley.
Webb, Albert Edward ; Brighton.
Whiting, Ernest Milburn ; Credenhill.
Williams, David John ; Cardiff.
Wood, Charles Edmund ; Rock Ferry.

DONATIONS TO THE LIBRARY.

At the meeting of the Library, Museum, School, and House Committee, on Thursday, March 21, the Librarian presented the following report of donations :—

To the Library (London).

Dr. L. Planchon, Montpellier :—Sur les propriétés toxiques du *Diplotaxis erucoides*, DC., 1898.

Linnean Society of London :—Catalogue of Library, 1896.

American Pharmaceutical Association :—Proceedings, 1897.

College of Preceptors, London :—Calendar, 1898.

EVENING MEETING IN EDINBURGH.

The sixth evening meeting of the Session was held in the Society's House, 36, York Place, on Wednesday, April 20, Mr. W. L. Currie, Glasgow, in the chair. Apologies were intimated from Messrs. Ewing, Nesbit, Boa, and Davidson.—Mr. Lunan read a paper on "Oxygen for Therapeutic Purposes," which is printed at page 388.

Mr. J. Rutherford Hill said that nowadays oxygen was being prescribed by physicians all over the country, and he had discovered in his intercourse with pharmacists that while they were perfectly aware of the fact, they were wonderfully ignorant as to how it was to be used. They knew that it was used in cases of pneumonia, but as to the exact *modus operandi*, their information was very vague. It was a very great disadvantage to pharmacists to plead or exhibit such ignorance if they were applied to by medical men for information on a subject of this kind, and one of the uses of the meetings of the Society was that those who had such apparatus might exhibit it to those who had not seen it, but who possibly might be asked for it. The oxygen sent out at present by the makers was very pure, but unless they anticipated a therapeutic use of it, if they imagined it was only to be used for lantern purposes, they might not use the same precaution in keeping it pure, and it was very apt to contain traces of substances which would be extremely objectionable in the therapeutic use of it. It had been widely used in cases of pneumonia where the lung tissue was largely solidified and incapable of securing the aëration of the blood. It was necessary in such cases that the small amount of lung tissue remaining should have supplied to it a large percentage of oxygen so that it might perform the entire function of the whole lung. It had been used with wonderful success in some cases. With regard to the wash-bottle, it served three purposes. In the first place it ensured purity of gas, in the second place it was an indication when the supply of gas was exhausted, and in the third place it moistened the gas. The gas put in a cylinder was frequently very dry, and inhaling gas in such a dry condition would probably have an irritating effect on the mucous surfaces. That would be specially the case if it were inhaled direct. He thought this was a very simple arrangement, and it was an advantage to them to have seen it. He felt personally obliged to Mr. Lunan for his kindness in bringing it forward.

The Chairman said they had only to see the apparatus to be satisfied of its suitability for the purpose for which it was intended. This was a very important subject. They could not contradict the fact that the time was not far distant when they would be called upon to supply oxygen for medicinal purposes, and they should be in a position to know the best ways and means not only of obtaining oxygen and guaranteeing its quality, but of knowing exactly how it should be applied. As Mr. Lunan said, this was a primitive apparatus and

could doubtless be improved, but they were exceedingly indebted to Mr. Lunan for showing the lines on which it could be used. Speaking from his own experience, from a pneumonic point of view, he well recollected the great feeling of oppression he had in breathing the ordinary atmosphere. His medical man considered the advisability of applying oxygen, but unfortunately he was not in a position to know where to get it and the mode of applying it, and it was not done. He quite understood the necessity of chemists and medical men making themselves fully acquainted with all the details of this very interesting process.

Mr. HILL then read his four papers, two of which appear at pages 388 and 389, whilst the others will be published next week. The subjects of the papers were "An Incompatible Strychnine Mixture"; "Strychnine Hydriodide"; "Invisible and Sympathetic Inks"; and "Methylated Spirit in Photography."

Mr. COULL said with regard to the pyroxylin solvent, he did not think it would be illegal to sell a mixture of methylated spirit and ether. Permission could be got to use methylated spirit in making collodion. He did not see why there should be any objection to the sale of such an article. The last paper was an important one, and dealt with a very serious matter. In one case a dispenser might filter out the strychnine, and the prescriber, failing to get the effect, might increase the dose. This might be dispensed by a dispenser who did not filter out the strychnine, and the consequences might be serious. Mr. Hill's paper on "Hydriodide of Strychnine," was a distinct contribution to chemical knowledge. He thought it evident that the formula from strychnine hydriodide was as Mr. Hill stated it. Imperfect drying and volatilisation might account for the slight discrepancies between the theoretical and actual results.

Mr. MCDIARMID said he understood the addition of rock oil to methylated spirit was intended to prevent its being diluted with water before selling. It had not prevented drinking of the spirit. He had observed a strychnine mixture with potassium iodide in *Home Notes*, and its dangerous nature had been pointed out.

Mr. MCPHERSON said he had made some experiments with the strychnine mixture. It was possible that in the cases previous to this one the dose might be a tablespoonful, and not a teaspoonful, and in such a dilute mixture there might be no precipitation. He found that a mixture of potassium iodide, 5 grains, liquor strychninæ, 5 minims, and water, 2 drachms, remained clear. Even with 10 minims there was no precipitate, and in this proportion the mixture might be safely dispensed. With 15 minims precipitation began, and with twenty it was dangerous—the red crystals might be due to free iodine in the iodide.

Mr. DUNCAN said he agreed that dilution would obviate the difficulty. Half an ounce of glycerin added to the mixture retarded precipitation, but not completely; more might have done so. The mixture was one that was largely prescribed just now in Edinburgh, the strychnine being added to counteract the depressing effect of the potassium iodide, and it was likely that many of them might meet with further examples. It was the dispenser's duty to inform the prescriber in these cases, and not merely to dispense the prescription, adding something to prevent precipitation.

Mr. LUNAN said he had dispensed such prescriptions in tablespoon and dessert-spoon doses, and he had found that it could be sent out in a presentable condition by adding mucilage, but this was probably quite safe.

Mr. BOWMAN said he had frequently dispensed a mixture of strychnine, potassium iodide, and tincture of cinchona, and he asked if the spirit in the tincture would prevent precipitation of the strychnine. In such a muddy mixture they could not see the precipitate.

The CHAIRMAN said that as an amateur photographer he had encountered the objection to rock oil in the methylated spirit referred to, and he agreed that its presence should be abolished. The addition of rock oil had not stopped the use of the spirit for drinking, and in Glasgow it was rather on the increase—so much so that one or two shops had obtained quite a notoriety in certain districts of the city for selling methylated spirit, even on Sunday. The strychnine mixture was an illustration of the modern tendency among prescribers to order concentrated medicines in small doses. The pharmacist had professional objections to this tendency, and this instance indicated another kind of objection.

Mr. HILL, in reply, said no doubt pyroxylin solvent might be sold by permission, but in this case no permission had been asked. He did not object in the least to the sale, but the legality required looking into. He suggested that Mr. McPherson should keep his solutions a little longer, and he would probably get crystals, the potassium iodide was pure. The free hydriodic acid in the mixture decomposed by oxidation, yielding free iodine, which produced the red crystals. Glycerin retarded, but did not inhibit precipitation, and perfect safety lay in having two solutions. In Mr. Bowman's mixture it was almost certain that strychnine would be precipitated, though the spirit in the tincture certainly lessened precipitation.

On the motion of the CHAIRMAN, votes of thanks were awarded to the authors, and on the motion of Mr. BOWMAN, a vote of thanks was given to Mr. Currie for presiding, and the meeting then closed.

LINNEAN SOCIETY.

At a meeting held on Thursday, April 7, Dr. A. GÜNTHER, F.R.S., President, in the chair, Mr. J. E. Harting exhibited specimens of

The Asiatic Partridge,

Perdix daurica, of which a large consignment has been lately received in London. The species was described from the Altai and Dauria so long ago as 1811 by Pallas ('Zoogr. Ross.-Asiatica'), who regarded it as a variety of *Perdix cinerea*. It was re-described in 1863 by Verreaux and Des Murs ('Proc. Zool. Soc.,' 1863, p. 62, pl. ix.) from specimens procured by Taczanowski in Central Dauria, and was named by them *Perdix barbata*, from the peculiarly elongated feathers of the chin, an excellent coloured figure of the bird by Joseph Wolf accompanying their description. According to Swinhoe this bird is brought in numbers in a frozen state to the Pekin market in winter by the Mongolians, who snare them, and it seemed not unlikely that those received in London had been forwarded by Russian agents *viâ* St. Petersburg, or perhaps from Irkutsk, north of the Mongolian territory, which is the true home of the species.—Mr. Harting also exhibited

The Skin and Skull of a Wild Cat,

Felis catus, recently obtained near Speanbridge, in Inverness-shire. He pointed out the present restricted range of the animal, which had not only disappeared entirely from England and Wales, but was no longer to be found in Scotland south of a line drawn from Oban to Ben Lui, along the southern and eastern boundary of Perthshire, and thence northward to Nairn. He explained the cause of reversion in the colour of emancipated house-cats to the wild type of *Felis catus*, and referred to the skulls of cats which had been exhumed on the site of the Roman city of Silchester, which he thought disproved the view of the late Professor Rolleston (*Journ. Anat. and Physiol.*), to the effect that the domestic cat was not known to the Romans.—Dr. G. ELLIOT SMITH next read a contribution towards a more exact knowledge of

The Anatomy of the Brain in Edentata.

A full account of the brain of *Orycteropus* was first given, and comparisons were instituted with that of a dozen species representative of the leading Edentate families, including *Manis* and *Chlamydophorus*. The structure of the brain was fully described, special attention being given to modification determined by habit, especially as concerning parts associated with the olfactory and visual organs. The cerebellum was dealt with in detail, a terminology being introduced which rendered clear its comparison with that of other mammalia. The pallium was shown to be fissured in all species examined except *Cyclothurus* and *Chlamydophorus*, and the factors which influence fissure-formation in the Edentata were shown to be identical with those which affect very distantly related species among the higher orders of mammals. "Splenial," "sagittal,', and "supra-orbital" fissures were described in various degrees of modification, and the recent conclusion of Huntington that the absence of a Sylvian fissure is an Edentate character was shown to be erroneous.—The last paper read was by Mr. H. FARQUHAR, of Wellington, N.Z., on

Some New Zealand Actiniaria,

in which he described a new genus, *Halcampactis*, and species *Halcampactis mirabilis*, together with the following new species: *Edwardsia elegans* and *neo-zelanica*, *Corynactis Haddoni*, *mollis*, and *gracilis*, and *Actinia tenebrosa*. *Halcampactis mirabilis* he regarded as of special interest, since it appeared to form a link between the Sagartidæ and Halcampidæ, which had hitherto been widely separated by systematists.

ANTISEPTIC DRESSINGS AND SURGICAL ACCESSORIES.*

Sublimate Gauze, 1 Per Mille.—Purified gauze, 100. Moisten in a solution of sublimate, 0·1; sodium chloride, 50; distilled water, 120; glycerin, 20. Subject to pressure for some hours, then dry in the dark.

Sublimate Gauze, 2·5 Per Mille.—Purified gauze, 479. Moisten uniformly with a solution of corrosive sublimate, 1; vaseline oil, 20; ether, 200. Place in a jar, press to distribute the liquid uniformly, and dry.

Arnicated Court Plaster.—Made as the above, medicating the second half of the basis with tincture of arnica, 50. Other medicated taffetas may be prepared, such as iodoform, boric acid, phenol, on similar lines. French taffeta differs from court plaster (known on the Continent as taffeta d'Angleterre) in being spread on gold beaters' skin.

Antiseptic Papers.—Tissue paper or cigarette paper is employed for medication. *Carbolic Paper*: Hard paraffin, vaselin, of each 2; phenol, 1. Melt and dip the paper in the mixture. *Salicylated Paper*: Hard paraffin, vaselin oil, of each 50; salicylic acid, 1. Melt and dip the paper in the mixture. *Sublimate Paper*: (*a*) Sublimate, 2; distilled water, alcohol 90 per cent., of each 500; glycerin, 50. Moisten blotting paper with the solution. (*b*) Sublimate, 20; boiled distilled water, 1000; glycerin, 50; blotting paper, *q.s.* Moisten the paper and dry in the sun. *Hæmostatic Paper*: (*a*) Solution of perchloride of iron, 18; alum, 1. Moisten absorbent paper in the mixture and dry. (*b*) Sulphate of aluminium, 2; hydrate of aluminium, benzoic acid, of each 1; solution of ferric chloride, 6; distilled water, 4. Apply hot with a brush to the surface of absorbent paper.

Adhesive Antiseptic Plaster.—Gum acacia, 15; distilled water, 55; salicylic acid, 1. Paint cigarette papers with this mixture.

Antiseptic Collodions.—These are used as applications to wounds to ensure healing by first intention. The majority of the medicaments, such as iodoform, phenol, iodol, may be simply dissolved in official collodion. The following is the formula for *Salol collodion* of Ferrier and Perdire: Ether, 225; alcohol, 90 per cent., 25; pyroxylin, 10; salol, 10; serves as a type for other medicated collodions.

Steatines.—In preparing these a large piece of wet parchment paper is laid upon the smooth surface of a table and wiped dry with a cloth. A piece of gauze is laid on this paper, and on this the nearly cold ointment is painted evenly with a brush, a uniform smooth surface being finally obtained by means of a warm spatula. *Boric Steatine*, 10 *per cent.*: Benzoated suet, 70; benzoated lard, 20; powdered boric acid, 10. *Carbolic Steatine*, 10 *per cent.*: Benzoated suet, 90; carbolic acid, 10. *Sublimate Steatine*, 0·2 *per cent.*: Benzoated suet, 900; benzoated lard, 50; sublimate, 2; alcohol, 90 per cent., 50. *Sublimate Steatine*, 1 *per cent.*: Benzoated suet, 85; benzoated lard, 5; sublimate, 1; alcohol, 90 per cent., 9. *Mercury and Carbolic Steatine*: Benzoated suet, 35; mercurial ointment, 50; carbolic acid, 5. *Ichthyol Steatine*, 10 *per cent.*: Benzoated suet, 80; benzoated lard, 10; ichthyol, 10. *Iodoform Steatine*, 10 *per cent.*: Benzoated suet, 85; benzoated lard, 10; iodoform, 5.

Adhesive and Antiseptic Plasters.—*Carbolic plaster*: Simple adhesive plaster, 19; phenol, 1. *Salicylic plasters*: Simple adhesive plaster, 95; melt and add a mixture of salicylic acid, 2; lard, 3; *Iodoform adhesive plaster*: Lead plaster, 65; suet, 10; gum dammar, 7; pine tar, 7; Venice turpentine, 1; melt, cool, and when nearly set, add iodoform in finest powder, 10. *Iodoform adhesive plaster*, 20 *per cent.*: Lead plaster, 35; suet, 6; yellow wax, 6; gum dammar, 6; pine tar, 6; Venice turpentine, 1; melt, and when nearly cold add iodoform in finest powder, 25. *Iodol Adhesive Plaster*:—Lead plaster, 65; suet, 3; yellow wax, 7; dammar, 7; pine tar, 7; Venice turpentine, 1. Melt, and when nearly cold add powdered iodol, 10. *Sublimate Adhesive Plaster*: Corrosive sublimate, 2; alcohol, 90 per cent., 10. Dissolve and add castor oil, 15, and pour into adhesive plaster, 100. *Iodoform Rubber Plaster*, 20 *per cent.*: Dammar, 15; benzoated suet, 30; anhydrous lanoline, 20; rubber, 5; glycerin, 10; iodoform, 20; benzene (to dissolve the rubber), 45. *Boric Rubber Plaster*, 20 *per cent.*: Dammar, 20; benzoated suet, 25; white wax, 15; rubber, 8; anhydrous lanolin, 12; boric acid in powder, 20; benzene to dissolve the rubber, 72. *Ichthyol Rubber Plaster*, 20 *per cent.*: Dammar, 5; benzoated suet, 5; yellow wax, 5; rubber, 2; anhydrous lanolin, 3; ichthyol, 5; benzene to dissolve the rubber, 18.

* From the *Bulletin Général de Thérapeutique.*

DENTAL NOTES.

Preparation of Female Dies.

Female dies can be obtained as follows:—Take plaster model of suitable tooth, saw off crown surface, dress the flat surface smooth with coarse file, lay on a flat surface, place a rubber ring over model to hold it in position. While metal is being poured, place point of excavator on model to retain it. Remove the instrument, and when metal is cool, turn model downwards and tap the metal until the model drops out, thus saving model in the event of first cast not being perfect. To make a cast from an artificial tooth, place softened modelling compound in a rubber ring and imbed the tooth, leaving required amount of articulating surface exposed. Cool compound and trim it far enough below the upper surface of ring to give space for cast, or place another rubber ring on the one containing the compound, then the model is ready to pour. To use the metal for dies on which to swage plates, it is necessary to use modelling compound as a counter-die. To make a modelling compound counter proceed as follows:—Soften compound and place in lower part of vulcanite flask, lay rubber dam over the compound, and press the die into it. When cool remove and you have the counter. When swedging, use the dam between the die and counter. To drive plate into small depressions in die, between the teeth, for instance, lay a bar of lead on the plate and drive to place with hammer. This metal will not make a sharp enough die for a plate when cast in modelling composition, as the large amount of metal softens the impression, but for small dies it cools quickly and gives a sharp die; therefore cast in a plaster impression for plate swedging. To obviate taking more than one impression of the mouth, use a die to make an impression in compound, and in the impression pour the metal. This die will do for first swedging and the die made in plaster impression for the final swedge.—*Dental Digest.*

Salivary Calculus in the Parotid Duct.

A communication from Mr. T. E. Constance to the *Journal of the British Dental Association* describes a case of salivary calculus in the parotid duct, causing symptoms simulating alveolar abscess, which occurred to a patient aged fifty. The left cheek was obviously swollen, the swelling having commenced three days previously, being painful and tender, the skin tense but not reddened. The swelling was most prominent in the centre of the cheek. Pressure over the region of the left parotid caused pain. The pain commenced in the last tooth—left upper second molar. This on being tapped caused pain, although apparently sound, and for the last three days had given pain while eating. A greyish appearance was noticed at the most prominent part of the swelling in the mucous surface of the cheek. When a probe was with difficulty passed into the parotid duct this proved to be a small calculus, which upon removal was about the size of a 1-grain cocaine tabloid and of similar shape. Two days later the patient had quite recovered.

Antinosine in Mouth Washes.

Antinosine being very readily soluble in water, odourless, non-poisonous, and almost tasteless, forms a valuable addition to tooth and mouth waters, either by itself in solution, or mixed with an antiseptic. To obtain clear solutions, distilled or freshly-boiled water must be used. Antinosine is best dissolved in glycerin, especially if the solutions are intended to be kept. If a brown precipitate occurs in the aqueous solution, it can be got rid of by boiling. The precipitate is only "nosophen," a compound of antinosine. For daily use, 5 C.c. of a 1 per cent. solution should be diluted in a tumblerful of water. A solution of 1 per cent. has been used for over a month without the teeth becoming discoloured. If it is desired to improve the taste of the solution, the addition of a little peppermint water is recommended. Good results have been obtained with a 2 per cent. solution in caries of the teeth, and in stomatitis mercurialis.—*Journ. f. Zahnleilk.*, xii., No. 3.

Paste for Killing Tooth Nerves.

The arsenical paste in use consists, according to Schuh, of equal parts of arsenious acid and morphine hydrochloride, mixed with liquefied carbolic acid; to a paste; 5 per cent. cocaine hydrochlor. is then added.—*Zeit. d. allg. oest. Apoth. Ver.*, li., 797.

EXTRACTS FROM CONSULAR REPORTS.

Fertilisation of the Cultivated Date Palm, in Tunisia, according to a recent report, is entirely artificial. When the male date palm is in blossom Arabs climb the tree and bring down the great spathe of blossoms, then climb the female tree and either shake the pollen over her, or hang the male blossom alongside.

The Blossom of the Male Date Palm is sold as a commercial article in the market places. It is divided into small pieces, and for a penny sufficient may be purchased to fertilise two or three female palms. Some male date palms are said to be more vigorous than others, and have quite a reputation as sires.

The Almond Trees of Tunis, from the kernels of which an excellent oil, much valued for pharmaceutical purposes, is obtained, are usually disseminated in the gardens and not planted in masses, but Sir H. H. Johnston, Her Majesty's Consul at Tunis, thinks orchards of almond trees could be successfully cultivated. The trees are planted at a distance of 12 metres apart, and as the tree is not an easy one to transplant, two seeds are sown together where it is intended to grow, and the least vigorous plant of the two is pulled up. They are sown at the commencement of the winter, are grafted at between two and three years, begin to produce fruit in the fifth year, but do not arrive at the full bearing stage until the fifteenth or sixteenth year remaining vigorous up till fifty. The trees are not pruned because the scars cause an exudation of gum which weakens the tree, the dead wood only being cut off.

A Profitable Culture, according to Consul Johnston, is that of flowers and herbs for perfumes. The expenses and receipts of growing 100 kilos of roses for perfumes in Tunis are stated to be respectively 104 and 189 francs, thus giving a profit of 85 francs per 100 kilos, while the cost of producing the same quantity of jasmine flowers and turning them into perfume is 127 francs, the product realising 170 francs, a profit of 43 francs.

Prepared Drugs and Medicines of British origin are reported to be in favour in Tunis, but are chiefly supplied by one enterprising London firm, which takes the trouble to describe the medicines and give the particulars as to dose in French. As a consequence the preparations of this firm have obtained a great hold on the French market, while other British druggists have but a poor hold on the market, except in chemicals imported in masses, because they send out their medicines labelled with English descriptions, which are unintelligible to the Franco-Tunisians.

A Great Demand is said to exist at Susa (Tunis), for soda crystals or washing soda, also for English paints, varnishes, and painting oils.

Chemical and Pharmaceutical Goods imported into the Argentine Republic during the year 1897 show an increase of 292,345 dollar over the import of the previous year. In the Foreign Trad Returns it is satisfactory to note that Great Britain stands at the head of total imports, although the importation of British produce has fallen off in 1897 by 8,337,909 dollars. Argentine produce exported to the United Kingdom also shows a decline of 1,404,071 dollars.

The British Admiralty are reported to have caused no small stir in the olive oil trade of Italy by issuing invitations for tenders for over 2000 tons of olive oil, a quantity which represents almost the entire stock of Gallipoli, there being only about 2400 tons at disposal. This large demand has naturally caused a boom, and prices have risen considerably. England is the largest importer of oil from Gallipoli, the total amount forwarded in 1897 being 1757 tons, as compared with 1827 tons in 1896.

The Olive Oil Crop for 1897 has, according to the report of Consul Neville-Rolfe, proved to be an utter failure, so far as the yield of oil is concerned, for, when the olives came to be crushed, they were mostly skin and stones, the pulp having been destroyed by worm. A general advance in price is therefore to be expected, because all the olive oil existing in the provinces is insufficient for one year's ordinary requirements.

LEGAL INTELLIGENCE.

PROCEEDINGS UNDER THE PHARMACY ACTS.

The Council of the Pharmaceutical Society of Great Britain *v.* Howarth.

At the Rochdale County Court, on the 15th inst., before His Honour Judge Jones, the Council of the Pharmaceutical Society of Great Britain sued William Howarth, of 30, Manchester Road, Castleton, for a penalty of £5 for selling poison contrary to the provisions of the Pharmacy Act, 1868.

Mr. T. R. Grey, instructed by Messrs. Flux, Thompson, and Flux, appeared for the Society.

Defendant did not appear.

Mr. Grey stated that the action was brought to recover a penalty of £5, which defendant had incurred through selling poison. Defendant was an assistant in the employ of Mrs. Taylor, whose name appeared upon the Register of Chemists and Druggists. A witness went to 30, Manchester Road, Castleton, where he purchased a bottle of Lavan's Linctus, a compound which contained "morphine." Defendant sold the article to the witness, and at the time he was not acting under any superintendence or control of a duly registered chemist and druggist. After dealing with the various sections of the Act, counsel pointed out that Section 15 was the important Section, which provided that any person selling poison, not being a duly registered chemist and druggist, should be liable for each offence to a penalty of £5. Armson's case, which went to the Court of Appeal, decided that proprietary medicines containing a poison came within the Act, and in Wheeldon's case the Court decided that an unqualified assistant selling poison was liable for penalties.

Arthur Foulds examined: On October 22 last I went to 30, Manchester Road, Castleton—a chemist's shop. I saw defendant in the shop. I asked him for some glycerin and a bottle of Lavan's Linctus. He took the bottle out of a show-case on the counter. No one else in the shop at the time. The bottle of Lavan's Linctus was in the wrapper produced, which was fastened at both ends. Had seen defendant in the shop since.

Harry Moon examined: I instructed Foulds to make the purchase. I was acting upon instructions from the Registrar. Foulds subsequently handed to me the puchases. I opened the wrapper which contained the bottle of Lavan's Linctus in the analyst's presence.

Ernest J. Eastes, F.I.C., examined: I am an analyst. Mr. Moon opened this wrapper in my presence and handed to me the bottle which was contained in it. I have analysed the contents of the bottle; the preparation contained morphine. The amount of fluid in the bottle was nearly 2¼ ounces. The amount of morphine in the whole bottle was 0·47 grain, nearly half a grain.

Mr. Grey: I put in a printed copy of the Register. It is by Statute made evidence, and as defendant's name does not appear therein, it is proof that he is not a chemist and druggist. That is my case.

His Honour: No defendant being here, and you having proved your case, the plaintiffs are entitled to a verdict for the penalty of £5 and costs.

The Council of the Pharmaceutical Society of Great Britain *v.* Taylor.

At the same Court, upon this case being called on,

Mr. T. R. Grey, instructed on behalf of the Society, stated that defendant, who had been sued for a penalty for selling poison, had paid the amount to the Society, the balance having reached them on the 14th. Defendant had not paid the costs, and he now asked that defendant should be ordered to pay costs.

Thomas W. Stroud, clerk to Messrs. Flux, Thompson and Flux, proved receipt of first remittance from defendant, and the reply sent as to payment of balance.

His Honour: I must order defendant to pay costs.

Machinery Polishing Paste.—The following paste is recommended for polishing machinery and iron or steel ware: Oil of turpentine, 5; paraffin, 25; finest emery, 25; fine powdered animal charcoal, 45. The paste thus formed is thinned down with methylated spirit, then applied to the parts to be cleaned with a brush. When the spirit evaporates the surface is well polished.—*Apotheker Zeit.*

LETTERS TO THE EDITOR.

The Council Election.

Sir,—May I through your columns warmly thank the numerous friends who had kindly promised me their support at the forthcoming election of the Pharmaceutical Council, and express my regret that, owing to a non-compliance with a technical regulation, the cause of which was my absence from England, I am disqualified for the present election; at some future time I hope to avail myself of their kind sympathy and support.

Oxford, April 14, 1898. G. Claridge Druce.

The British Pharmacopœia, 1898.

Sir,—In your issue of last week your correspondent, Mr. George Coull, of Leith, addressed you upon the actions of an individual and a certain wholesale firm in connection with the new British Pharmacopœia. As I am the member of the Pharmaceutical Society's Pharmacopœia Committee to whom he refers, I think it expedient to reply to his communication. It is apparent from the opening paragraph in Mr. Coull's letter that he was unfortunate enough not to be in possession of the exact facts connected with the first appearance of the British Pharmacopœia.

It is possible that had he been in London, complete information concerning it might have reached him earlier than it did in Edinburgh, and it is not improbable that Easter holidays rather accentuated than otherwise his inability of making himself "up to date." This was his misfortune and apparently not his fault. Those who were in London on the Thursday (April 7) preceding Good Friday, became aware that the General Medical Council, acting on a resolution of its Executive Committee, February 21, 1898, determined to make the new British Pharmacopœia "accessible to the public" (*sic*) at 10 a.m. on Thursday, April 7. By a paragraph which appeared in the issue of the *British Medical Journal*, dated April 9, which issue was, on account of Good Friday, in the press earlier than usual, a full notification concerning the Council's resolution, exhibit of the Pharmacopœia, etc., was made. It would appear that it was the intention of the Medical Council to make the new Pharmacopœia "accessible to the public" at the Medical Council's Registrar's Offices in Edinburgh and Dublin, as well as in London. Whether the exhibit was to be made in all three centres at the same hour of the same day I do not know, but I am aware that in London and from the offices of the Medical Council, and on Wednesday, April 6, a notice was sent to my firm (and doubtless to other London wholesale druggists) that at 10 a.m. to 4 p.m on Thursday, April 7, and from 10 a.m. to 1 p.m. on Saturday, April 9 (no exhibit on Good Friday), the new British Pharmacopœia could (to use the exact words of the paper which it was required should be signed by callers) "be used in the Medical Council's offices, to be returned every evening to the clerk when done with."

I have not a shadow of doubt that your correspondent had not the "up-to-date" information upon the subject, and may have been, on the Thursday forenoon when the new British Pharmacopœia was already a *fait accompli*, contemplating or arranging for the production of some of its preparations with his firm. I was at that very time discussing its contents with my friend, Mr. F. R. Squire (pharmacist) at San Remo. I am aware that in the forenoon of Thursday (in London at any rate) representatives of the wholesale drug houses did take advantage of the notice that had been sent by the Medical Council the previous night, and called at 299, Oxford Street, W., the Registrar's offices, and "used" the volume. My firm in its call was represented by a partner, Mr. John C. Umney. So much for the time, conditions, place, etc., under which the British Pharmacopœia first saw the light.

Now as to my personal connection with the volume. When I accepted the invitation of the Council of the Pharmaceutical Society to act on the British Pharmacopœia Committee I undertook to treat all proof sheets of the draft work as private and confidential communications, and upon no condition was I to permit the proofs to go out of my possession, neither was I to part with information, and these instructions I carried out to the letter. Further, I should like to add that a complimentary copy of the work, which was sent to me by the General Medical Council prior to Thursday, April 7, the date the work was first put on view, was treated as "private and confidential" (although I was not enjoined to do so in the letter which accompanied it), until the authorised volume had been "accessible to the public." These statements, I am persuaded, will be ample to convince your correspondent, if he had any doubt upon the subject (and there is nothing in the letter to show that he had), that up to the time of the exhibit of the book I carried out that which I undertook to do, and that, when the book was placed for "the use of the public" in the London Office of the Medical Council, the obligations of my trust ceased.

Addressing myself to another point raised by Mr. Coull as to the time that should have intervened between Thursday, April 7, and the issue of a price-list of the new pharmacopœial preparations, I should like to state that I am of opinion that the interval prior to the appearance of such a list must necessarily depend upon circumstances. In my own firm, if I were called upon to decide as to the time that should intervene, I should say that the list should be commenced immediately and proceeded with as rapidly as possible consistent with accuracy. The rapidity of compilation would, of course, depend upon: (1) The individual who was required to do the work, (2) The opportunities such individual had previously had of doing similar work, (3) The data upon the loss in manufacture of preparations generally, that were accessible. Now in my firm's case, the "man at the wheel" was Mr. John C. Umney, and in his start he had this particular subject "at his fingers' ends," for he had during the previous three years or more been constantly working under my instructions upon any subject connected with the British Pharmacopœia that my colleagues and I thought desirable. Mr. John C. Umney decided early on Thursday morning, April 7, that he would publish his firm's price-list without delay, and he accordingly set to his task aided by two typists. He worked the greater part of Good Friday (typists included) and until the small hours of Saturday morning; and, finally, he completed his issue, having circularised between two and three thousand of his firm's clients throughout Great Britain, Ireland, and the Colonies on Saturday afternoon—that is on the third day. Now I do not know that your correspondent can honestly take exception to this close application of Mr. John C. Umney to his firm's business, unless, indeed, it be objected that his Good Friday might have been more advantageously spent in a more genial occupation.

Is it to be presumed that Mr. Coull thought it was possible that the whole of the wholesale druggists of Great Britain and Ireland could, and would, put their prices current on show as the Medical Council did their book (or should have done) at the same hour of the same day?—I feel certain he did not. Surely, therefore, it must go without saying that someone, in the absence of simultaneous publication and distribution, must necessarily have been first, and I cannot imagine that Mr. Coull grudges me the kudos (if any) in my connection with the work, or my firm through me in utilising its opportunity of being in the front rank for the London district, and this more especially when I and my son, Mr. John C. Umney, aided constantly by my firm's chemists, clerks, and typists, had worked without fee or reward, and the firm whose action your correspondent would hold up to public ridicule or upon whose conduct he would cast a slur, has provided not only this labour but all the material, and that during a period of from three to four years, absolutely free of charge. In short, this very wicked firm (I gather that this is Mr. Coull's meaning, has "worked for nothing and found the thread." (Mem.—Other firms and individuals were equally generous, but I was the only London wholesale druggist on Committee).

Now I make bold to assert that your correspondent in this, as in other portions of his letter, is not "in touch" with the true facts. If he were aware of all that I have stated it is to be regretted that to his knowledge he did not add a *soupçon* of charity. As I have not the pleasure of knowing him, neither am I aware that his firm and mine are keen competitors, I cannot think that this attack on me is from "Jealousy, the green-eyed monster" that Shakespeare refers to. Surely such a distemper could not be at the root of his bitter complaining? I venture to hope that the prices current issued by my firm may be of some guide to Mr. Coull in compiling a list for his own firm, and this letter would be incomplete without asking him the favour that he will closely scrutinise the price-list which so "incensed" and which apparently caused him some discomfiture, and when he has come to the conclusion that there are errors in the list (the possible result of excess of zeal and hurried work), I shall esteem it a favour if he will point out the mistakes, which will be gratefully acknowledged. I regret that there has been occasion to enter into so much detail, but I thought it desirable that my case should be made plain, and my position from the beginning (1895), when I was honoured with a seat on the Committee, to the end (April 7, 1898), when the book was made "accessible to the public," clear and

well defined. I have not overlooked your editorial paragraph on page 377 of last issue, in reference to pharmacists and future pharmacopœias. The Medical Council can and will deal with this important subject at the proper time. At present, with the ink of the new volume scarcely dry, any discussion would be premature.

Southwark, London, April 18, 1898. CHAS. UMNEY.

LINIMENTUM TEREBINTHINÆ, B.P., 1898.

Sir,—Amongst a list of the B.P. preparations that have been altered to no advantage I find Linimentum Terebinthinæ. I am sorry a better formula for that preparation has not been found. Not only do I think that the proportions of ingredients are incorrect for a permanent emulsion, but also the directions for manipulation.

Maybole, April 18, 1898. ROBERT TOCHER.

*** Has our correspondent tried the new formula, or is he expressing an opinion only? [*Ed.*, P. J.]

A LECTURE RECORD.

Sir,—It may interest some of your numerous readers to hear that on Thursday, April 14, I delivered my ten thousandth lecture in connection with the Westminster College of Chemistry and Pharmacy. If you consider this incident worthy of notice in your Journal I should be pleased if you would call attention to it in your next issue. With best wishes for the success of the new Pharmacy Bill and the continued prosperity of the Society.

London, April 16, 1898. G. S. V. WILLS.

ANSWERS TO QUERIES.

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

BRITISH PHARMACOPŒIA.—Most probably not, but you cannot afford to ignore the book when it is published. [*Reply to* SALOL.—8/33]

MEDICAL PRELIMINARY EXAMINATION.—Apply to the Registrar, General Medical Council, 299, Oxford Street, London, W., for particulars. [*Reply to* MEDICAL.—8/29.]

DISTEMPER POWDER FOR DOGS.—The powder does not contain a trace of antimony or of mercury, or any heavy metal. Nor does it contain cane sugar, as you state. It is chiefly milk sugar; the lime you found is only a trace, probably present as an impurity in the milk sugar. We cannot tell you more with the amount of material available. [*Reply to* CANINE.—8/26.]

METRIC WEIGHTS.—Pharmacists should not purchase metric weights and measures for use in trade until they can obtain them properly stamped. Those you mention are apparently intended for chemical work, and might be disposed of through our Exchange Column. [*Reply to* S. H.—130/28.]

WOOD VIOLET SACHET POWDER.—Ionone, 20 minims; oil of orris root, 4 minims; heliotropin, 20 grains; oil of ylang ylang, 8 minims; oil of sweet orange, 1 minim; oil of bergamot, 4 minims; musk Bauer, 4 grains; otto of rose, 4 minims; santal oil, 1 minim; orris root, in powder, 4 ounces. We, like yourself, have found that some lots of ionone are more powerful than others. [*Reply to* F. H. S.—9/11.]

PETROLEUM EMULSION.—Sulphur-free heavy white petroleum oil, 2¼ fl. oz.; powdered acacia, 1 oz.; powdered tragacanth, 1 drachm; tincture of quillaia, 2 drachms. Rub down in a warm mortar, then add warm water, 1¾ fl. oz., and emulsify thoroughly. Next gradually add a solution containing calcium hypophosphite, 90 grains; sodium hypophosphite, 90 grains; soluble saccharin, 2 grains; water, 2 ounces. Mix. "Vaseline" is quite "pure enough" to use internally, but the fluid hydrocarbon is better suited for the emulsion. You can use white vaseline oil if you prefer to do so. [*Reply to* PETROLEUM.—9/1.]

BOTANICAL.—1, *Peltigera canina* (Lichenes); 2 and 3, *Pellia epiphylla* (Hepaticæ); 4, *Racomitrium fasciculare* (Musci). [*Reply to* STUDENT.—9/3.]

YACHTING PHOTOS.—The most likely firms to act as London agents for your productions would be Messrs. Erdmann and Schang, 4, Salkott Road, Clapham Junction, S.W.; Messrs. Spooner, 379, Strand, W.C.; Messrs. W. A. Mansell and Co., 271, Oxford Street, W.; and the Autotype Co., 74, New Oxford Street, W. [*Reply to* BEKEN.—8/10.]

PHARMACOPŒIA NOTES.—(1) Probably; (2) We do not state anything of the kind, as you may perceive if you will read the paragraph carefully once more; (3) It is distinctly stated in the introductory paragraph at page 367, that, unless otherwise specified, the rule to be followed is "solids by weight and liquids by measure." [*Reply to* PILULA.—9/10.]

SOOT-REMOVING POWDER.—You are quite right about the composition of the powder. It consists simply of a mixture of about 10 per cent. of sulphur with potassium nitrate. From the amount of material used you will see that it cannot exert much influence in the direction you indicate in your equation, since the weight of sulphur and of potassium nitrate is insufficient to exert any great amount of chemical action on a large amount of soot. Probably the charge acts mechanically by causing a draught, and thus starting combustion, so that the soot is burnt out. [*Reply to* J. A. H.—8/30.]

CONVERSION OF QUININE SULPHATE INTO THE ACID HYDROBROMIDE.—Dissolve the sulphate in water with the aid of a little dilute sulphuric acid. Then add just sufficient barium bromide to precipitate the whole of the sulphuric acid; carefully avoid excess of the barium salt. Acid quinine hydrobromide, $C_{20}H_{24}N_2O_2(HBr)_2 3H_2O$ remains in solution. On filtering off from the barium sulphate, and concentrating by evaporation on the water-bath, the salt will crystallise. The mother liquor must be fairly concentrated, as the salt is soluble in 6 parts of water. [*Reply to* H. D. M.—8/28.]

TESTING CLOTH FIBRE FOR INDIGO.—Material dyed with vat indigo should not be affected with water or with alcohol on gently warming, cold saturated oxalic acid solution, borax, alum, or ammonium molybdate solutions, but the fibre should be immediately decolorised on warming with an acid solution of stannous chloride or ferric chloride. It should give no H_2S on boiling with HCl; after continued boiling, and then adding excess of NaHO, and a few drops of $CHCl_3$, no odour of isonitril should be produced. The colour should be removed by nitric acid. Indigo carmine, on the other hand, is partially removed by borax solution, and the solution coloured blue. Glacial acetic acid removes the colour entirely from fibre dyed with vat indigo, but is without action on those dyed with indigo carmine. For further tests consult Allen's 'Commercial Organic Analysis,' vol. iii., part 1, where you will find full information on the subject. [*Reply to* BETA:—8/27.]

OBITUARY.

LENTON.—On April 3, Joseph Lenton, Chemist and Druggist, late of Biggleswade. Aged 32.

BATES.—On April 13, Henry Bates, Pharmaceutical Chemist, Oldham. Aged 70. Mr. Bates had been a member of the Pharmaceutical Society since 1881, and for many years conducted a successful business in George Street. He retired from active participation in the business some ten years ago, when his brother, Mr. Hiram Bates, succeeded him.

THOMAS.—On April 13, William John Thomas, Chemist and Druggist, Dorrington. Mr. Thomas, who was a student and associate of the Pharmaceutical Society for about ten years, died after a lingering illness of four months' duration.

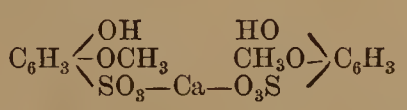
FAULKNER.—On April 13, James Ross Faulkner, Pharmaceutical Chemist, Notting Hill. Aged 57.

COMMUNICATIONS, LETTERS, etc., have been received from

Messrs Baird, Bell, Bird, Bullivant, Clower, Cragg, Cuthbert, Dennis, Dowely, Dowzard, Druce, Farmer, Gibbard, Groves, Hacking, Harmer, Henderson, Hickman, Hogg, Humphreys, Jammie, Lawrence, M'Innes, Martin, Nasif, Newsholme, Parker, Ranken, Smallwood, Squire, Stewart, Thompson, Tocher, Tremeer, Umney, Ward, Watson.

"THE MONTH."

Guajacyl. Guajacyl is the calcium salt of guaiacol-sulphonic acid, and in a 5 to 10 per cent. aqueous solution has been found a good anæsthetic in dentistry and slight surgical operations. It is obtained, according to C. André, by the action of concentrated sulphuric aeid on guaiacol after 48 hours' standing at the ordinary temperature. The red syrupy liquid is neutralised with calcium carbonate, and the filtrate evaporated to dryness. The dried residue is dissolved in four to five times its weight of absolute alcohol, filtered, again dried down, and the guajacyl finally obtained as a greenish-blue powder, which is readily soluble in water and alcohol, but not in oil. It has the composition of—



—*Journ. de Pharm. et de Chim.*, 1898, 324, through *Apot. Zeit.*, xiii., 265.

Determination of Alkaloids in Tinctures and Extracts. J. Katz, in order to avoid the action of heat, which decomposes many alkaloids, has devised a method in which the alkaloid is titrated in the solvent used in the extraction. It is carried out as follows :—25 C.c. of a tincture containing 45 per cent. of alcohol are agitated in a separator with 50 C.c. of ether and 1 C.c. caustic soda solution (33 per cent.). The aqueous solution is separated and shaken twice again with 25 C.c. of ether containing 10 per cent. of alcohol. The ether solution is now agitated with 2 to 3 grammes of plaster of Paris to remove water, and filtered into a stoppered flask. The alkaloid in the ethereal solution is titrated with centi-normal hydrochloric acid, using three drops of an alcoholic solution of iodeosin as an indicator. Alkaloids, such as strychnine, which require chloroform as a solvent, are extracted from tinctures with a mixture containing one part of chloroform and three parts of ether. The chloroform-ether solution is washed with brine, and the separation of the solvent from the aqueous layer is also accelerated by the addition of 2 to 3 grammes of sodium chloride. Tinctures containing more than 45 per cent. of alcohol are diluted with water to this strength, and those containing chlorophyll are first acidulated and the chlorophyll filtered off before determining the alkaloids as above described. Extracts are dissolved in 45 per cent. alcohol and the solution treated as before.—*Pharm. Zeit.*, xliii., 273.

Copper "Pure for Analysis." J. W. Westmoreland has examined a sample of copper-foil, "pure for analysis," which was found to contain copper, 99·30 per cent, together with 0·02 per cent. of lead, and some arsenic. Assuming this copper to be pure, and using it for standardising volumetric solutions, it is evident that concordant yet very erroneous results might be obtained. For example, in testing material containing 5 per cent. of copper, the results would be 0·035 per cent. too high, with 70 per cent. material 0 49 per cent. too high, while metal containing over 99·3 per cent. would apparently contain more than 100 per cent. of copper. Another sample examined contained copper 99·10 per cent., whilst samples marked "Copper Foil Opt," contained copper 99·81 per cent. A specimen marked "Free from Arsenic" was found to contain : Copper, 99·23 per cent. ; arsenic, 0·67 per cent. Three samples obtained in the North of England, marked "Copper, pure for Analysis," contained respectively 99·29 per cent., 99·64 per cent., and 99·87 per cent. of copper. Other provincial samples gave 99 03 per cent., 99 85 per cent., 99·52 per cent., 99·65 per cent., whilst but one was absolutely pure. The author used the electrolytic and iodide methods for determining the percentage of copper in the various samples, and observes that it is evident that although samples which give 100 per cent. by the electrolytic test may possibly not be pure, samples which give lower results, say 99·5 per cent., cannot possibly be pure. The samples stated to be "pure" gave practically 100 per cent. by electrolytic test, and gave results agreeing within the error of experiment when used for standardising thiosulphate solutions for the iodide test, in conjunction with copper obtained by the electrolysis of a solution of the pure sulphate, and of another sample of extremely pure copper, of which the author obtained some quantity. Some of the impure samples were also used in this way (taking the percentage found by the electrolytic test)—and gave results agreeing within the limits of experimental error.—*Analyst*, xxiii., 86.

Acetic Acid as a Menstruum. Dr. E. H. Squibb states that acetic acid has been more extensively used in the past year in the way of applying it to the exhaustion of crude drugs, containing active principles. The drugs have been so completely exhausted as to put beyond all doubt the value of this acid as a solvent. It is found that this acid is so effective that a thoroughly representative extract can be obtained which contains such a slight excess of acetic acid that it may be practically disregarded. Even this excess could be got rid of by heat if its presence was considered detrimental, but when the dose of the extract in question is considered, the amount of acid present is inappreciable. Moreover, such an acetous extract is found to be permanent, showing no signs of deterioration after a lapse of six or eight months. In the case of drugs containing oleoresins even, the exhaustion by this acid has also proved to be quite complete, which proves that its solvent properties may be regarded as fully efficient for all classes of crude drugs—thus substituting it quite completely for alcohol as a solvent in the preparation of both fluid and solid extracts. The ready miscibility of these acetous extracts with water without precipitation, together with the strength and uniformity that can be obtained by the use of this solvent, offsets the objection that may be raised against the small excess of acetic acid in the finished extract, while the greatly decreased cost warrants the use of such extracts even though there were most extreme disadvantages against them. Another very important advantage of these acetous extracts is that their active principles are evidently combined with the acetic acid to form salts which are no longer incompatible with many of the prominent medicaments now found in prescriptions. The latter is such an important advantage that it outweighs many minor disadvantages.—*Ephemeris*, v., 1938.

Oxidases. Prof. J. R. Green has published an exhaustive review of the oxidases or oxidising enzymes, which act by promoting direct oxidation of various substances, chiefly aromatic compounds. Laccase, the earliest of these enzymes to be recognised, is the body which is concerned in the production of lacquer from the crude sap of the lac tree of South-East Asia. Tyrosinase occurs in *Russula nigricans*, Bull., and other fungi which contain chromogens that do not turn blue on exposure to air, but become red and finally black. Œnoxydase plays a prominent part in causing a particular disorder—"casse" or "cassure"—in certain wines. The wine so affected loses its characteristic colour, and after three or four hours contains a red-brown precipitate. Finally, there are various animal oxidases concerning which but little appears to be known at present.—*Science Progress*, vii., 253.

Nascent Hydrogen. D. Tommasi considers that nascent hydrogen is synonymous with H+cal., the greater affinity of the gas in the so-called nascent state being due simply to the fact that the hydrogen, at the moment it is set free, is accompanied by all the heat which is produced while it is being set free. On this assumption, therefore, the differences observed between hydrogen produced by different chemical reactions are explained by the fact that those reactions are not accompanied by the production of the same quantity of heat. Representing nascent hydrogen by H+a (a being the quantity of heat given off by a chemical reaction which results in the evolution of hydrogen), the following results are obtained :—

SO_4H_2+Aq	+Zn	produces	38·0 cals.	(a)
SO_4H_2+Aq	+Cd	,,	23 8 ,,	,,
SO_4H_2+Aq	+Mg	,,	112 0 ,,	,,
2HCl +Aq	+Zn	,,	34·2 ,,	,,
2HBr +Aq	+Zn	,,	34·2 ,,	,,
Sodium Amalgam	+Aq	,,	112·0 ,,	,,

The value of a varies with each chemical reaction, and consequently the hydrogen should be the more active as the value of a increases, bearing in mind that the reaction between the hydrogen and the substance to be reduced may have commenced. In some cases, however, the reduction is not due to H+cal., but to the metal serving for the disengagement of hydrogen (M+cal.), as when potassium chlorate is reduced by zinc and dilute sulphuric acid, or when its solution is electrolysed, zinc being employed for the anode.—*Mon. Scient.* [4], xii., 182.

Gums. Three kinds of gum from the Hinterland of Angra Pequena, South-west Africa, are described by K. Dieterich (*Ber. Deut. Pharm. Ges.*, vii., 3). Gum "Tlach": dissolves in ten parts of water. The solution has a sweet taste, is completely precipitated by alcohol, and does not reduce Fehling's solution. A mucilage of 1 : 2 is of a fine brown colour, somewhat cloudy, and gives a gelatinous precipitate with ferric chloride. Gum "Amrad": a solution 1 : 10 is sweet with an acid reaction, is not precipitated by alcohol and lead salts and does not reduce Fehling; it gives a cloudy mucilage and is gelatinised by ferric chloride. Gum "Auruar": the aqueous solution is rendered cloudy by alcohol and precipitated by lead sub-acetate, but is unaffected by lead acetate. It reduces Fehling's solution. The mucilage 1 : 2 is coloured, not quite clear, and is gelatinised by ferric chloride. All three kinds of gum have good adhesive properties, but as they do not correspond from a chemical point of view with gum arabic or Senegal gum they cannot, for medicinal purposes, be used as substitutes, although adapted for technical use.—*Apot. Zeit.* xiii., 265.

Histology of Veratrums. R. H. Denniston has endeavoured to distinguish the powdered rhizome of *Veratrum album*, L., from that of *Veratrum viride*, Ait., but although certain reactions were found to distinguish the powders when separate, the difference, being mainly one of intensity, proved to be of practically no value when the powders were mixed. The structure of the two rhizomes is identical in almost every detail, whether viewed in transverse or longitudinal sections, and such slight differences as are apparent at times are not constant. In the root structure, however, greater differences are found. Directly beneath the epidermis in *V. viride* there are but two or three rows of large, irregular, distorted collenchymatous cells; in *V. album* the collenchyma consists of seven or eight rows of rounded, thicker-walled, and smaller cells, which are not distorted in the least. As a rule the whole cortical region in *V. album* consists of smaller and more regular cells than in *V. viride*, and in the central bundles of the former there are usually found a somewhat larger number of wood rays, whose largest trachcæ do not approach the size of those of *V. viride*. But when the drugs are powdered these differences in root structure are valueless in helping identification, as the roots of *V. album* are usually removed before powdering. The form and size of the starch grains do not differ essentially in the two rhizomes, and raphides are equally abundant in the phrenchyma cells of both. The use of alkaloidal reagents was next resorted to, and in every instance the powder of *V. album* showed a deeper colour than that of *V. viride*, as was to be expected when the great preponderance of alkaloids in the former is considered. Concentrated sulphuric acid gave a brick-red colour with *V. album*, and an orange-red with *V. viride*, but neither this nor any other test tried was of any use in the case of mixed powders.—*Pharm. Archives*, i., 68.

Yeast and Fermentation. Professor J. R. Green devotes a lengthy paper to the consideration of the relation of yeast to alcoholic fermentation. It is, for the most part, historical, but prominence is given to the widely-different theories that have been offered, from time to time, to account for the phenomena of fermentation, and the paper concludes with the statement that, if Buchner's recently published results should be confirmed, a very heavy blow will be dealt to the vibration theories of fermentation due to Liebig and Naegeli, whose views are only tenable on the supposition that most, if not all, the action takes place in the liquid outside the yeast cells. If, however, Buchner is correct, and the work is done by means of an enzyme, it must necessarily be intra-cellular, for enzymes, so far as is at present known, show no tendency to diffuse through such a membrane as the cell-wall. The latest theory also militates against Pasteur's idea of intra-molecular respiration, which demands the idea of decomposition being brought about by chemical action between the protoplasm and the body from which it is suggested it obtains its oxygen.—*Nature*, lxxvii., 591.

Preparation of Crealbin. This combination of creolin and albumin may be obtained by dissolving 100 of dried egg albumin in water, and to the clear solution adding a mixture of creolin 100 and water 1000. Then add sufficient 10 per cent. dilute hydrochloric acid to precipitate the crealbin. Collect, drain, press, and dry on the water-bath, powder and again dry for three hours at 115° to 120° C.—*Journ. de Pharm. d'Anvers*, liv., 62.

Desichthol. Ichthyol distilled with steam loses about ½ per cent. of a volatile oil, to which the odour is due. The residue is comparatively odourless and is called desichthol. The chemical and therapeutic actions of this body have yet to be determined. If it retains the properties of ichthyol, without the powerful odour, it will prove a useful addition to pharmacy and medicine.—*Pharm. Ztg.*, xliii., 155.

Quinine Glycero-Phosphates. There are two glycerophosphates of quinine —basic and neutral. According to E. Fallieres, the basic glycerophosphate may be obtained by dissolving 75·6 grammes of quinia in 400 or 500 C.c. of ether and mixing with a solution of 17·2 grammes of glycerophosphoric acid in 50 to 60 grammes of alcohol (96 per cent.). An abundant white precipitate is thrown down, which is collected, washed with ether, and dried in the air. For the neutral salt 36 grammes of quinia are taken and treated in a similar manner with 17 grammes of the acid. The salt is precipitated in the form of small needles of a yellowish tint. When collected it forms a yellowish crystalline powder, moist to the touch, which, from its tendency to aggregate, should only be prescribed in pilular form. For general use the basic salt is to be preferred.—*Annales de Pharm.* [9], iv., 123.

Menthoxol, Camphoroxol, and Naphthoxol

These preparations, which consist of a combination of a 3 per cent. hydrogen peroxide solution with alcoholic solutions of menthol, camphor, or naphthol, have been shown by Beck to be powerful germicides. Wagner has employed 10 per cent. solutions of these oxols (*Deutsch. Med. Wochenschr.*) in the treatment of abcesses and suppurating wounds. After, if necessary, opening the abcess and irrigating the wound with the solution, a pad of cotton moistened with a 10 per cent. solution is laid on the surface and kept in position by a bandage. The dressing is changed every second day. All three oxols act alike and are equally efficient, menthoxol in contact with the wound disengages large quantities of gas, so as to form a copious froth. In all cases purulent discharges rapidly cease and healthy granulation supervenes. The oxols are perfectly free from any irritating effect, and prove to be energetic deodorants. Menthoxol is specially useful in this respect.—*Nouv. Rem.*, xiv., 112.

Poisoning by Wormwood Seed.

A fatal case of poisoning with the oil of *Chenopodium anthelminticum* is recorded by Dr. A. R. Bond in the *Maryland Medical Journal*. The victim, a boy of three, succumbed in less than twelve hours after being given a dose of half a teaspoonful of wormseed oil, despite every effort to remove the poison. Wormseed tea is a popular remedy for "worms" in the United States, but the oil is evidently a powerful drug, and should be employed with caution. Many text-books give no indication that oil of wormseed may exert a toxic effect.—*Therap. Gaz.*, xii., 108.

Low Temperatures and Germination.

To test the power of seeds to resist cold, Mr. H. T. Brown and Mr. F. Escombe have subjected a number of air-dried seeds (containing from 10 to 12 per cent. of natural moisture) for 110 consecutive hours to a temperature between − 183° and − 192° C., subsequently thawing them very slowly. The seeds belonged to various natural orders—Gramineæ, Cucurbitaceæ, Leguminosæ, Geraniaceæ, Compositæ, Umbelliferæ, Convolvulaceæ, Liliaceæ. Their germinative power was not appreciably reduced; the resulting plants grew to full maturity and were quite healthy. Some of the seeds experimented on contained endosperm, others did not; the reserve material consisted in some cases of starch, in others of oil or mucilage.—*Proc. Royal Society*, lxii., 1897, p. 160.

Protoplasmic Threads Perforating the Cell-Walls.

Pursuing his investigations on this subject, Mr. W. Gardiner has determined the existence of protoplasmic threads connecting cell with cell in a large number of additional instances. They are often of extraordinary tenuity, and are present in very great quantities. In the case of pitted tissues the pit-closing membrane is invariably traversed by "pit-threads"; but the protoplasmic threads are by no means confined to the pits; "wall-threads" frequently perforate the walls of the cells themselves. When the same cell is provided with both pit-threads and wall-threads, the former are stouter and more readily stainable than the latter. The pit-threads are collected into groups, and in every group the threads are arranged in bundles. The threads appear to be a primary and not a secondary formation in the cell; the whole system of connecting threads arises at an early stage. The author altogether discards the idea of a system of open pits connected with one another. He has little doubt that connecting threads of protoplasm occur universally in all the cells of all the living tissues of all plants. The fundamental unit in vegetable physiology is, therefore, not the cell, but the plant. The following is a list of the tissues in which connecting threads of protoplasm have been observed by the author:—Cotyledons of *Tropæolum majus*; endosperm of *Lilium martagon*, *Fritillaria imperialis*, *Hordeum vulgare*; root of *Ranunculus asiaticus*; leaf-stalk of *Tamus communis*, *Viscum album*, *Aucuba japonica*, *Prunus laurocerasus*, *Nerium oleander*, *Lilium martagon*, *L. candidum*, *Salisburia adiantifolia*, *Asplenium rutæfolium*, *Marattia elegans*; flower-stalk of *Taraxacum dens-leonis*; pulvinus of *Mimosa sensitiva*, *Robinia pseudacacia*; tendril of *Cucurbita pepo*.—*Proc. Royal Society*, lxii., 1897, p. 100.

Antherozoids of the Dictyoteæ.

J. Lloyd Williams confirms his previous statement that the male elements in this class of sea-weeds are motile antherozoids, not passive pollinoids. In *Dictyota dichotoma* and *Taonia atomaria* a single antherozoid is formed from each cell of the antherid. It has only a single long flagellum, which may be as much as six times as long as the diameter of the head, and is often spiral. The greater part of the head consists of hyaline protoplasm, one side being occupied by a thin layer of denser plasm, the flagellum springing from about the centre of this layer. The motility of the antherozoid continues only for a short time, usually about ten minutes, and under unfavourable conditions may be entirely suspended.—*Annals of Botany*, 1897, 565.

Opium Industry in America.

In an article in the *Scientific American*, March 5, p. 147, it is stated by Mr. C. F. Holder that it is estimated that in San Francisco 30 per cent. of the Chinese are addicted to smoking, and that 10 per cent. of the entire population of China Town are habitual opium drunkards. In one year the importations for smoking purposes amounted to 100,000 pounds. In alluding to the habit in China, Mr. Holder states that China is probably the largest poppy producing nation, South-Western China producing 224,000 piculs, as against 100,000 piculs from India. Nearly all the opium smoked in California comes from the Took Hing Co., of Hong Kong, which pays the Government £300,000 for the privilege of carrying on the business.

Asarum Canadense.

Professor H. Kraemer gives illustrations of the wild ginger or *Asarum canadense*, and a plant that has been confounded with it, which was separated as a distinct species under the name of *Asarum reflexum* by Mr. E. P. Bicknell in November last. The species differs chiefly in the shape of the flowers. In *A. canadense* the calyx lobes are spreading, passing gradually into a slender upcurved acumen, and the interior of the calyx tube is purple down to the base, but in the *A. reflexum*, the lobes reflexed and abruptly acuminate into a straight obtuse point, the calyx tube being white within. The *A. canadense* prefers rich hilly woods, often in rocky situations, and the *A. reflexum* low woods along streams or river valleys, often forming extensive beds, rarely in upland woods. It is not yet ascertained which species yields the wild ginger rhizome of commerce, nor whether the rhizomes differ in anatomical structure.—*American Journ. of Pharm.*, pp. 145, 149.

Prophylactic Hair-wash.

For prophylactic purposes P. Eichoff recommends a hair wash composed of captol, which is a tannin chloral compound, and therefore containing no free chloral, acid. tartar, resorcin, each 1 part; salicylic acid, 0·7; ol. ricini, 0·5; ess. flor., *q.s.*; and spirit. vin. rect. (65 per cent.), 100 parts.—*Monat. Prakt. Derm.*, 1898, 361, through *Apoth. Zeit.*, xiii., 266.

THE NEW PHARMACOPŒIA TEST FOR QUININE SULPHATE.

BY A. J. COWNLEY.

The new Pharmacopœia test for quinine sulphate differs in several respects from that prescribed in previous editions, but it cannot be said to be an improvement on it. Considering the number of investigations and criticisms on quinine sulphate testing that have been made since the previous Pharmacopœia, it was to be expected that the official authority in this country for fixing the standard of quinine sulphate would have given us an official test that could be regarded as a scientific method of testing. In default of that, it would have been better to have merely prescribed a limit of impurity, leaving the method of arriving at the result in the hands of those competent to undertake the necessary operation. The test now prescribed can hardly be considered as scientific or accurate. The method given in the 1887 Pharmacopœia, based, as it was on the method suggested in the Journal [3], vii., 653 and 673, was rendered nugatory by unauthorised alterations. The defects in the test have, however, been clearly pointed out (*P. J.*, xvii., 645), and it was only necessary to have added some further modification derived from experience and published work to have given a test worthy of the new Pharmacopœia.

The new test stipulates that 4 grammes of the quinine sulphate are to be dissolved in 120 C.c. of boiling water and the solution allowed to cool slowly to 50° C., with frequent stirring; separate by filtration the purified quinine sulphate which has crystallised out. The filtrate is to be concentrated to 10 cubic centimetres or less, and when cold shaken with 10 cubic centimetres of ether, and half that amount of solution of ammonia. Set aside in a cool place for not less than 24 hours. Collect the crystals, which consist of cinchonidine and cinchonine (*sic*) combined with quinine, on a tared filter, wash with a little ether, dry at 100° C., and weigh. These should not amount to more than 0·12 gramme. Quinine sulphate so tested should not yield more than a total of 3 per cent. of crystals of impure cinchonidine.

The directions also prescribe methods of testing for cinchonine, quinidine, and cupreine, alkaloids which are never present in quinine sulphate of any known commercial manufacture. Moreover, cupreine is a rare alkaloid, met with only in the bark of *Remijia pedunculata*, which at the present time is seldom, if ever employed by quinine manufacturers, and in any case cupreine could only exist in quinine sulphate to the extent of a few hundredths per cent.

For the purpose of ascertaining the value that can be attached to the new test, and the amount of impurity (cinchonidine) that might be passed in following out the directions exactly as described, two samples of quinine sulphate of well-known brands were examined. The following results were obtained:—

SAMPLE A.—This sample contained 15 23 per cent. water of crystallisation. Four grammes of the quinine sulphate were dissolved in 120 C.c. of boiling water in the manner described, and cooled slowly to 50° C. and filtered at that temperature. The filtrate on cooling to 15°·5 C. deposited crystals, and when concentrated to 10 C.c. gave on cooling a heavy magma of crystals. The entire mass of liquid and crystals was shaken with 10 C.c. of ether and 5 C.c. of ammonia, and allowed to stand twenty-four hours. The separated crystals, after washing with a little ether, were weighed, and amounted to 0·099 gramme, or 2·48 per cent. on the quinine sulphate taken.

SAMPLE B.—This sample contained 12·7 per cent. water of crystallisation. Four grammes were taken and dissolved in hot water as directed. In this case also a heavy magma of crystals was obtained on concentrating to 10 C.c. The crystals and adherent liquid together were shaken with 10 C.c. of ether and 5 C.c. of ammonia solution. On standing for twenty-four hours the impure crystals separated, and washed gave 0·222 gramme, or 5·55 per cent. on the quinine sulphate taken.

The results by the new Pharmacopœia test are then—

	Sample A.	Sample B.
Impure crystals	0 099 gramme	0·222 gramme.
Equal to.....	2·48 per cent.	5·55 per cent.

The point now to ascertain is what do these results mean? Is it really supposed by the compilers of the Pharmacopœia that 0·099 gramme, or 2·48 per cent., and 0·222 gramme, or 5·55 per cent., express the maximum amount of impurity as represented by the crystals obtainable in these two samples? In order to answer these questions, and to show the absurdity of such a contention, the two samples, A and B, were submitted to an exhaustive examination, more particularly to obtain the maximum amount of crystals of "impure cinchonidine" separable from quinine sulphate. The method adopted was that of repeated fractionation by crystallisation from water, following in a modified form the directions given in the Journal (B. H. Paul, *P. J.* [3], vii., 673), the operation being continued until no crystals could be obtained from a small volume of ether. In this manner were obtained from—

	Sample A.	Sample B.
Total amount of impure crystals	0·21 gramme	0·428 gramme
Equal to	5·25 per cent.	10·7 per cent.

So that the results thus compare—

	Sample A.	Sample B.
Impure cinchonidine crystals actually obtainable	0·210	0·428
Impure cinchonidine crystals obtained by the new British Pharmacopœia process	0·099	0·222
Impurity passed as crystals.....	0·111	0·206
Or expressed in percentage:—		
Crystals obtained by the B P. process	47·2	51 8
Crystals missed by the B.P. process.....	52·8	48·2
Total crystals	100·0	100·0

These results, therefore, show that the new test misses 52·8 per cent. of "crystals of impure cinchonidine" in Sample A, and 48·2 per cent. in Sample B.

The Pharmacopœia limit is 0·12 gramme of impure crystals, and according to Sample A, which is a sample of recognised high-class quality, only 47·2 per cent. of crystals are obtainable by the B.P. process. The total amount of crystals that could be obtained according to the method above described would be—

$$0{\cdot}12 \times \frac{100}{47{\cdot}2} = 0{\cdot}254$$

The B.P. limit of 0·12 gramme therefore shows a loss, as under:—

	Gramme.		Per cent.
Crystals obtainable by the B.P. process	0·120	=	47·2
,, missed ,, ,, ...	0·134	=	52·8
Total crystals possible to be obtained	0·254	=	100·0

The new Pharmacopœia test therefore misses, in a sample of quinine sulphate answering the B.P. limit of 0·12 gramme from 4 grammes, over 50 per cent. of impurity, as expressed in the empirical term "crystals of impure cinchonidine."

It is necessary, in order to make these results of the Pharmacopœia test intelligible, to obtain some concrete value from them, and to express the impurity in terms of cinchonidine sulphate.

It is now generally acknowledged by quinologists—chiefly from the work of Dr. Hesse—that the cinchona alkaloids are apt to form double compounds when crystallising from such solvents as ether.

The amount of quinine contained in crystals of quinine and cinchonidine separating from ether is dependent to a large extent on the relative proportion of each present, and the object to be obtained in quinine sulphate testing is to eliminate as much as possible by a preliminary operation the greater part of the quinine before treatment with a solvent such as ether.

In the Pharmacopœia test the object seems to be to obtain as much as possible of quinine mixed cinchonidine. For it is directed that the solution should be cooled to 50° C. and filtered, thereby retaining a quantity of quinine sulphate in solution.

On the basis of the crystals separating from ether by the Pharmacopœia method containing 70 per cent. of cinchonidine, the results above obtained are thus stated in terms of crystallised cinchonidine sulphate.

Quinine Sulphate.

	A.	B.	B.P. sulphate of quinine yielding 0·12 gramm of crystals.
	per cent.	per cent.	per cent.
Crystallised cinchonidine sulphate from B.P. results	2·34	5·24	2·83 = 47·2
Crystallised cinchonidine sulphate missed	2·61	4·87	3·16 = 52·8
Total cinchonidine sulphate present in the sample of crystallised quinine sulphate	4·95	10·11	5·99 = 100·0

Therefore the statement that a sample of quinine sulphate answering the requirements of the Pharmacopœia "should not yield more than a total of 3 per cent. of crystals of impure cinchonidine," by the Pharmacopœia test, really means that quinine sulphate containing an admixture of 5·99 per cent. of crystallised cinchonidine sulphate would answer the requirements of the new British Pharmacopœia.

INVISIBLE AND SYMPATHETIC INKS.*

BY J. RUTHERFORD HILL.

So-called invisible and sympathetic inks are well known, and there are many formulæ for their production. They have been used for secret correspondence, but are perhaps of more interest to the conjuror or the romancist than to the prosaic disciple of Galen. And yet the latter is not infrequently applied to by the conjuror, either professional or amateur. Such was my lot on a recent occasion. An invisible or a sympathetic ink was required that would become visible on exposure to the fumes of either chloroform, ether, or ammonia. A reference to the usual authorities gave no practical result, and the case seemed rather hopeless; but it occurred to me that by using a solution of mercurous nitrate and exposing the writing to the fumes of ammonia, a precipitate of black mercurous nitrate would be formed and give the desired result. On writing with such a solution, by means of a quill, on ordinary white paper, the writing, when dry, is invisible. A small quantity of strong solution of ammonia is placed in the bottom of a large cylindrical glass jar, which thus becomes filled with ammonia gas in a suitably moist condition. On placing the paper with the invisible writing inside the jar for a few seconds and then withdrawing it, it will be found that the writing comes out in a very distinct black.

This is an invisible ink, but when once developed it remains. A sympathetic ink, on the other hand, is one that becomes visible and then vanishes again as required. To meet this requirement it occurred to me to try a fairly strong solution of phenol-phthalein. Writing with such a solution on ordinary white paper is quite invisible when dry, but when placed for a few seconds in the jar above mentioned the writing becomes of a beautiful pink colour, which fades as the ammonia evaporates. By breathing upon the paper the colour disappears almost immediately. By a little thought many other devices of a curious and interesting kind might be discovered, and perhaps the addition of the foregoing to the ideas already in existence may be found useful by those who are called upon to cater for the multifarious demands for something new, mysterious, and entertaining.

* Read at an Evening Meeting of the Pharmaceutical Society (North British Branch), on Wednesday, April 20.

METHYLATED SPIRIT IN PHOTOGRAPHY.*

BY J. RUTHERFORD HILL.

Certain objections to the use of methylated spirit containing rock oil, in photography, have been brought under my notice by a professional photographer. Thus, in the process of enamelling collodion is used. As received, the collodion is too dense, and has to be diluted in the proportion of one part of collodion, one part of ether, and one part of methylated spirit. Before the addition of rock oil to the spirit this process was in constant use, and gave uniformly satisfactory results. After the addition of the oil it was found that the finished picture was spoiled by a white hazy opalescence, particularly at one corner.

The process of enamelling is as follows:—The diluted collodion is made to flow over a plate of glass, and is then drained off at one corner and allowed to dry. The print is placed in a bath of hot solution of gelatin in water and then "squeegeed" on to the collodion-coated plate. After it is dry the print is peeled off, the resultant picture possessing a highly-glazed or enamelled surface. But after the use of the rock oil spirit, a very large proportion of the pictures were completely spoiled in the way above indicated. At first no explanation of this untoward circumstance was thought of, and it was assumed that the fault lay in the collodion. After several new quantities of collodion had been tried without any improvement, suspicion was ultimately attached to the methylated spirit. This was found to be the source of the evil, and on using methylated spirit free from rock oil the results were again uniformly satisfactory. The explanation arrived at was that rock oil in the spirit and the water in the gelatin were the cause of the opalescence complained of.

It may be interesting to note that a liquid called "pyroxylin solvent" is extensively sold for the foregoing and other technical purposes. To all appearance it is simply a mixture of ether and methylated spirit, free from rock oil. This, of course, is quite free from objection for the purpose, but the legality of the sale of such a mixture is surely a point that requires to be cleared up.

It frequently happens that a picture is wanted in a hurry, and, in such cases, after the negative has been developed and washed, it is dried in a very short time by dipping it into methylated spirit, and then removing it and letting it dry, sometimes in a warm place. In this way, what would take several hours may be done in fifteen or twenty minutes. But one difficulty that occurs if methylated spirit with rock oil is used is that the negative is covered all over with a white fog, which is objectionable, and may interfere with the printing, especially in the case of delicate or faint negatives. This white fog appears to be caused by contact of water in and on the film with oil in the methylated spirit.

Another objection in this dipping and drying process, which is in constant use in every large studio, is that the spirit very soon becomes muddy from precipitation of rock oil by water. It cannot, therefore, be used again and again as was the case with the old methylated spirit. Considering that the addition of rock oil seems to have been quite ineffectual for the purpose for which it was added, and that so much may be said against the addition, it certainly seems as if some good reason should be given to justify the retention of the existing regulation or it should be abolished.

* Read at an Evening Meeting of the Pharmaceutical Society (North British Branch) on Wednesday, April 20.

The British Pharmacopœia, 1898.

The Vegetable Materia Medica of the Work.—(*Continued.*)

DIGITALIS FOLIA.—Bentl. and Trim., 'Med. Pl.,' vol. iii., p. 195. Collected from plants commencing to flower. The lower veins of the leaf are decurrent down the petiole. The leaf has glandular, simple, usually three-celled hairs. The transverse section exhibits a mesophyll free from crystals of calcium oxalate. Dose in powder ½ to 2 grains. The decurrent veins and other characters serve to distinguish the leaves from those of *Inula conyza* and other accidental admixtures.

ELATERIN.—The process of obtaining it is here omitted. Small hexagonal scales almost entirely insoluble in water. Neutral to litmus.

ELATERIUM.—The fresh fruit of *Ecballium elaterium* is no longer official, and the process for preparing elaterium is omitted. When exhausted with chloroform, the solution evaporated, the residue washed with ether and the process of solution, evaporation and washing repeated, elaterium should yield 25 per cent. or not less than 20 per cent. of elaterin. Dose 1/10 to ½ grain.

ELEMI.—Omitted.

ERGOTA.—Bentl. and Trim. 'Med. Pl.,' vol. iv. plate 303. Taste disagreeable. Ergot should be free from mustiness; it is liable to deteriorate by keeping and by exposure to damp. Dose, 20 to 60 grains. Ergot is often slightly damp when received into stock, and needs careful drying and preservation from damp air.

EUCALYPTI GUMMI. Additions, 1890.—Mueller, 'Eucalyptographia.' Characters and tests: In grains or small masses. Thin fragments are transparent, and of a ruby-red or garnet-red colour. It is somewhat tough and has a very astringent taste. When chewed it adheres to the teeth and tinges the saliva red. Dose, 2 to 5 grains.

EUONYMI CORTEX.—Additions, 1890. Sargent, 'Silva,' vol. ii., tab. liii. The outer layer is a soft friable cork. The bark breaks with a short fracture, the fractured surface is yellowish in colour.

FARINA TRITICI is omitted.

FEL BOVINUM.—The word "hygroscopic" is introduced into the character and tests.

FICUS.—The dried fleshy receptacles, Bentl. and Trim., 'Med. Pl.,' vol. iv., pl. 228.

FILIX MAS.—Bentl. and Trim., 'Med. Pl.,' vol. iv., plate 300. The bases of the petioles bear numerous brown membranous scales. The rhizome and bases of the petioles are green internally and the latter exhibits in transverse section about eight pale yellow fibro-vascular bundles in each, arranged in a diffuse circle.

FÆNICULI FRUCTUS.—The word "ripe" is inserted in the description of the fruit. About 1/10 in. (3 Mm.) in diameter, pale yellowish-brown (instead of brown); the primary ridges are prominent. The mericarp exhibits in transverse section six large vittæ. Considering the variation in the constituents of the essential oils of the different kinds of fennel fruits met with in commerce, some indication of the best variety might have been expected, on the score of uniformity of flavour, in preparations containing it.

GALBANUM.—*Ferula rubricaulis* is omitted as a source of galbanum. The tears are usually opaque and yellowish-white internally, sometimes bluish-green in colour and mixed with transverse slices of the root. The taste is not now described as alliaceous. If a small fragment is heated to redness in a dry test tube, the contents of the tube after cooling yield, with boiling water, a solution that when largely diluted and made alkaline with solution of ammonia exhibits a blue fluorescence. Dose, 5 to 15 grains.

GALLA.—*Quercus infectoria*, Oliv. Bentl. and Trim. 'Med. Pl.' vol. iv., p. 249.

GELATINUM. Additions, 1890.—The word "animal" is substituted for "gelatigenous" in the description. The sheets or shreds are almost colourless. A solution in 50 parts of hot water solidifies to a jelly on cooling.

GELSEMII RADIX.—The rhizome has usually a brown or dark brownish violet cork, often much fissured, is nearly straight, and exhibits silky fibres in the bast. The root is yellowish-brown, finely wrinkled and somewhat tortuous. The dose is omitted.

GENTIANÆ RADIX.—The dried rhizome and roots. The rhizome bears closely approximated encircling leaf scars, and is frequently terminated by a bud. Tough when slightly moist, but brittle when dried. The central portion consists principally of parenchymatous tissue, is soft, and is not distinctly radiate. The use of the term "rhizome" here is unnecessarily misleading, as the so-called rhizome and root are continuous. The word root-stock, *i.e.*, the stem-like part of the root, would be much more appropriate. The description in the last edition was much clearer.

GLYCYRRHIZÆ RADIX.—The peeled root and peeled subterranean stem. Before being peeled dark brown in colour, and longitudinally wrinkled, but not scaly; when peeled yellowish with a nearly smooth fibrous surface. The fracture is coarsely fibrous; internally the drug is yellow. A transverse section exhibits a porous distinctly radiate wood, and a thick cortex with groups of bast fibres arranged in radial lines. The taste is free from bitterness. The absence of bitterness is apparently intended to exclude the use of Russian peeled liquorice and other Eastern varieties derived from *G. echinata* or *G. glandulifera*.

GOSSYPIUM.—It dissolves in concentrated solution of copper ammonio-sulphate.

GRANATI CORTEX.—The dried bark of the stem and root. In irregular curved or channelled pieces ½ to 1 inch (12–25 Mm.) in width. The outer surface of the root bark is rough, yellowish-grey, and marked with irregular conchoidal depressions, the stem being smoother and frequently bearing minute lichens, the inner surface yellow, more or less tinged with brown. The transverse section exhibits numerous fine radial and tangential lines. The permission to use stem bark is an advantage, as it is always found in the commercial article in large proportion.

GUAIACI RESINA.—The masses should not contain bark, wood, or other impurities, since the mention of these is now omitted. A solution in alcohol (90 per cent.) assumes a blue colour on the addition of diluted test solution of ferric chloride.

GUAIACI LIGNUM.—For *Guaiacum sanctum*, a reference is given to Sargent, 'Silva,' vol. i., plate 28. Chips, raspings, and shavings are not mentioned.

HÆMATOXYLI LIGNUM.—The heart-wood dull orange to purplish red, but is not described as sliced; and the chips or coarse powder should be unfermented, but their colour is not described as in P.B., 1885.

HAMAMELIDIS CORTEX, Additions, 1890.—The dried bark of *Hamamelis virginiana*, 'Bot. Mag.,' plate 6684. The bark is stated to be about 1/16 in. thick, marked with transverse lenticels frequently freed from the cork, then exhibiting a nearly smooth reddish-brown outer surface. The inner surface is pale reddish-pink; the fracture is laminated and coarsely fibrous. The transverse section exhibits a complete ring of sclerenchymatous cells and numerous tangentially-elongated groups of bast fibres.

HAMAMELIDIS FOLIA, Additions, 1890.—The leaves fresh and dried. Broadly oval in outline. The upper surface is dark green or brownish-green in colour, the under surface paler; the margin is sinuate; the veins are furnished on the under surface with stellate hairs. The leaves have no marked odour. (The fresh leaves exhibit hairs sparingly scattered over the under surface, but they are less visible in dried leaves except on the veins.)

HEMIDESMI RADIX.—Bentl. and Trim., 'Med Pl.,' vol. iii., plate 174. Rigid, seldom exceeding 1/4 in. (6 Mm.) in thickness, and of a reddish-brown or dark brown colour. On one side of the root the cork is frequently separated from and raised above the cortex. The transverse section exhibits numerous laticiferous cells in the cortex.

HIRUDO.—Brand and Ratzeburg, 'Med. Zool.,' vol. ii., tab.

xxviii., fig. 34, and tab. xxx., fig. 1. The anterior end is terminated by a small sucker surrounding the tri-radiate jaws, and the posterior by a large sucker. The body is marked with from 90 to 100 fine annulations.

Hydrastis Rhizoma, Additions, 1890.—The scars are cup-shaped. The fractured surface exhibits a ring of bright yellow, somewhat distant narrow wood bundles. It has a characteristic odour and a bitter taste.

Hyoscyami Folia.—Collected from the flowering biennial plant. No geographical source is given. The leaves are mostly sessile, grandular hairy, particularly along the veins. The corolla is yellowish, with a network of purplish veins. The mesophyll of the leaf contains prisms of calcium oxalate.

Ipecacuanhæ Radix.—The dried root of *Psychotria ipecacuanha*, Stokes. An additional reference to an illustration is given, which represents the short-styled form of the plant, viz., Berg und Schmidt, 'Off. Gewachse,' bd. 1, 11 tab. xv.c., that of Bentl. and Trim., 'Med. Pl.,' vol. ii., pl. 145, representing the long-styled form. The pieces not often exceeding 6 inches in length (15 Cm.) or ¼ inch (6 Mm.) in thickness. It varies in colour from dark brick-red to very dark brown, the annulations not taking the form of narrow merging ridges (distinction from Carthagena ipecacuanha). The fractured surface exhibits a thick greyish cortex, which usually has a resinous, but sometimes a starchy, appearance, and a small dense central portion. When examined under the microscope the cortex exhibits small compound starch grains and raphides. The wood contains no vessels. Dose, as an expectorant, ¼ to 2 grains. It is remarkable that the word radix has been added here, while cortex has been removed from cascarilla, on what grounds it is impossible to guess. The microscopic character, "the wood contains no vessels," distinguishes it from *Richardsonia* but not from *Psychotria emetica*, which also has none. It might have been supposed that Carthagena ipecacuanha, which contains more of the actively emetic principle cephaeline, would have been selected as the official kind. It yields preparations much more active as emetics than the Brazilian variety.

Jaborandi Folia.—The dried leaflets of *Pilocarpus jaborandi*, Holmes ('Bot. Mag.,' pl. 7483, and *P. J.* [3], vol. v., p. 582). The leaflets usually vary from 2½ to 4 inches (6 to 10 Cm.) in length. The mature leaflets are glabrous or exhibit at most a few scattered hairs on the under surface. On the upper surface the lateral veinlets are distinctly prominent. It is to be regretted that an alternative species, *P. selloanus* or *P. microphyllus*, was not admitted, since the genuine leaves are at times not procurable in the market, and a double quantity of the leaves of *P. selloanus* would have been about equal in strength to the genuine leaves.

Jalapa.—Bentl. and Trim., 'Med. Pl.,' vol. iii., pl. 186. Varying in length from 1 to 3 inches (2½ to 7½ Cm.) or more. Examined under the microscope it exhibits numerous compound starch grains, clustered crystals of calcium oxalate, and cells containing resin.

Kamala.—Omitted.

Kino.—Bentl. and Trim., 'Med. Pl.,' vol. ii., plate 81. The juice is evaporated to dryness. Partially soluble in cold water. Not less than 80 per cent. should be soluble in boiling water. Dose, 5 to 20 grains.

Krameriæ Radix.—Pará rhatany (*Krameria argentea*, Mart., 'Fl. Brasil.,' vol. xiii., pt. 3, plate 28) is substituted for the Savanilla kind. In cylindrical pieces characterised by its purplish-brown colour, and smooth thick bark marked at intervals by deep transverse cracks, and adhering firmly to the wood, which is of a pale reddish-brown colour. Details of measurements are not given under this drug.

Lac.—Omitted.

Lactuca.—Omitted.

Laricis Cortex.—Omitted.

Lauro-cerasi Folia.—Practically unaltered.

Limonis Cortex.—*Citrus medica*, var. *B. limonum*, Hook.f.

Linum.—*Lini semina*, B.P., 1885. The surface is minutely pitted. They contain a narrow oily endosperm and two large oily cotyledons. This name is another of the curious anomalies to be met with in the new Pharmacopœia. Whilst *Ipecacuanha* is changed into *Ipecacuanhæ radix*, *Lini semina* is altered to *Linum*, and *Lini farina*, which might have been more correctly called *Lini semina contusa*, is called *Linum contusum*. Literally translated, therefore, into English, the new names mean flax or thread, and bruised flax.

Linum Contusum.—*Lini farina*, B.P., 1885. Linseed reduced to a coarse powder. It should be recently prepared and have a bland, not pungent or rancid odour when mixed with warm water. I should yield not less than 30 per cent. of oil when exhausted by carbon bisulphide, and should not yield the characteristic reactions with the tests for starch. When incinerated with fresh access of air it should leave not more than 5 per cent. of ash.

Lobelia.—The stems have often a purplish tint, and bear one-celled hairs and the scars of alternate leaves. The fruits are inflated, two-celled, and when mature contain oblong minute reticulated brown seeds. The transverse section of the stem exhibits laticiferous vessels in the bast.

Lupulinum.—A brownish-yellow powder. Glands consisting of a single hemispherical layer of cells, the cuticle of which has been raised by the secretion of the oil or oleoresin contained in the gland. It should contain not more than 40 per cent. of matter insoluble in ether, and not more than 12 per cent. of ash when incinerated.

Lupulus.—Hops. No geographical source is given. The strobiles consist of membranous stipules and bracts. The bract at the base and the achene are sprinkled with yellow glands.

Manna.—Omitted.

Mastiche.—Omitted.

Maticæ Folia.—Omitted.

Mel.—Appears only as Mel Depuratum. The characters and tests are those given under "Mel" in the B.P., 1885. Incinerated it should not yield more than 0·25 p. c. of ash.

Mezerei Cortex.—The bark of *Daphne gnidium*, Bentl. and Trim, 'Med. Pl.,' pl. 227, is added. The bark in discs or rolls is not mentioned. The transverse section of mezereon bark exhibits numerous groups of bast fibres in the secondary bast. The bark of *Daphne gnidium* frequently occurs in commerce, and, so far as is known, is equal in activity to the other official species. It is of a deep purplish-brown colour; it is hairy in the younger portions.

Mica Panis.—Omitted.

Mori Succus.—Omitted.

Moschus.—Brandt and Ratzeburg, 'Med. Zool.,' vol. i, tab. vii., viii. On incineration it should yield not more than 8 per cent. of ash.

Myristica.—Divested of its testa.

Myrrha.—*Balsamodendron myrrha*, Nees, 'Plant Med.,' plate 357, and probably other species. When moistened with nitric acid it assumes a violet colour (distinction from bdellium and false myrrh). It is difficult to understand why the genus *Balsamodendron* is retained instead of *Commiphora*, Engler., which is the one adopted in the 'Kew Index,' and which seems to be generally accepted by Continental botanists, the genus *Commiphora* having twenty-seven years' priority.

Nectandræ Cortex.—Omitted.

Nux Vomica.—The dried ripe seeds. Nearly disc-shaped, ¾ to 1 inch (2 to 2½ Cm.), in diameter. The hairs are radiately arranged. The endosperm is large and horny. The cotyledons small and leafy. Dose, in powder, 1 to 4 grains.

Oleum Amygdalæ.—Soluble in ether and chloroform in all proportions. Sp. gr. 0·915 to 0·920. It does not congeal until cooled to nearly −4° F. (−20° C.) If 2 C.c. of the oil be well shaken with 1 C.c. of fuming nitric acid and 1 C.c. of water, a whitish, not brownish, red mixture should be formed, which after standing for 6 hours at 50° F. (10° C.) should separate into a solid white mass, and a nearly colourless liquid (absence of peach-kernel and other fixed oils).

Oleum Anethi.—Sp. gr. 0·905 to 0·920. It rotates the plane of a ray of polarised light not less than 70° to the right at 60° F. (15°·5 C.) in a tube 100 Mm. long. Dose, ½ to 3 minims.

Oleum Anisi.—Distilled from anise fruit or from star anise fruit (*Illicium verum*), Hook. f., 'Bot. Mag.,' plate 7005. It congeals when stirred at temperatures between 50° and 59° F. (10° to 15° C.), and should not again become liquid below 59° F. (15° C.). Sp. gr. taken at 68° F. (20° C.), 0·975 to 0·990. It rotates the plane of a ray of polarised light slightly to the left. Dose, ½ to 3 minims.

Oleum Anthemidis.—Sp. gr. 0·905 to 0·915. Dose, ½ to 3 minims.

Oleum Cadinum. Additions 1890.—Moggridge, 'Flora of Mentone,' tab. 65.

Oleum Cajuputi.—*Melaleuca leucadendron*, Linn. Sp. gr. 0·922 to 0·930. It should become semi-solid on being stirred with a third or half its volume of phosphoric acid of commerce of sp. gr. 1·750 (presence of a due proportion of cineol). Dose, ½ to 3 minims.

Oleum Carui.—No geographical source given. Sp. gr. 0·910 to 0·920. Dose, ½ to 3 minims.

Oleum Caryophylli.—No geographical source given. Sp. gr.

not below 1·050. An alcoholic solution yields a blue colour with solution of ferric chloride. Shaken with its own volume of strong solution of ammonia it forms a semi-solid yellowish mass. Dose, ½ to 3 minims.

OLEUM CINNAMOMI.—Sp. gr. 1·025 to 1·035. One C.c. dissolved in 5 C.c. of alcohol (90 per cent.) and test solution of ferric chloride added should afford a pale green, but not a decided blue coloration (absence of cinnamon leaf oil). If 10 C.c. be well shaken with 50 C.c. of a boiling 30 per cent. solution of sodium hydrogen sulphite an oily layer separates, which, when cooled to 60° F. (15°·5 C.), should not measure more than 5 C.c. (absence of more than 50 per cent. of constituents other than aldehydes). Dose, ½ to 3 minims.

OLEUM COPAIBÆ.—Sp. gr. 0·900 to 0·910. It turns the plane of a ray of polarised light to the left (distinction from African copaiba oil), and is soluble in its own volume of absolute alcohol.

OLEUM CORIANDRI.—Sp. gr. 0·870 to 0·885. If 1 C.c. of the oil be mixed with 3 C.c. of alcohol (70 per cent.), a clear solution results (absence of oil of turpentine and added terpenes). Dose, ½ to 3 minims.

OLEUM CROTONIS.—No geographical source is given. Sp. gr. 0·940 to 0·960. Entirely soluble in absolute alcohol. Freely soluble in ether and chloroform. An alcoholic solution should not redden moistened blue litmus paper. If to 2 C.c., 1 C.c. of fuming nitric acid and 1 of water be added, and the mixture be shaken vigorously, it should not solidify, either completely or partially, but only thicken slightly after standing for two days (absence of other non-drying oils).

OLEUM CUBEBÆ.—Sp. gr. 0·910 to 0·930.

OLEUM EUCALYPTI.—*Eucalyptus globulus* is the only species mentioned by name, although it may be obtained from other species. Sp. gr. 0·910 to 0·930. It should not rotate the plane of a ray of polarised light more than 10° in either direction in a tube 100 Mm. long, and it should become semi-solid, on being stirred, when cold with a third or half its volume of phosphoric acid of commerce of sp. gr. 1·750 (presence of a due proportion of cineol). If to 1 C.c. of the oil there be added 2 C.c. of glacial acetic acid and 2 C.c. of a saturated aqueous solution of sodium nitrite, the mixture, when gently stirred should not form a crystalline mass (exclusion of eucalyptus oils containing much phellandrene). Dose, ½ to 3 minims. It would have been more satisfactory for dispensers if oil derived from a single species were alone official, since the commercial oils rich in cineol differ considerably in odour. The substitution of pure eucalyptol for the oil would have been more satisfactory still.

OLEUM JUNIPERI.—Sp. gr. 0·865 to 0·890. The oil is soluble with slight turbidity in four times its volume of a mixture of equal parts of absolute alcohol and alcohol (90 per cent.). Dose, ½ to 3 minims.

OLEUM LAVANDULÆ.—No geographical source is given. Sp. gr. not below 0·885. It should dissolve in three times its volume of alcohol (70 per cent.). Dose, ½ to 3 minims.

(To be continued.)

THE BRITISH PHARMACOPŒIA, 1898.

CORRECTIONS TO FORMER NOTES.

We are indebted to correspondents for pointing out the following inaccuracies in the summary of formulæ and processes printed in our issue of April 16. A printed slip of the corrections will be sent free, on application, to anyone who has purchased an early copy of the reprint. All the corrections are embodied in the second edition of the *Pharmaceutical Journal* reprint, which is now ready and includes, as additional matter, Mr. F. C. J. Bird's Alcohol Conversion Table, which has been specially revised by the author, and will be found of the greatest service in every pharmacy.

Extractum Belladonnæ Alcoholicum.—In the last line but one of paragraph read "50 C.c.," not "5 C.c."

Extractum Ipecacuanhæ Liquidum.—The finished extract should be standardised so as to contain "2 to 2.25 Gm." of total alkaloid, in 100 C.c., not "2 to 2.5 Gm."

Pilula Saponis Composita.—The paragraph should read: Mix opium, in powder, 1; hard soap, in powder, 3; syrup of glucose, 1. Dose: 2 to 4 grains.

MATERIA MEDICA.

Cocæ Folia.—Read "*Erythroxylum coca*, Lam.," not "*Erythroxylon coca*, Burck," in the first line of paragraph. The leaves which cannot be obtained in commerce are retained as the official variety, for some reason best known to the Editor of the Pharmacopœia and the botanical referees.

NOTES ON PEPSIN ASSAYING.*

BY A. H. ALLEN.

The process of testing pepsin prescribed in the British Pharmacopœia of 1885 has been the subject of severe and richly-deserved criticism. The description given was deficient in the detail desirable in a process of a strictly empirical nature, and the low proteolytic activity required (50) was for years a direct premium on careless preparation or systematic adulteration.

The method of assaying pepsin prescribed in the United States Pharmacopœia of 1890 is in many respects preferable to the B.P. test of 1885, but the prolonged period during which the digestion is directed to be continued is inconvenient and open to objection in other respects. Mainly as a consequence of this lengthened period of digestion, the results obtained by the B.P. (1885) and U.S.P. processes, when applied to the same sample of pepsin, are widely different.

The British Pharmacopœia of 1898 requires pepsin to have a solvent power of 2500. The method of assay closely follows that of the U.S. Pharmacopœia, as is shown by the following table:—

	B.P. (1885) Test.	U.S.P. (1890) Test.	B.P. (1898) Test.
Pepsin	2 grains.	0·00335 gramme.	0·005 gramme.
Albumin (moist)	100 grains.	10 grammes.	12·5 grammes.
Water	1 fluid ounce.	100 C.c.	125 C.c.
Hydrochloric acid	5 minims.	2 C.c. of dilute acid (=0·21 gramme real HCl).	0·25 gramme HCl.
Time of digestion	30 minutes.	6 hours.	6 hours.
Temperature	130° F.	100°·4 to 104° F.	105° F.
Interval between agitations	No definite time stated.	15 minutes.	No definite time stated.
Dissolving power required	50	3000	2500

C. D. Moffat (*Pharm. Journ.* [3], xxv., 813) has compared the B.P. (1885) and U.S.P. methods of testing on three samples of commercial pepsin, with the following results:—

No.	Digestive Power Claimed.	Solvent Power Found.	
		By B.P. (1885) Test.	By U.S.P. Test.
1	1:3000	1:250	1:3000
2	1:3000	1:150	1:1800
3	1:2500	1:150	1:1800

From this it appears that the same sample of pepsin showed by the old B.P. test only one-twelfth of the dissolving power on albumin which is indicated by the U.S.P. test. But it will be observed that in the latter case the operation is prolonged to six hours instead of being brought to an end in half an hour.

It should be borne in mind that the real digestive power of a pepsin is measured by the amount of peptone which it produces in a given time under certain conditions, whereas it is usual to observe the amount of albumin dissolved. A weak pepsin may dissolve all the albumin and convert it merely into syntonin, whilst a much stronger pepsin may carry the action further, even to the last stage, with production of peptone. As the albumin has been wholly dissolved in each case, to all appearance the two pepsins have done an equal amount of work, whereas in reality one may have a far greater activity than the other.

The British Pharmacopœia of 1898 states that "if 12·5 grammes of coagulated and firm white of fresh eggs (previously passed through a sieve having twelve meshes to the centimetre, and used before it has lost moisture), 125 C.c. of acidulated water, containing about 0·2 per cent. of hydrogen chloride (HCl), and 0·005 gramme of pepsin, be digested together at 105° F. (=40°·6 C.) for six hours, and shaken at intervals, the coagulated

* Abstracted from advance sheets of the concluding volume of Allen's 'Commercial Organic Analysis.'

white of egg dissolves, leaving only a few small flakes in an almost clear solution." This process closely resembles that of the United States Pharmacopœia, which it follows in the objectionally long time for which the digestion is continued. But the U.S.P. gives precise directions as to the frequency of stirring, which very important condition is ignored by the B.P.; and the U.S.P. employs a standard solution of pepsin, which allows of an exact quantity being readily taken for the experiment, whereas the B.P. apparently intends the very small quantity of 0·005 gramme of pepsin to be accurately weighed out, presumably with an error of not more than 0·0001 gramme! Nor is any correction made for the solvent action of the acid on the pepsin, the entire effect being apparently credited to the pepsin. It is deplorable that those responsible for the production of the Pharmacopœia should have adopted a process of pepsin-assay so unscientific in its principles and so defective in the details of its application.

At the present time the whole subject of pepin-assay is in a very unsatisfactory, not to say discreditable, condition, for which the unscientific and inadequately described official methods of testing are largely responsible. There has commonly been no marked distinction drawn between the mere conversion of albumin into syntonin or other soluble form and the true peptonisation characteristic of the action of pepsin, both these changes being confounded under the term "digestion." Further, the effect of the hydrochloric acid used in effecting solution of the albumin has been generally ignored or considered insignificant, whereas it has been shown by L. A. Harding (*Pharm. Journ.* [3], xxv., 914) that a material part of the solvent action observed is really due to the acid employed, and hence should be allowed for before coming to a conclusion as to the strength of the pepsin under examination. But the acid, under the conditions of a pepsin-assay, only converts the albumin into syntonin, the peptonisation of this product being due to the pepsin. Hence, as admitted by various authorities, the true gauge of the activity of a sample of pepsin is the amount af peptones, or of mixed peptones and albumoses, formed by its action under specified conditions.

ALCOHOL—ITS OFFICIAL STRENGTHS.*

BY WILLIAM MARTINDALE, F.L.S., F.C.S.

Alcohol Absolutum, Absolute Alcohol (*Off.*). *Syn.* Ethylic Alcohol, B.P. 1885.—Ethyl hydroxide, with not more than 1 per cent., by weight of water. Sp. gr. 0·794 to 0·7969.

In B.P. 1885 this had sp. gr. 0·797 to 0·800, and therefore contained 1 to 2 per cent. of water; the purest alcohol obtained by Squibb had sp. gr. 0·7935 at 60° F.—'Ephemeris,' ii., 562.

Alcohol (90 per cent.), Spiritus Rectificatus. *Syn.* Rectified Spirit (*Off.*).—Contains 90 per cent. by volume, or 85·65 per cent. by weight, of ethyl hydroxide. Sp. gr. 0·8340. Strength 57°·8 O. P. It is slightly stronger (1·35 per cent. by volume) than spiritus rectificatus, B.P. 1885, which contained 84 per cent by weight (=88·65 per cent. by volume) of ethyl hydroxide, and had sp. gr. 0·838; 55°·85 O. P. It is generally manufactured commercially of higher alcoholic strength, *i.e.*, about 70° O. P., sp. gr. 0·809, containing nearly 95 per cent. by weight of ethyl hydroxide, and is diluted as required. The corresponding alcohol, U.S., has sp. gr. 0·820, and contains 94 per cent. by volume of ethyl hydroxide.

Diluted Alcohol (*Off.*). *Syn.* Alcohol Dilutum.—In addition to alcohol (90 per cent.)—see above—there are now official four "strengths," or "degrees of dilution," of ethylic alcohol directed to be prepared from the alcohol (90 per cent.), and containing respectively 70, 60, 45, and 20 per cent. by volume of ethyl hydroxide. Of the following tables, the first compares the new and old official alcohols, and the second, founded on B.P. and Gilpin's tables, shows:—

(i.) The volume of distilled water necessary to be added to 100 volumes of alcohol (90 per cent.) for the production of each strength of diluted alcohol.

(ii.) The volumes of alcohol (90 per cent.) and of distilled water respectively which, when mixed and reduced to 60° F. (15°·5 C.), will produce, allowing for contraction in volume, 1000 C.c., 1 pint, or 1 gallon of each strength of diluted alcohol.

The specific gravity and the exact excise (Sikes') strength at 60° F. (15°·5 C.) in degrees over proof (O.P.) and under proof (U.P.), of each dilution are given in the first column.

As a rule, in B.P. 1898, alcohol (90 per cent.) has replaced rectified spirit, and alcohol (60 per cent.) proof spirit, where these were ordered in the 1885 Pharmacopœia, unless other dilutions have been found more suitable as solvents.

* Abstracted from advance sheets of the 'Extra Pharmacopœia,' new edition.

Alcohol Table.

Volume Percentage, Specific Gravity, and Excise Strength.	Official Names.
99·95 to **99·4** per cent. Sp. gr. 0·794 to 0·7969	Absolute Alcohol, B.P. 1898.
90 per cent. Sp. gr. 0·8340 57·80 O.P.	Spiritus Rectificatus, Alcohol (90 per cent.) *Syn.* Rectified Spirit, B.P. 1898.
88·65 per cent. Sp gr. 0 838 55·85° O.P.	Rectified Spirit, B.P. 1885. Contained 84 per cent. by weight of Ethyl Hydroxide.
57 per cent. (= 49 per cent. by weight) Sp. gr. 0·920 "Proof."	Proof Spirit, B.P. 1885. 5 vols. "Rectified Spirit," Sp. gr. 0·838. + 3 vols. Distilled Water. Contraction in volume about 2·5 per cent. (Not now official.)

Table for the Dilution of Alcohol (90 per cent.) to Weaker Official Strengths.

Volume Percentage, Specific Gravity, and Excise Strength.	Alcohol (90 per cent.).	Distilled Water.	Volume Produced.
70 per cent. Sp. gr. 0·8900 22·78° O.P.	100 vols.	+ 31·05 vols.	= 128·57.
	777·8 C.c.	+ 241·5 C.c.	= 1000 C.c.
	15 oz. 266 m.	+ 4 oz. 398 m.	= 1 pint.
	124 oz. 215 m.	+ 38 oz. 307 m.	= 1 gal.
60 per cent. Sp. gr. 0·9135 5·20° O.P.	100 vols.	+ 53·65 vols.	= 150.
	666·7 C.c.	+ 357·7 C.c.	= 1000 C.c.
	13 oz. 160 m.	+ 7 oz 74 m.	= 1 pint.
	106 oz. 320 m.	+ 57 oz. 112 m.	= 1 gal.
45 per cent. Sp. gr. 0·9436 21·07° U.P.	100 vols.	+ 105·34 vols.	= 200.
	500 C.c.	+ 526·7 C.c.	= 1000 C.c.
	10 oz.	+ 10 oz. 256 m.	= 1 pint.
	80 oz.	+ 84 oz. 130 m.	= 1 gal.
20 per cent. Sp. gr. 0·9760 64·95° U.P.	100 vols.	+ 355 8 vols.	= 450.
	222·2 C.c.	+ 790·7 C.c.	= 1000 C.c.
	4 oz. 213 m.	+ 15 oz. 390 m.	= 1 pint.
	35 oz. 267 m.	+ 126 oz. 243 m.	= 1 gal.

PHARMACEUTICAL SOCIETY.

DONATIONS TO THE MUSEUM.

At the meeting of the Library, Museum, School, and House Committee, on Thursday, April 21, the Curator presented the following report of donations:—

To the Museum.

Dr. F. Bach, La Plata:—Three specimens of Gutta Percha from North Brazil.

Mr. H. Haensel, Pirna-on-the-Elbe:—Wood of *Bulnesia sarmienti*; Terpeneless Oil of Petit Grain.

Messrs. Hodgkinson, Clarke, and Ward:—Three specimens of Decorticated Cardamoms as imported.

Dr. T. G. Nicholson, Marlow:—Specimens of a Leguminous Fruit used as a Fish Poison, of fruits of *Sterculia urens*, of a species of *Strychnos*, and of flowers of a Proteaceous plant from Central Africa.

Dr. Hake, London:—A specimen of "Pilisa" Root from Natal.

Messrs. Potter and Clarke:—Specimens of living plants of *Delphinium staphisagria*.

To the Herbarium.

Mr. E. G. Virtue, British Central Africa:—Specimens of *Strophanthus courmontii*.

The Curator, Biltmore Herbarium, Biltmore, N. Carolina:—One hundred and ninety-nine specimens of medicinal and other plants.

Table of Thermometric Equivalents

According to the Centigrade, Fahrenheit, and Réaumur Scales.

C.°	F.°	R.°	C.°	F.°	R.°	C.°	F.°	R.°	C.°	F.°	R.°
240.5556	465	192.4444	258.3333	497	206.6667	275.5556	528	220.4444	293.3333	560	234.6667
241	465.8	192.8	258.75	497.75	207	276	528.8	220.8	293.75	560.75	235
241.1111	466	192.8889	258.8889	498	207.1111	276.1111	529	220.8889	293.8889	561	235.1111
241.25	466.25	193	259	498.2	207.2	276 25	529.25	221	294	561.2	235.2
241.6667	467	193 3333	259.4444	499	207.5556	276.6667	530	221.3333	294.4444	562	235.5556
242	467.6	193.6	260	500	208	277	530.6	221.6	295	563	236
242.2222	468	193.7778				277.2222	531	221.7778			
242.5	468.5	194				277.5	531.5	222			
242.7778	469	194.2222				277.7778	532	222.2222			
243	469.4	194.4	260.5556	501	208.4444	278	532.4	222.4	295.5556	564	236.4444
243.3333	470	194.6667	261	501.8	208.8	278 3333	533	222.6667	296	564.8	236.8
243.75	470.75	195	261.1111	502	208.8889	278.75	533.75	223	296.1111	565	236.8889
243.8889	471	195.1111	261.25	502.25	209	278.8889	534	223.1111	296.25	565.25	237
244	471.2	195.2	261.6667	503	209 3333	279	534.2	223.2	296.6667	566	237.3333
244.4444	472	195.5556	262	503.6	209.6	279.4444	535	223.5556	297	566.6	237.6
245	473	196	262.2222	504	209.7778	280	536	224	297.2222	567	237.7778
			262.5	504.5	210				297.5	567.5	238
			262.7778	505	210.2222				297.7778	568	238.2222
245.5556	474	196.4444	263	505.4	210 4	280.5556	537	224.4444	298	568.4	238.4
246	474.8	196.8	263.3333	506	210.6667	281	537.8	224.8	298.3333	569	238.6667
246.1111	475	196.8889	263.75	506.75	211	281.1111	538	224.8889	298.75	569 75	239
246.25	475.25	197	263.8889	507	211.1111	281.25	538.25	225	298.8889	570	239.1111
246.6667	476	197.3333	264	507.2	211.2	281.6667	539	225.3333	299	570.2	239.2
247	476.6	197.6	264.4444	508	211.5556	282	539.6	225.6	299.4444	571	239.5556
247.2222	477	197.7778	265	509	212	282.2222	540	225.7778	300	572	240
247.5	477.5	198				282.5	540.5	226			
247.7778	478	198.2222				282.7778	541	226.2222			
248	478.4	198.4				283	541.4	226.4			
248.3333	479	198.6667	265.5556	510	212·4444	283.3333	542	226.6667	300.5556	573	240.4444
248.75	4.9.75	199	266	510.8	212.8	283.75	542.75	227	301	573.8	240.8
248.8889	480	199.1111	266.1111	511	212.8889	283.8889	543	227.1111	301.1111	574	240.8889
249	480.2	199.2	266.25	511.25	213	284	543.2	227.2	301.25	574.25	241
249.4444	481	199.5556	266.6667	512	213.3333	284.4444	544	227.5556	301.6667	575	241.3333
250	482	200	267	512.6	213.8	285	545	228	302	575.6	241.6
			267.2222	513	213.7778				302.2222	576	241.7778
			267.5	513.5	214				301.5	576.5	242
250.5556	483	200.4444	267.7778	514	214.2222	285.5556	546	228.4444	302.7778	577	242.2222
251	483.8	200.8	268	514.4	214.4	286	546.8	228.8	303	577.4	242.4
251.1111	484	200.8889	268.3333	515	214.6667	286.1111	547	228.8889	303.3333	578	242.6667
251.25	484.25	201	268.75	515.75	215	286.25	547.25	229	301.75	578.75	243
251.6667	485	201.3333	268.8889	516	215.1111	286.6667	548	229.3333	303.8889	579	243.1111
252	485.6	201.6	269	516.2	215.2	287	548.6	229.6	304	579.2	243.2
252.2222	486	201.7778	269.4444	517	215.5556	287.2222	549	229.7775	304.4444	580	243.5556
252.5	486.5	202	270	518	216	287.5	549.5	230	305	581	244
252.7778	487	202.2222				287.7778	550	230.2222			
253	487.4	202.4				288	550.4	230.4			
253.3333	488	202.6667				288.3333	551	230.6667			
253.75	488.75	203				288.75	551.75	231			
253.8889	489	203.1111	270.5556	519	216.4444	288.8889	552	231.1111	305.5556	582	244.4444
254	489.2	203.2	271	519.8	216.8	289	552.2	231.2	306	582 8	244.8
254.4444	490	203.5556	271.1111	520	216 8889	289.4444	553	231.5556	306.1111	583	244.8889
255	491	204	271.25	520.25	217	290	554	232	306.25	583.25	245
			271.6667	521	217.3333				306.6667	584	245.3333
			272	521.6	217.6				307	584.6	245.6
255.5556	492	204·4444	272.2222	522	217.7778	290.5556	555	232.4444	307.2222	585	245.7778
256	492.8	204.8	272 5	522.5	218	291	555.8	232.8	307.5	585.5	246
256.1111	493	204.8889	272.7778	523	218.2222	291.1111	556	232 8889	307.7778	586	246.2222
256 25	493.25	205	273	523.4	218 4	291.25	556.25	233	308	586 4	246.4
256.6667	494	205.3333	273.3333	524	218.6667	291.6667	557	233 3333	308.3333	587	246.6667
257	494.6	205.6	273.75	524.75	219	292	557.6	233.6	308 75	587.75	247
257.2222	495	205.7778	273.8889	525	219.1111	292.2222	558	233.7778	308.8889	588	247.1111
257.5	495.5	206	274	525.2	219.2	292.5	558.5	234	309	588.2	247.2
257.7778	496	206.2222	274.4444	526	219.5556	292.7778	559	234.2222	309.4444	589	247.5556
258	496.4	206.4	275	527	220	293	559.4	234.4	310	590	248

PHARMACEUTICAL JOURNAL.

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THE PHARMACY BILL AND ITS OPPONENTS.

Opposition to the Pharmacy Acts Amendment Bill may be inspired by ignorance, lack of disinterestedness, or by petty spite, and it is greatly to be regretted that the Bill has suffered from all three causes. Certain members of the Pharmaceutical Society first opposed it, without taking the trouble to ascertain definitely what changes in the existing position of affairs the Bill could or could not effect if it became law; then came a Member of Parliament who, for avowedly personal reasons, has blocked and still continues to block the way; whilst, last and most puerile of all, is intimated an impudent and spiteful attempt at opposition by the head of a concern which has inflicted irreparable damage on the business of some scores of industrious chemists and druggists, by taking advantage of a flaw in the Pharmacy Act of 1868. Joint-stock companies having been declared to be outside the scope of the Act so far as its main object was concerned, advantage was soon taken of the fact to attempt to delude the public into the belief that medicaments of all kinds are articles that admit of exactly the same treatment from a commercial point of view as groceries, draperies, or other equally familiar commodities. Flashy places of business were opened with the object of supporting this idea, individuals of more or less doubtful qualification were placed in charge thereof, and to a certain extent the public has responded to the advances thus made by interested parties posing as public benefactors. As time wore on it became necessary, in the public interest, to check certain illegal practices in connection with these so-called cheap drug stores, and, making a virtue of necessity, the heads of those establishments have been compelled to protect themselves by securing the services of a few weak-kneed pharmacists who care more for a slight temporary alleviation in their immediate surroundings than for their future prospects. For no joint-stock company, consisting of unqualified persons, could properly carry on the business of a chemist and druggist for a single day unless by the aid of registered men who will only have themselves to thank if, by the rendering of such assistance, pharmacy is spoilt as a career in the future. These facts are well known to the promoters of companies, who drive the proverbial coach and four through the Pharmacy Acts: since they cannot get behind the facts, they vent their spleen and petty spite by constantly throwing mud at the Pharmaceutical Society and at chemists and druggists—who ask the public for nothing but reasonable support in the legitimate exercise of their craft.

The latest incident of this kind is the publication of a circular headed "Pharmacy Acts Amendment Bill—Reasons why the Bill should not be passed." This precious production emanates from Nottingham, and is printed partly in black, partly in red. Commencing with a summarised account of the Bill, we are next met with the statement that though its objects are apparently of a purely formal character, deep designs are masked by innocent sounding words and phrases. We learn, in fact, that the ultimate aim is to make the Pharmaceutical Society a close and exclusive trade corporation. "For years," it is stated, "the Pharmaceutical Society has been trying to obtain increased political power, entirely outside the status conferred on it as a scientific body by the Pharmaceutical Acts" (*sic*). But more dreadful even than this, "by a presumptuous interference in commercial legislation prominent members of the Pharmaceutical Society are even now seeking to take advantage of the Bill for the Amendment of the Companies' Acts by insidious amendments designed to make themselves collectively an exclusive corporation." Red ink is used for this part of the effusion as a matter of course, and the compiler of the circular would appear to have been agitated by contending emotions as he proceeded to unfold the plot in accordance with which those prominent members of the Society have occupied themselves in "misrepresenting the conditions under which the chemist's business is carried on under the auspices of numerous companies, some of them very old established, embracing many thousands of shareholders, and supported by many millions of customers" (*sic*). As if the conditions could be misrepresented, or the commercial immorality be too freely exposed, which permits people possessed of surplus cash to combine together to divert the means of livelihood from honest tradesmen and professional men, who have worked hard and spent freely of their limited means to attain their present position, and are now threatened with ruin because a defect in the law permits seven unqualified persons to do what it forbids to one.

The remainder of the circular is hardly worth quoting, though red ink has been freely spilled in its composition, and the whole affair is not worthy of comment except in so far as it is deserving of high praise as the consummation of impudence. The inaccuracies and perversions of truth are too gross to receive more than passing notice by anyone conversant with the facts, but attention is directed to the matter, in order that registered chemists may be warned of the insidious nature of the attacks that are being directed at their business existence. Whatever the deficiencies of the average chemist and druggist may be, he has served the British public well, on the whole, during the past three-quarters of a century or more; and now that he has attained a position of well-deserved respect, it is hard if, in addition to being deprived of the fruits of his labours by joint-stock companies, he and his institutions are to be flouted and abused by the promoters of trashy concerns which are only enabled to keep open shop by reason of the disloyalty of a few of his fellow craftsmen. Why should such envy, hatred, and malice be displayed by successful adventurers towards those whom they have deprived of a portion of their means of livelihood? The question is easier to ask than to answer, though no one has any reasonable doubt of the existence of the feelings named on the part of those who attempt to profit by such underhand methods as are illustrated by the publication of the circular commented on.

A LESSON FOR CHEMISTS AND DRUGGISTS.

THE circular referred to in the previous article will have served a useful purpose if it helps chemists and druggists to realise what opportunities they miss by not uniting more for self-defence. Thus, it is speciously argued that chemists show no enthusiasm for the Pharmacy Acts Amendment Bill, because, out of "the 15,000 persons registered as Chemists and Druggists, only 2218 are 'Members' of the Pharmaceutical Society." The force of misrepresentation could not go much further than this. More to the point is the statement that, at a meeting held in Manchester to consider the Bill, only about 30 chemists responded to invitations sent to some 500, and that, "of the 27 who took part in the voting on the resolution proposed at that meeting, only 18 supported, while 9 opposed it." Equally significant is the further statement that, "at Glasgow only 13 attended a similar meeting," and thus are the weakness, indifference, and hesitancy of chemists and druggists made to serve as weapons against them. It may interest our readers also to learn that the compiler of this scurrilous circular quotes with approval expressions of opinion adverse to the Bill by a trade organ which is fond of posing as the especial guide, philosopher, and friend of the craft; it is well that chemists should know who are their real friends.

To return to the circular, it may be suggested that the real reason of this latest attempt at opposition to pharmaceutical reform is possibly the same that some time ago led to a curious outburst on the part of the conductor of what the great Nottingham "cutter" is pleased, in his appreciation of its policy, to style "the best and most influential journal of the trade." Praise from such a source must be as balm to the journalist who totally wrecked what little influence he possessed in pharmaceutical circles, properly so-called, in the vain attempt to check inevitable progress. The reason referred to is, of course, the increase in the fee to be charged in the immediate future for registration as a chemist and druggist. That increase naturally worries the directors of joint-stock companies, for it will require to be taken into account in fixing the salaries to be paid to those registered men who are so far lost to all sense of what is desirable in their own interests as to prostitute their qualification to serve the ends of a few capitalists. For the statement that certain companies which were originally mere family parties have now about 2000 shareholders, can hardly be accepted as credible; if true, they must have increased at a truly miraculous rate.

Equally mythical is the suggestion that there is no possibility of any unqualified person selling poisons in a joint-stock drug store, except under the supervision of a properly qualified chemist. For it is neither impossible nor improbable; the difficulty is to detect them in the act or to punish them when detected; as a matter of fact there is no law which can touch corporate bodies for employing unqualified persons. But this and other specious arguments may count for much with members of Parliament, who have no special knowledge of the subject, and are unable to realise the force of the multitude of deliberate falsehoods and misrepresentations set forth so ingenuously in this red and black triumph of the printer's art. Chemists and druggists throughout the country are warned, therefore, that they need to exert themselves to the utmost in self-defence, and to that end they ought to miss no opportunity that may present itself for self-justification in the public view.

ANNOTATIONS.

THE 'PHARMACEUTICAL JOURNAL' SYNOPSIS of the formulæ and processes of the British Pharmacopœia, 1898, went out of print the day it was issued, and a second edition is almost exhausted. Pharmacists have purchased copies for their own information in altering old and making new preparations, or for distribution amongst medical men; wholesale druggists are placing copies in the hands of their travellers and laboratory workpeople; whilst pharmacy teachers find it their most convenient summary to supply to students attending the classes. The second edition has been purged of two or three slight errors which had escaped notice in the first (see p. 416), and readers who possess copies of the latter can obtain a printed "Erratum" slip for insertion in the book, on application. They will do well also to order copies of the second edition, as a useful addition has been made to the book by the insertion of Mr. F. C. J. Bird's "Alcohol Conversion Table," after careful revision by the author. In connection with this table it may be pointed out that the slight differences between Mr. Martindale's figures (see p. 417) and those of Mr. Bird, are due to the fact that the latter represent the nearest conveniently measurable quantities that would give approximately accurate results. Mr. Martindale, however, gives the figures required by theory, and his o.p. strengths have been verified by the Excise authorities. Mr. Bird has also made allowance for the fact that the heat developed on mixing the liquids causes the loss of a certain amount of alcohol by evaporation. All measurements must be effected at 15°·5 C., and whatever table is followed, absolute accuracy can only be ensured in the first instance by determining the specific gravity of each mixture after cooling to 15°·5 C. When that has once been done the operation need not be repeated so long as the same batch of alcohol is used for the dilutions.

THE QUANTITIES GIVEN IN OUR SYNOPSIS of the 1898 B.P. formulæ and processes were purposely so arranged that the general convenience might be served, both of retail pharmacists and manufacturers, whether in England or the Colonies. They appear to trouble a few readers, however, though the difficulty suggested by Mr. Slinn (see p. 427) is a purely imaginary one. Taking the formula instanced by him, that for tinct. quininæ; as stated by us, it reads: "Dissolve quinine hydrochloride, 2, in tincture of orange, 100." Now, regarding the figures as representing ounces and fluid ounces respectively, the only calculation required prior to making a pint of the tincture, is to divide the numbers given by 5, thus 2 ounces = 875 grains, and 875 ÷ 5 = 175, the number of grains required to make 1 pint of tincture. If it be desired to prepare any number of fluid drachms of the tincture, the quantities required will be just as awkward, and the calculations necessary quite as involved, in the one case as in the other, since the formula as stated in the B.P. 1898 reads: "Quinine hydrochloride, 175 grains; tincture of orange, 1 pint." But it must be pointed out, in this connection, that there is no relation between the drachm and the fluid drachm, such as there is between the ounce and the fluid ounce, or between the gramme and the millilitre. Moreover, it ought by this time to be well understood that the use of so-called Apothecaries' weights is not recognised by the Pharmacopœia authorities, and such weights ought never to be used in weighing out material for making official preparations, except as representing a definite number of grains. If dispensers will persist in using scruple and drachm weights for other than dispensing purposes, they will only have themselves to blame if they involve themselves in serious trouble. It is extremely probable that

official preparations are at times made over strength, owing to 1-drachm and 2-drachm Apothecaries' weights being wrongly regarded as equivalent to one-eighth or one-fourth of an ounce. In like manner the scruple may easily be misused, and the only effectual remedy is to abolish the use of such weights entirely for compounding purposes.

Materia Medica and the Doctor's Knowledge thereof furnish the Editor of the *Journal of Pharmacology* with a text upon which he enlarges in a manner that should prove profitable to medical practitioners who may find time to read the article. There was a time, the writer observes, when the physician went out into the woods and fields, collected his own herbs and roots, dried them, and made medicinal preparations therefrom, in the manner which was then considered to be right and proper. Now, however, the physician sits at his office desk, scrawls a well-worn formula on a scrap of paper and commends it to the care of the patient; "or, taking from a set of numbered vials a pill whose particular numeral is calculated to allay the pangs of that particular patient, he leaves it by his bedside, confident that he has shown a discrimination in his treatment of the case that is as up-to-date as the proprietary production he is prescribing." Materia medica is a thing of the past, we are told, an intimate knowledge of drugs being virtually unknown to the average practising physician. "He wants to press the button, and have the right remedy for the disease drop out of the slot, all nicely prepared in palatable form," and believes in making use of all short cuts to success. Professors of materia medica in medical schools are alleged to be other than expert at their subject, whilst the study of it is reduced to a dry accumulation of facts which no student endeavours to recall after his examination is over. In conclusion, it is urged that the medical man must acquaint himself better with the nature and action of drugs, and he is advised to invoke the shades of his ancestors of the Middle Ages, rather than trust himself unreservedly to wholesale manufacturers of pills and potions.

The Major Examination Results, as shown in tabular form last week, were somewhat muddled by a compositor's attempt to improve the appearance of the table after it had been passed for press. It is therefore repeated in a more intelligible form.

	Candidates.	"Square" Men	Other Candidates
Candidates examined ..	39	17	22
,, failed	18	3	15
,, passed	21	14	7
Percentage of passes ..	53 8	82·3	31·8

A Correct Register of Chemists and Druggists is of the highest importance to the craft, and it is therefore the obvious duty of every registered person to notify any inaccuracy he may note to the Registrar. Usually this is the course pursued, but occasionally the individual who becomes aware of some deficiency in the Register happens to be, in some more or less remote way, connected with a trade journal which seeks to make capital of the fact. Apparently, in the hope of securing a little cheap notoriety, one such organ has recently devoted a lengthy editorial article to a diatribe on the alleged incapacity of the Registrar to attend to his business properly. Such attacks, however, must not be taken for more than they are worth, a truly infinitesimal value, for everyone possessing anything beyond the most imperfect acquaintance with the subject, knows perfectly well that, if the existing Register of Chemists and Druggists is not the best of all possible registers, the fault does not reside with the Registrar or any other person directly concerned in its production. So long as chemists and druggists value registration so little that they will not take the trouble to ensure the accuracy of the entries relating to themselves, so long will the Register remain incorrect, and, in any case, the remedy for any aggrieved person is in his own hands, and does not concern the conductors of any trade journal.

The Midland Pharmaceutical Association holds its Annual Meeting and Dinner on Thursday, May 5, at the Great Western Hotel, Birmingham, and the President of the Pharmaceutical Society, Mr. Walter Hills, has promised to be present. The President (Mr. F. J. Gibson) and Council of the Association express the wish that all Midland pharmacists will make a special effort to be present, and thus show their appreciation of Mr. W. Hills' kindness in visiting the Association. A first-rate musical programme has been arranged, and tickets can be obtained from the Hon. Sec., Mr. H. S. Shorthouse, 144, Edmund Street, Birmingham, at a cost of 5*s.* 6*d.* each.

In the Course of the Present Year the Third International Congress in Relation to Applications of Chemistry will be held in Vienna between July 28 and August 4. The subjects to be considered on that occasion will comprise questions which are of general public interest, arrangements for establishing uniformity in the analytical methods adopted for determining the value of commercial articles and also in the regulation of particular branches of chemical industry, methods of education, and provisional arrangements for friendly intercourse between representatives of applied chemistry in all parts of the world. The discussions at the Congress will be distributed over twelve sections as follow :—Section I.—General analytical chemistry and the application of instruments. Section II.—Chemistry of food, medical and pharmaceutical applications. Section III.—Agricultural chemistry. Section IV.—Sugar industry. Section V.—Brewing. Subsection 1, beer and malt, 2, alcohol and yeast manufacture. Section VI.—Chemistry of wine. Section VII.—Chemical manufactures, sulphuric acid, soda, bleaching powder, manures, cements, gaslighting, glass, porcelain, earthenware and clay goods. Section VIII.—Metallurgy, smelting, and explosives. Section IX.—Dyeing and calico printing, tar colours, pharmaceutical preparations, fats, oils, lubricating materials, paper or wood pulp, tanning, and gelatin making. Section X.—Photo-chemistry, photographic printing. Section XI.—Electro-chemistry. Cards for membership, ten florins each, can be obtained from the General Secretary, F. Strohmer, Schönburg Strasse 6, Vienna, iv/2. The organising Committee in Vienna has for its Honorary President, Hofrath Professor Bauer; Professor H. v. Perger is the Chairman; Professors Ernst Ludwig, Meissl, and Schwackhöfer are Vice-Chairmen.

The Crystal Palace Exhibition, held under the auspices of the Royal Photographic Society, is an unqualified success. A great point was gained when the Prince of Wales attended to perform the opening ceremony, and, as one distinguished photographic editor remarks, it is simply wonderful how so comparatively little preliminary announcement and "boom" should have been required to introduce an exhibition so large, so comprehensive, and so full of varied interest. Details of the various sections are reserved until next week, but it may not be amiss to note that everything seems to have been well planned, the catalogue is o unequalled magnificence, and the entertainments are proving to be as useful from an educational point of view as they are good and attractive.

Pharmaceutical Transactions.

NEWCASTLE-ON-TYNE AND DISTRICT CHEMISTS' ASSOCIATION.

The last monthly meeting for the session was held in the Hotel Métropole, on Wednesday evening, April 20, at 8 o'clock, Mr. T. Maltby Clague, President, in the chair. The minutes of previous meeting having been read and approved and several items of routine business disposed of, the Chairman called upon Mr. F. R. Dudderidge, pharmaceutical chemist, to open a discussion upon the new British Pharmacopœia. The remarks made by the lecturer were naturally somewhat superficial, owing to the fact that the new work is not yet available. Mr. Dudderidge criticised sharply several of the "omissions" and "inclusions" of the book, and his remarks led up to a very comprehensive discussion amongst members present. The *résumé* of the publication given by the *Pharmaceutical Journal* was much appreciated, and those present seemed to have been able to arrive at a fairly accurate judgment of the changes made, by the aid of the reports which have appeared. A cordial vote of thanks was awarded the lecturer for his paper.

MIDLAND CHEMISTS' ASSISTANTS' ASSOCIATION.

There was an unusually large gathering of the members of this Association at the Exchange Restaurant, Birmingham, on the 20th inst., when Mr. F. H. Alcock gave an address on

The New Pharmacopœia.

—Mr. Casson took the chair.—Mr. Alcock explained at the outset that he had made a special journey to London to inspect the advance copies of the B.P., facilities having been granted by the General Medical Council. He proceeded to recount a number of questions which he had himself submitted to representatives of large dispensing houses and medical friends, who were of opinion that an authoritative statement should be issued by the General Medical Council concerning them. What, he asked in the first place, was the pharmacist to do with his old stock, seeing that as soon as the new B.P. received official sanction it was imperative upon the dispenser to use that as his guide? In the second place, was the pharmacist to make up ante-dated prescriptions according to the new formulæ? Thirdly, have prescriptions to be so dispensed when the prescriber has not yet had an opportunity of consulting the work and noting if any changes have taken place in the composition he desires to prescribe? The composition of chlorodyne, for instance, now became much stronger in alkaloidal constituents; morphine suppositories were now half their previous strength, and such a common preparation as chloroform water had had its strength halved. Again, if a sample was seized under the Food and Drugs Act, when would the inspector require the article to be of the new standard, and what would happen if it was the proper standard according to the older book? A point which concerned junior members of the craft was as to when the new book would be accepted as the students' text-book. To him it seemed that no period less than six months could be allowed for a student to make himself acquainted with the work, unless the Pharmaceutical Examining Board desired to favour a system of cram. Tracing the history of the work, Mr. Alcock referred to the part which pharmacists had taken in its preparation, mentioning that the whole had been supervised by Dr. Attfield. The changes were very important and would necessitate a better education than had hitherto been obtained. The microscope, for example, and other apparatus necessary for the determination of what were known as physical constants would require to be used freely. The introduction of the process of sterilisation seemed to be the first step towards the complete study of bacteriology. The chemistry part of the work was now relegated to text-books, but on the other hand the work of the students was diminished, for under the tests, when the test was made, a statement was made as to what it was intended to detect. The probability was that under the new B.P. dispensers would follow the metric system, so that it would be necessary for students to make themselves thoroughly acquainted with the working of the system. The botanical part had been entirely re-written, and no better guarantee of its accuracy could be given than the fact that Mr. E. M. Holmes had had much to do with it. Proceeding to mention what he called the omissions and additions, as well as the list of substances which had changed their name, formulæ and composition, Mr. Alcock spoke of the introduction of animal products, which, he said, would call for a special study of zoology. Which of them, for instance, knew where to search for the thyroid gland of the sheep, or when it had been obtained, could say whether it was healthy or not? The same remark applied to the pancreas of the pig and its proper manipulation for the production of liquor pancreaticus. With reference to galenical preparations of pharmacy, this had been dealt with by the trade journals, and it was only necessary for him to recommend students to read these statements, taking care that one or two initial errors, which had since been rectified, were corrected in their books, if they made any preparations from them before the new B.P. saw the light. Generally speaking the new preparations seemed to be in advance of the old ones. More sensible methods had been adopted. The processes of percolation, classification, and extraction were more in harmony with modern methods. They seemed to bear the imprint of the pharmacist's own work, and no doubt would meet with favourable criticism from pharmacists. Whether the medical man would be so satisfied remained to be seen. On the subject of posology, an attempt had been made to unify doses at the expense of the alteration of strength of composition. This no doubt would meet with general approval, for with the dose the medical man had much to do. Mr. Alcock explained, in conclusion, the modes of standardisation, and although he disclaimed any intention to criticise the processes, which would be unfair on such a short acquaintance with the work, he alluded to much that those present could reflect upon so as to prepare themselves to take part in a discussion at a future meeting.

PLYMOUTH, DEVONPORT, STONEHOUSE AND DISTRICT CHEMISTS' ASSOCIATION.

The quarterly meeting of the above Association was held on Wednesday, the 20th inst. Mr. Jas. Cocks, President, occupied the chair, and a large and representative attendance included Messrs. C. T. Weary, Hon. Sec., J. H. Bailey, J. Barge, C. J. Park, G. Breeze, O. A. Reade, W. Blackman, H. D. Davey, H. C. Cantle, F. W. Hunt, P. A. Kelly, J. D. Turney, W. H. Woods, etc.—Mr. Elford was elected a new member.

The Government Poisons Bill.

Mr. Cocks introduced a discussion on what steps the Association should take with regard to the new Poisons Bill which the Government intend shortly to introduce, and after a lengthy discussion Mr. Park proposed, Mr. Bailey seconded, and it was unanimously carried,

> That the Secretary write to the Registrar asking him what steps the Pharmaceutical Council would advise the Association to take with regard to the new Poisons Bill, and that immediately upon the receipt of an answer the Secretary shall call a special general meeting.

—Mr. Hearder then exhibited his new suppository, pessary, and bougie mould, practically demonstrating the same, at the conclusion of which a hearty vote of thanks was passed to him —An exhibition of microscopic lantern slides by Messrs. O. A. Reade and H. C. Cantle terminated a very successful meeting.

LIVERPOOL CHEMISTS' ASSOCIATION.

The last meeting of the session 1897-8 took place at the Royal Institution, Colquitt Street, on Thursday evening, the 21st instant, the President, Mr. J. Bain, in the chair.—After reading the minutes of the last meeting, the Secretary, Mr. T. H. Wardleworth, announced the fact that he had received letters from the families and widows of their lately-deceased members, Messrs. M. Conroy and R. H. Mitchell, acknowledging the votes of condolence passed by the members of the Association at recent meetings, and thanking them for their sympathy.—Mr. E. Taylor was elected a member.—A paper was then read by Mr. H. Wyatt, junr., on

L'Assistance Publique of Paris and its Internes en Pharmacie,

which had been written by a friend of his, Monsieur Serée. pharmacien de la Première Classe ex Interne des Hôpitaux de Paris.—At the close a vote of thanks was passed to the author, Monsieur Serée, for his interesting paper, and, at the suggestion of Mr. Wardleworth, it was resolved to appoint M Serée a corresponding member of the Association. In acknowledging the vote of thanks and the honour done to his friend, Mr. Wyatt said he knew how Monsieur Serée would appreciate the manner in which his efforts had been received, and he would promise the Associa-

tion other papers from the same source on future occasions The mode of conducting examinations in France was considerably different to our English way, but the results seemed about equal. This examination for the Internat was quite honorary and optional, giving the successful ones no very great material advantages certainly, but the amount of esteem in which it was held by the students themselves was on a par with that felt in England for Bell scholarships. In France the superiority of their method of making a pharmacist seemed to be that they first of all ensured getting suitable men to work upon by insisting on a high standard of preliminary education. Before a youth could hope to set out on the course which was to make him a first-class pharmacien he must have obtained a diploma either as bachelier ès lettres, bachelier ès sciences, or bachelier de l'enseignement sécondaire, any one of which examinations may be said to at least equal our London matriculation. Mr. Wyatt then ran over the principal points in the subsequent "stage" or apprenticeship examinations and those of the School course, finishing up with a glance at the amount of protection afforded to the French pharmacist and the consequent condition of things pharmaceutical among our near neighbours across the Channel.

EDINBURGH DISTRICT CHEMISTS' TRADE ASSOCIATION.

On Tuesday last a meeting of this Association was held in the Pharmaceutical Society's House, 36, York Place, Edinburgh, Mr. Bowman, President, in the chair.—Mr. C. F. Henry, Hon. Sec., read the minutes of last meeting, and intimated apólogies for absence from Messrs. Coats, Lunan, A. Clark, A. Spence, and W. Spence.

Chemists and Service on Juries.

Mr. Henry stated that he had received a letter from Mr. Spence, Linlithgow, who had given notice of a motion on this subject, asking him to propose the motion for him. Mr. Henry read a statement, which accompanied the motion, in which Mr. Spence said he had again had the misfortune of being cited to jury service and had a sitting of nearly twelve hours. There was surely something radically wrong with the Juries Act generally. Was it not time the Association had taken the matter up in the interests of chemists? He understood that doctors were exempt from jury service and also dentists. He could understand why doctors were exempted, but as regarded dentists, an hour or two longer in having an old stump extracted would only inconvenience not injure the general public, whereas an hour or two longer in procuring medicine from a chemist's might result in injury or death. He knew of two instances where chemists in country towns had been this year summoned to jury service who had no one but apprentice boys to leave in their shops. One of them was kept for four days and the other for one day, and they had to imagine the inconvenience to which the general public were put if they had to wait for the legally qualified chemist coming to business. He referred to the obligation laid on the qualified chemist under the Pharmacy Act in the dispensing of poisons, and said that the Juries Act entirely ignored that Act when it called legally qualified chemists from their posts of duty and thus endangered the public weal. This liability to be cited for jury service was a hardship on all chemists who could not afford the regular services of a legally qualified assistant, and was detrimental to the welfare of the public. He hoped the Association would take the matter up and invite other associations to co-operate with them in getting the Juries Act amended so as to exempt chemists from service. His motion was—

> "That it be referred to the Committee to communicate with other associations, and also with the Council of the Pharmaceutical Society, as to the best means to obtain exemption of chemists from jury service, and to take action in whatever way it was thought best to attain this end."

Mr. Henry added that Mr. Spence had sent him several documents, including a list of those persons entitled to be exempted.—Mr. Nesbit (Portobello) said he had often suffered very great inconvenience from having to serve on juries, and he thought it very unfair that he should be taken forcibly away from business in that way while others were exempted, and he thought they should do their best to have the liability done away with. He was a pharmaceutical chemist, and would be exempted south of the Tweed. But he was not exempted because he was a pharmaceutical chemist in Scotland, but they should endeavour to exempt not only pharmaceutical chemists, but all register chemists in England and Scotland.—Mr. Mackenzie asked what the law was on the subject? He thought there was a law to the effect that pharmaceutical chemists in England were exempted.—Mr. Rutherford Hill said pharmaceutical chemists were exempted in England under the Juries Act, 1862. He had no doubt at all that, under the Act of 1862, every chemist and druggist would have been exempted if they had been wise enough to be members of the Pharmaceutical Society. When they made a claim for exemption, the reply was, Who are you? There were some twenty or thirty thousand of them, but who could define a chemist and druggist who was not a member of the Pharmaceutical Society? For the reason that it was impossible to define them, or say who they were, they could not get exemption. It was in that way that the undesirable distinction cropped up. The reason why there was no exemption of any kind at all in Scotland for chemists was because the Juries Act of 1862 was an English Act exclusively, and had no reference to Scotland. With regard to the action of the Pharmaceutical Society, the subject had been very frequently brought up, and had been often under the notice of the Council. The Pharmaceutical Society and the Council were, he thought, perfectly unanimous in expressing their strong desire that all registered chemists should be exempted from jury service, and time and again attempts had been made to do that in connection with a Pharmacy Bill. But the reply had always been "It is not a question for a Pharmacy Bill, but for a Juries Bill." Now as to the Juries Act, he had taken the trouble to look up that morning how it came about that dentists were exempted. They got exemption in 1878—very recently—and they got it in connection with the Dental Act. This was very important for pharmacists; dentists were exempted by a special provision in their own Act. He thought that was an important precedent for them. It showed that the Legislature so recently as 1878 passed an Act relating exclusively to dentists, in which they embodied a section exempting dentists from jury service. Mr. Spence stated in his letter that there was nothing in the duties of a dentist that could be urged as furnishing a stronger reason, or even as strong a reason, as a great deal that could be urged on behalf of registered chemists, and therefore he thought it worth while to keep this in view—that it was not necessary to wait for a Juries Act, but that an exemption clause in favour of registered chemists would be perfectly cognate to a Pharmacy Act.—Mr. Mackenzie said they all felt indebted to Mr. Hill for his last statement. Mr. Hill seemed to him to have hit the very point that they wished to emphasise. The Legislature had made it the law that a chemist must be at his post to carry out the provisions of the Pharmacy Act. The Legislature, then, could not conceivably ask a chemist to break one law in order to fulfil another. That had always seemed to him to be the strongest argument in favour of their exemption. If a chemist were to fulfil his duty to the public, and in compliance with the Pharmacy Act, he must be there in person. How could he be there in person if he was liable to be a juryman? He asked if it would be possible for the Secretary, in forwarding this resolution to the Pharmaceutical Society, to state the very argument which had been made use of by Mr. Hill. The Society might perhaps have noted the fact that the exemption of dentists had been obtained as part of the Dental Act, but he thought it would be important that the Secretary, in forwarding this motion as the finding of this association, should mention that fact.—Mr. Forret said Mr. Hill had stated in explanation that he did not think they would allow any clause providing for such an exemption to be tacked on to a Pharmacy Bill, but he had showed that such an exemption had been allowed in the case of the Dental Act, which was ten years younger than theirs. If it had been tacked on to the Dental Act, it seemed quite reasonable that the same could be done to a Pharmacy Bill.—The Chairman thought the best way would be to approach the Pharmaceutical Society and ask their support in this matter. He suggested that it might be left in the hands of Mr. Storrar and Mr. Johnston to bring it before the first Council meeting, and ask them to give it their support.—Mr. Hill said he would be inclined to suggest that they should send the resolution to the Secretary, and he might also ask Messrs. Johnston and Storrar to give attention to it.—Mr. Nesbit said he thought it would be well to draw attention to the exemption provided by the Dental Act, for they had been told over and over again in London that they could not get such an exemption tacked on to a Pharmacy Act that belonged to a Juries Act. He thought that those in London were under a misapprehension as to this, and that attention should be called to it.—Mr. McLaren said if the exemption had been made in regard to dentists in the Dental Act it was quite possible an exemption might be made in the same way

for pharmacists.—Mr. Nesbit did not suggest that it be inserted in the present Pharmacy Bill, but that it might be inserted in any future Pharmacy Bill.—The motion was then adopted.

The Sale of Methylated Spirit.

The Secretary reported that following up the recent resolution of the Association in regard to the addition of rock oil to methylated spirit, the Committee had adopted the plan of writing direct to the Inland Revenue authorities. As they were not members of the Federation, they had not approached that body, but had written direct to the Inland Revenue, and might have the reply by next meeting.—Mr. Hill said he perhaps might mention that one of the largest distillers in Leith had written to him on the subject, evidently thinking they were not aware of the regulation by which methylated spirit could be obtained without rock oil if it were taken in quantities of 5 gallons. The firm entirely sympathised with them in the objections they were taking to rock oil and to the prevention of the spirit being used for the purposes he had referred to. The firm also agreed with them that the only reason for adding rock oil was to prevent the spirit being used for drinking purposes. It was rather important that they found a large and well-known firm of distillers agreeing with them to that extent.—The subject then dropped.

The Annual Picnic.

Mr. David McLaren said, after very careful inquiry the Committee had fixed upon St. Fillans, five miles from Comrie, as the place for the annual picnic. They would go by Caledonian train to Comrie and drive to St. Fillans, where there was excellent hotel accommodation for two hundred or two hundred and fifty. It was arranged that pharmacists from Glasgow might join them at Larbert, and they might also have contingents from Dundee and Perth. The excursion had been fixed for Thursday, June 9, and tickets would be as formerly, 10*s*. 6*d*. each.—This arrangement was agreed to.

Election of Auditors.

It was dccided to re-elect the auditors, Messrs. McKenzie and Wylie.

Wholesale Houses and their Prices.

Mr. C. F. Henry said that a short time ago the price-list of a limited liability company came into his hands, and on looking over it he noticed a two-page advertisement, which seemed to him to be an advertisement of proprietors and paid for by them. In that advertisement there appeared in one case the minimum price and in the other case the reduced price of their specialties. That appeared to him to be an entirely new departure on the part of proprietors, and there seemed to him to be an element of unfairness in it to those chemists who had a booking trade, because the public from this advertisement would get to know what was the minimum price of their goods, and would expect to get them at that price. He thought the Association should draw attention to the matter, with the view of getting it remedied. He wrote to the firms, but unfortunately he made nothing of it. In the one case it turned out, according to the statement made by the firm, that the advertisement was not paid for by them, but was put in by the company. In the other case he got a rather curious letter, saying that the price of these articles had been reduced. They said they had been compelled, in order to meet competition, to reduce their retail price-list. The third case, brought under his notice by a member of the Association, had been put right. He did not know that they could do anything in this matter, but he had thought it right to bring it before the Association in order to draw attention to it in case this reprehensible practice should extend.—Mr. Mackenzie said that for his own part he did not think they could make anything of this or look for success in tackling the proprietors, as they had a decided antipathy to interfering with the sellers of their goods.—Mr. Forret asked whether they could as an association have anything to do with the prices. When the P.A.T.A. people were there he thought that was the Association's excuse, urged by the Secretary, for not associating themselves with them, that they as an association had nothing to do with prices.—The Secretary said this was quite a different matter He was not drawing attention to prices nor the way in which any one charges, but to the matter of advertising these as the prices of their goods. He did not mind what prices they were sold at, but he thought the point was if a proprietor advertised these as the reduced prices and the minimum prices of their goods.—Mr. Mackenzie asked if the articles referred to by Mr. Henry are included in Mr. Glyn-Jones' Association.—The Secretary: No. Perhaps attention having been called to this, it may be sufficient without any further resolutions.—With a vote of thanks to the Chairman the meeting terminated.

SCHOOL OF PHARMACY STUDENTS' ASSOCIATION.

At a meeting held in the Hanbury Library, 17, Bloomsbury Square, London, on Friday, April 22, Mr. T. E. Lescher in the chair, Mr. Evans read a paper entitled

An Examination of Commercial Samples of Benzoin and Guaiacum.

The conclusions drawn by Mr. Evans from his investigation, which was undertaken at the suggestion of Professor Greenish, were to the effect that a very necessary test for these resins was the quantity of residue, organic and inorganic, left after complete exhaustion with spirit. The Siam benzoin was shown to be much superior to the Sumatra in this respect, and those samples of Sumatra benzoin considered best by experts were also found to yield less residue than the inferior samples, so that it afforded a reliable test to chemists of less experience. Not more than 10 per cent. of such residue was suggested as the limit. Similar results were obtained in the case of guaiacum resin, the residues varying between 1·5 per cent. and 10 per cent. Mr. Evans considered that the maximum should be 5 per cent.—Messrs. Lescher, Wilson, Dewhirst, Durbin, Matthews, Payne, and Turner discussed the paper, the opinion being expressed that English merchants could compel more careful collection of the resins.—Mr. Evans replied to the various criticisms, and the meeting adjourned.

IRISH PHARMACISTS' ASSISTANTS' ASSOCIATION.

At Dublin, on April 9, the third annual dinner of this Association was held in the Gresham Hotel. The attendance was large, and representatives of medicine, surgery, and the allied professions were present. The President, Mr. W. J. Hardy, occupied the chair, and was supported by many prominent gentlemen. The vice-chair was occupied by Mr. H. Hunt, Vice-President.—After the removal of the cloth, the toast of "The Queen" was drunk with musical honours.—The President proposed "The Health of the Pharmaceutical Society," coupling with the toast the names of Councillors Kelly and Dr. Walsh. He said the Pharmaceutical Society had acted very kindly to the Association since it started three years ago, and the assistants were fully sensible of that kindness, and were prepared to help the Society in carrying on the good work so ably conducted by Mr. Downes and his respected colleagues. He paid a high tribute to the zeal and energy of Councillors Kelly and Walsh.—The toast was drunk amid cheers.—Mr. Kelly, in reply, said the Council almost to a man was kindly disposed to the Association. They recognised that the assistant of to-day would be the employer of to-morrow, and that the young men were the future Pharmaceutical Society. He thought Irish pharmacists were not sufficiently assertive. He observed that not an Irishman was on the British Pharmacopœia Committee, although no fewer than twelve gentlemen representing England and Scotland had been placed thereon. This was another injustice to Ireland. Irishmen were looked up to at home and abroad, and there was no reason why they should have been ignored in the compilation of the new B.P. The Pharmaceutical Society wanted the Association to prosper, and were ever prepared to give it a helping hand. He exhorted his hearers to persevere in well-doing and acting as men and gentlemen in the daily round of life.—Dr. Walsh also spoke. He endorsed Mr. Kelly's sentiments, and referred to the receipt by the President of the Pharmaceutical Society of Great Britain of a Jubilee Gold Medal. He complained that a similar distinction had not been conferred on the President of the Irish Pharmaceutical Society. Attention had been called to the matter, but they were told the donors were considering the subject. That was many months ago, and they were still deliberating, as the medal had not yet arrived. He hoped to see Irish pharmacists better treated in future, but they must not fear to assert themselves.—The toast of "The Medical Profession" was responded to by Dr. McWalter, an ex-pharmacist, who said that all over the world were to be found the "old boys" of pharmacy occupying high positions in the medical world. Formerly the compounding room was the ante-chamber to medicine, and the pharmacist looked forward to a medical career. Not a few of the most prominent doctors owed their success to their pharmaceutical training, and however questionable might have been the old practice to the interests of pure pharmacy, its benefits to the medical profession could not be over-estimated. As to the new

B.P., it should not be forgotten that Dr. Tichborne was a member of the General Medical Council, and was connected with the compilation of the volume. Although an Englishman, Prof. Tichborne was a Hibernian by adoption, and became more Irish than the Irish themselves. They should see that Ireland was fairly represented on the next B.P. revision five years hence. He complimented the assistants on their splendid association, which was second to none in the United Kingdom, and thanked the members for so kindly honouring the profession he represented.—The toast of "The Visitors" was acknowledged by Messrs. M'Clintock, Tyrie, and Farquhar.—At this juncture an interesting feature occurred, a presentation of a purse of sovereigns being made to Mr. J. Tyric Turner, Hon. Secretary of the Association. In conveying the gift, the President referred at some length to the zeal and ability of the recipient, who had acted as general organiser since the Association started, and to whom they owed its present flourishing state.—Mr. Turner suitably replied.—Mr. Kelly proposed the toast of "The President," which was drunk with enthusiasm.—The President, in replying, gave a brief retrospect of his connection with the Association, and alluded to the abolition of night lectures in the schools of medicine. He believed in the pharmacist making the best of his position and determining to excel in that direction. The chemist's calling was a very honourable one, and the only way to obtain recognition by the public was to keep together and come well to the front. —Mr. Hunt replied to the toast of "The Vice-President," after which a similar tribute of esteem was accorded to the Hon. Secretary, and was responded to by Mr. Johnston.—During the evening songs were contributed by Messrs. Cochrane, Tyrie, G. G. and J. Fetherston, M'Clintock, Cooper, and others. Mr. Bowles presided at the piano with his usual ability.—The function was brought to a close by the singing of "Auld Lang Syne," the company separating for the season amid cordial good wishes.

CHEMICAL SOCIETY.

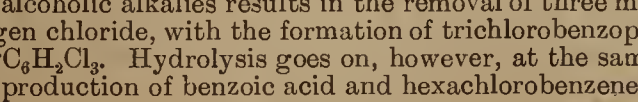
Professor Dewar, F.R.S., presided at a busy meeting on Thursday, April 21, at 8 p.m. Before calling on the new Secretary, Dr. Wynne, to read the minutes of the previous meeting, Professor Dewar paid a tribute to his distinguished services in chemical science, which eminently fitted him for that position.—The first paper, by Messrs. C. F. Cross, E. J. Bevan and Claud Smith, on

The Carbohydrates of Barley Straw,

was read by Mr. Cross. The main object of this paper was the determination of the constitution of the carbohydrates of cereal crops. Since pentoses are never found as such in plants, the authors surmised that they were down-grade products. Cereal straws yielding furfurol were experimented on; these harvested straws contain one-third of their weight of furfurol-yielding carbohydrates, green fodder plants containing one-fourth and woods one-fifth their weight of the same material. A series of physiological experiments was conducted. Plants were grown in both poor and well-manured soil, and it was found that differences in soil nutrition had no effect on the proportion of pentoses to hexoses in the carbohydrates obtainable from these plants. In the years 1894-96, during which time remarkable variations of climate took place, especially with regard to sunshine and rainfall, it was found that the relative proportions of furfurol-yielding carbohydrates remained the same. The authors went one step further in 1897 and removed the ears at the time of flowering. These vivisected plants threw out fresh shoots just above ground, and, when harvested, were greener than is normally the case. The straw was then examined by means of the usual constants. It was noticed that, while the permanent tissue amounts to 61·6 per cent. in normal straws, in plants thus vivisected only 53·5 per cent. is permanent tissue. The amount of cellulose also varied in the proportion of 43·3 to 33·0 per cent. The relative proportions of furfuroids was unaffected. A curious fact was mentioned, that the earless plants contained 30 per cent. more nitrogen than the normal. On hydrolysis with dilute acid—1 or 2 per cent., under a pressure of 3 atmospheres for fifteen minutes—the furfurol number in June was 13; in July, 25; in August, 33; and in matured straw, 48. The matured straw offers greater resistance to fermentation with yeast. Pure pentoses are assimilated by yeast, which builds up substances not pentoses.—In the discussion that followed, it was asked. What are the constituents that determine the value of different straws? It was remarked that the value of straws differs widely according to the time of reaping, and that the cutting of clover crops induces a spreading of roots and increase of nitrogenous matter in the soil.—Dr. Horace Brown asked what was the nature of the fermentable carbohydrates, and whether fractional fermentation would not clear up this point?—Mr. Cross, in replying to the several questions, mentioned that the extreme resistance to fermentation offered by carbohydrates in matured straw might be accounted for by the fact that the carbohydrates were in a condensed state.—The next paper by Mr. M. O. Forster, dealt with

Isomeric Bornylamines.

Camphor heated with ammonium formate to a high temperature gives bornylamine. Bornylamine bears the same relation to camphor as isopropylamine bears to acetone, *i.e.*, the carbonyl residue of the ketone is replaced by the $CH{\cdot}NH_2$ group, thus:



This bornylamine has a melting point of 159—160°, and is optically active $[\alpha]_D = -186°$.

It is known that ketoximes reduced with ethylic alcohol and sodium are converted into bases. Camphor oxime was so reduced, and gave a small yield of bornylamine. Dr. Forster had obtained a larger yield of the base by substitution of amylic for ethylic alcohol. This bornylamine melts at 172° to 173°, its optical activity = − 10°. The base obtained by heating camphor with ammonium formate in a sealed tube melts at 172° to 173°; its optical activity = − 17°. The author proposed to call the dextro-rotatory base bornylamine, and the lævo-rotatory base isobornylamine. The formyl, acetyl, and benzyl derivatives were prepared and examined. Those of "bornylamine" had a higher melting point than those of "isobornylamine" and were more soluble. The menthylamines afford a parallel case. Although the acetyl derivatives of "isobornylamine" are lævo-rotatory, those of "bornylamine" also are lævo-rotatory. Dr. Lapworth remarked that the use of the term isobornylamine implicd that the substance was derived from isoborneol, which is not the case.—A question was asked whether there is any difference in the stability of the two bornylamines, as is the case with the amincs of the isomeric borneols.—Professor Dunstan suggested the name "pseudo-bornylamine" for "iso-bornylamine."—In reply, Dr. Forster objected to the name pseudo-bornylamine, on the ground that the substance *is* bornylamine. He had found no chemical difference between the two bornylamines.—A paper on

Some Derivatives of Benzophenone

was next read by Mr. F. E. Matthews. Benzophenone readily yields chlorine addition compounds by dissolving benzophenone in chloroform, covering with a layer of water, and passing in chlorine to saturation. On exposure to sunlight the colour of chlorine disappears, and a crystalline solid separates out, the hexachloride of benzophenone, $C_6H_5{\cdot}CO{\cdot}C_6H_5{\cdot}Cl_6$. It was remarked that acetophenone does not yield a hexachloride under similar conditions, but methyl groups are substituted. This compound possesses less interesting properties than might have been expected. It crystallises especially readily from xylene, and its m. p. is 214° C. The action of alcoholic alkalies results in the removal of three molecules of hydrogen chloride, with the formation of trichlorobenzophenone, $C_6H_5{\cdot}CO{\cdot}C_6H_2Cl_3$. Hydrolysis goes on, however, at the same time, with the production of benzoic acid and hexachlorobenzene—

$$\begin{array}{c|c} C_6H_5CO & C_6H_5Cl_6 \\ OH & H \end{array}$$

The nitro-derivative of benzophenone undergoes similar reactions. —Dr. S. B. Schryver followed with a paper on—

Some Researches on Camphoric Acid.

As various lactone acids on treatment with sodium ethoxide lose water, yielding isomeric unsaturated bodies, the author subjected camphoric acid to the same treatment. But no isomeric unsaturated body could be obtained. Oxidation of lauronolic acid with potassium permanganate gave nothing but oxalic acid. Finally, on treating lauronolic acid with nitric acid he obtained nitrolactone, which gave aminolactone on reduction with tin and hydrochloric acid. Lauronolic acid treated with nitrogen peroxide gave nitro-campho-lactone, which by reduction gave the hydroxylamino compound, from which, by partial oxidation, nitroso-campholactone was produced.—In the discussion Mr. Marsh pointed out that while chlorocamphoric anhydride is easily

obtained, there is some difficulty in getting the bromo- compound. —An extremely interesting paper followed on

The Drying of Ammonia and Hydrogen Chloride,

by Mr. H. BRERETON BAKER, M.A. It will be remembered that Mr. Baker's important statement that hydrogen chloride and ammonia gases do not combine when perfectly dry created much interest, and was disputed by Gutmann early in the year. An experiment was shown by Mr. Baker in proof of this fact. The two gases in a wide glass tube were separated by a glass partition, the ends of the tube being bent over so as to dip in mercury. On breaking down the partition wall no rise of mercury should result. Mr. Baker had performed this experiment successfully many times, but on this occasion, owing to disturbances caused in transit, a slight rise of mercury was noticed. Though Gutmann had disputed the above statement, the author had verified it beyond the possibility of doubt. Gutmann's results were doubtless due to the fact that the phosphoric anhydride which he used to dry the gases contained large quantities of trioxide and tetroxide of phosphorus and meta-phosphoric acid. Ordinary phosphoric anhydride distilled in dry air yields as much as 80 per cent. of meta-phosphoric acid. A mixture of potassium and copper oxides, which has received the name of stas, as well as sulphuric acid, were both ineffective for the purpose of drying the gases; indeed, air passed over concentrated sulphuric acid wets phosphoric anhydride. Mr. Shenstone, however, had kindly prepared for Mr. Baker a quantity of very pure phosphoric anhydride.—Mr. SHENSTONE confirmed the statement that sulphuric acid is useless for dehydration of gases. The distillation of phosphoric anhydride must be slow in order to be successful; in fact, he had distilled it so slowly that only 2 grammes a day were collected. —Professor DEWAR warmly congratulated Mr. Baker on his important communication, proving his original statement. He hoped Mr. Baker would go further and show whether or not the latent heat of ammonium chloride is the same as that of a mixture of ammonia and hydrochloric acid gases.—At this late hour few remained to hear Mr. H. G. MADAN, M.A., give some notes on

The Properties of Methylene Di-iodide.

The author mentioned its use during the past ten or twelve years by mineralogists, on account of its high density, in the separation of minerals, its density being three or four times that of water. It is prepared by the action of hydriodic acid on iodoform. Glass was shown floating in the liquid, and fluospar floated like an iceberg with quite half its volume above the liquid. Topaz, however, sinks to the bottom. The high refractive index of methylene di-iodide (1·756, as determined by Dr. Gladstone) calls for special comment; and on this account it might well replace inflammable carbon disulphide in prisms for optical work. Unfortunately light has some action upon it, causing a yellow coloration. Tubes of this substance were exhibited, showing the effect of light upon it. One, kept in the dark, remained colourless; others, exposed to sunlight for four hours, two and ten days respectively, had assumed increasingly dark tints of yellow. This is the only objection to its use in microscopic work. Attention was called to the extreme solubility of phosphorus in methylene di-iodide. A solution containing equal proportions by weight has a refractive index of 1·95. Like all phosphorus and iodine solutions this is acted on by light with the formation in this case of red phosphorus. On exposing this solution in a watch glass and on blotting paper for a week no oxidation took place. The author suggested that the solvent formed a kind of varnish, which protected the phosphorus from oxidation. Sulphur is also soluble in methylene di-iodide, and the solution has a high refractive index.—Professor DEWAR suggested that possibly either there was moisture in the tubes or else that the oxygen in the air above the liquid had caused the yellow coloration. He would like to see the experiment repeated *in vacuo*, in the absence of moisture. The solubility of phosphorus in methylene di-iodide was a fact of no mean importance, as also the freedom from oxidation when poured on filter paper and exposed to air. The author, in reply, said that he had not dried the air in the tubes, and had dried the liquid by means of calcium chloride.—The PRESIDENT then announced that thirteen other papers would be taken as read, including the following: "The Sulphonation of Benzophenono," by A. Lapworth, D.Sc.; "The Condensation of Chloral Hydrate with Orcinol," by H. T. Hewitt, M.A., D.Sc., and F. Dixon, B.Sc.; "The Yellow Colouring Matter of Arctostaphylos Uva-Ursi," by Dr. Perkin, and "The Preparation of Ammonium Cyanate," by Messrs. Walker and Wood.

NOTICES TO CORRESPONDENTS.

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

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

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

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

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

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

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

LETTERS TO THE EDITOR.

THE *P. J.* SYNOPSIS (B.P. 1898) AND ALCOHOL CONVERSION TABLE.

Sir,—May I be allowed to express my appreciation of the useful synopsis of the galenical preparations of the new British Pharmacopœia, which appeared in your issue of April 16, and has since been reprinted in book form. The idea of giving a general summary of the preparations was a most excellent one, and the manner in which it was carried out beyond all praise, for naturally both the practical retail chemist and the wholesale manufacturer were anxious to know as early as possible what changes were to be effected in the composition of the official galenicals. This is of much greater importance than the alterations in the lists of chemicals and drugs, and it was a happy thought to deal with the pharmacy of the book first. Your article has proved of the greatest assistance in the laboratory, and the earnest thanks of all who have to deal with the making of galenical preparations are due to you for providing so conveniently arranged a working guide. In the Alcohol Conversion Table published last week there is an obvious printer's error, the proof strength of 90 per cent. alcohol appearing as 40 o. p. instead of 58 o. p. The sp. gr. of the 2 and 1 mixture should also be 0·967 rather than 0·966, and although the quantities given are roughly approximate more exact figures are the following :—

(Spirituous Menstrua for Ext. Bellaaon. Liq and Liq. Senegæ Conc.)

Alcohol, 90p.c., 7 vol Water, 1 vol. = 79·6 p. c.	143¾f.oz. 897·7 C.c.	18f. oz. 112·6 C.c.	141¾f.oz. 884·6 C.c.	20f. oz 127·1 C.c.	1 gall. 1060 C.c.	0·8645	40 o p.
Alcohol, 20p.c., 2 vol Alcohol, 45p.c., 1 vol. = 28·5 p. c.	51½ f. oz. 321·4 C.c.	111¾f.oz. 698·2 C.c.	50¾ f. oz. 316·7 C.c.	112½f.oz. 703·4 C.c.	1 gall. 1000 C.c	0 967	50 u p.

In using the above, however, on account of the sensitiveness of alcohol to small variations of temperature, care must be taken that both the water and spirit are at 15°·5 C., otherwise inaccuracy will result. The quantities of spirit throughout the table are slightly higher than indicated by theory (viz. the nearest ¼ fl. oz. above the calculated decimal), in order to compensate for the slight loss of spirit which easily occurs unless special precautions are taken. This small excess tends to keep any possible error on the right side. It may also happen that during summer weather the spirit and water cannot be conveniently reduced to 60° F. As a proper temperature is essential for even approximate results, it is quicker in such cases to weigh the liquids. The necessary

figures are shown in the accompanying table, which in other respects corresponds with the one on page 396. It may also be mentioned that the specific gravities are calculated to the nearest 0 or 5 in the fourth decimal place, the proof strength to the nearest half degree, and that one-eighth of the gallon quantities gives the proportions required for one pint of the respective alcohols.

Laurence Pountney Lane, E.C. F. C. J. Bird.
April 27, 1898.

*** The new table referred to by Mr. Bird will be published next week.—[Ed. *P. J.*]

Sir,—I notice in your list of B.P. Formulæ and Processes, Alterations, etc., page 367, that you state, *inter alia*, "All quantities in the new B.P. are stated in terms of both Imperial and metric systems, but in order to simplify matters as much as possible—whilst the relative proportions have been strictly adhered to in all cases, the formulæ are, as far as possible, given in parts and fluid parts, in accordance with the well-established rule, solids by weight, liquids by measure." Do you not think it would have been better, say in the case of tinct. quininæ or tinct quin., ammon., or sp. camph., or any other form including a solid or liquid, to have stated so many grains, etc., to the ounce or pint? For instance, anyone preparing, say, 100 drachms of tinct. quininæ (a far more usual quantity than 100 ounces) would get totally wrong by using 2 drachms quininæ hydrochlor., the correct quantity being only 109·4 (nearly) grains. So, too, with sp. camph., 1 drachm, dissolved and made up to 10 drachms (fl.) is totally different to 1 oz. dissolved and made up to 10 ozs. (fl.)., the former being equivalent to 48 gms. in ℥i. (fl.) and the latter (correct one) 43·75 gms. in ℥i. (fl.). While pharmacists have to use the old-fashioned grain (*sic*), scruple, and drachm alongside of the Imperial weights and measures, I think it is much better to leave "parts and fluid parts" alone. Otherwise I think your synopsis an excellent "advance copy." The alcohol tables by Mr. Bird, too, are excellent and very practical.

Nuneaton, April 26, 1898. A. E. Slinn.

*** Mr. Slinn's criticism is replied to in a note at page 420.—[Ed. *P. J.*]

The New Pharmacopœia.

Sir,—On page 376 of the *Pharmaceutical Journal* you call attention to the new Pharmacopœia as it will be issued to the public. As an old pharmacist I should like to make a few observations on the very drastic changes which will be enforced on chemists in making several of the preparations, changes so drastic that they will practically compel the chemist, who has long prided himself on making his own preparations, to fall back on the wholesale house. I have always thought that the Pharmacopœia should be compiled as far as possible so that the average chemist should be able to make and to teach an apprentice to make most if not all the preparations ordered in it. Allow me to ask how many men in the course of business will undertake to prepare tincture of opium by the new process? In what was the old formula unsatisfactory? I have found that carefully dried Turkish opium with proof spirit makes at all times an excellent and reliable tincture. The directions for tincture kino, to say the least, are confusing, possibly a certain amount of revision will be brought to bear on the case. My fruiterer tells me that Seville oranges are only in perfect condition for eight or nine weeks in the year. I must, therefore make an absurd quantity of the tincture, or again present the wholesale house with a share of my profits. Why should Socotrine aloes be displaced by Barbados in most preparations? I have never found any difficulty in obtaining the former. I remember an excellent authority say "that Barbados aloes are stronger, but they are more apt to occasion hæmorrhoids and to gripe! With spirit of rosemary, 1 to 9, in place of 1 to 49, which strength shall be used in future for Wilson's and other hair washes? Syrup of senna carefully prepared by the old process produces a very satisfactory and reliable preparation. Will the new one be as good, and if spirits of wine is required to exhaust the leaves in this preparation, why should water be ordered for the same purpose in liquor senna concentratis? How will our customers accept the new tincture of rhubarb without the fine colour imparted by the saffron? or is the chemist to keep two tinctures of this—one for dispensing, and the other for the retail counter? Liquor chirata looks like an imitation of a well-known stamped nostrum now almost out of date. In infusion of buchu the leaves are ordered to be broken, not bruised. I wish whoever is responsible for this would tell me how to do it; the finger and thumb process is distinctly tedious. Ung. Aqua Rosæ reminds me of cremor frigidus fifty years ago, only more watery. These few remarks are only a tithe of what might and probably will be noted; but I think I am justified in asking who will benefit by these changes? Certainly not the chemist, and as far as I can judge not the public, but very decidedly the wholesale houses. In conclusion, what is to become of our present stock of tinctures, etc, prepared according to the Pharmacopœia of 1885? I suppose they must be used for all prescriptions written before April, 1898—but how are they to be distinguished? The use of the new tinctures especially would lead to endless confusion, and unpleasantness to our customers.

Norwich, April 26, 1898. Octavius Corder.

Sir,—Amongst the most noteworthy alterations of the new British Pharmacopœia, shortly to be published, is the substitution of fresh orange peel for the dried, as hitherto used. Now, this year's crop of bitter oranges has, at the finish, turned out very short, and the prices therefore considerably advanced. At the present time there are practically no bitter oranges here, and what few are here are realising very high prices, and there are no more to come forward. By this you will see that there will be in a few days' time no fresh oranges until next November, when the new crop will commence to arrive.

London, April 21, 1898. Sparks, White and Co.

Sir,—It is perhaps unnecessary for me to reply to the somewhat lengthy and detailed communication of your correspondent, Mr. Chas. Umney, of Southwark, only I should like to correct one or two misconceptions under which Mr. Umney is labouring. In the first place, as being the most important point raised by him in his reply, I wish to state most emphatically that there was nothing personal in my letter, and by no straining of its meaning can it be made out that such is the case. This is what is termed raising a side issue, and as Mr. Umney recurs to it in different ways during the course of his letter, as when he says the price-list "apparently caused him some discomfiture," and "I cannot think that this attack on me is from jealousy, the green-eyed monster that Shakespeare refers to. Surely such a distemper could not be at the root of his bitter complaining," I cannot too strongly repudiate the suggestion that I was actuated by any personal feeling against Mr. Umney or his firm. I wrote simply as a pharmacist to express publicly my disapproval of a certain line of conduct which has privately been much commented on. I think Mr. Umney practically admits he has made a tactical error, and were his admission a little more open I doubt not that those in the drug trade who feel aggrieved by his recent action would freely forgive him. He practically gives the case away when he says:—"Now in my firm's case, the 'man at the wheel' was Mr. John C. Umney, and in his start he had this particular subject 'at his fingers' ends,' for he had during the previous three years or more been constantly working under my instructions upon any subject connected with the British Pharmacopœia that my colleagues and I thought desirable." But the sole head and front of Mr. Umney's offending is his taking too early advantage of his son's having "this particular subject at his fingers' ends." That is the whole matter in a nutshell. Mr. Umney was not in London, but at San Remo when the Pharmacopœia was made "accessible to the public," but to carry his allegory about the "man at the wheel" a little further—is it not the custom in nautical life that when the skipper leaves the deck he gives the helmsman directions what course to steer? Had Mr. Umney given his son (for whose work and attainments I have the highest respect) instructions not to be indecently hasty in utilising the knowledge gained by his work during the last three years or more, there would have been no occasion for grumbling. The honour attaching to the position which Mr. Umney was called upon to fill is or ought to be, like virtue, its own reward.

Leith, April 26, 1898. George Coull.

Re Paraffinum Liquidum, B.P.

Sir,—You are aware that this article has recently formed the subject of discussion before pharmaceutical societies. We are fully in accordance with the criticism passed on the specific gravity adopted by the new British Pharmacopœia, and we fully endorse the opinion that the limits laid down are too close.

Foreign pharmacopœias admit paraffinum liquidum of 0·880 to 0·885 gravity, and even 0·870 to 0·875 gravity, and there is no reason why, considering the great perfection of existing methods of purifying this oil, paraffinum liquidum of 0·865 gravity should not also be admitted by any pharmacopœia, and speaking from our practical experience we have no hesitation in saying that our light paraffinum liquidum 0·865, as supplied by our works, is neither inclined to change its colour on being exposed to the air nor will it develop any odour. The limitation of the sp. gr. on the part of the British Pharmacopœia to 0 885 to 0·890 is a mistake for this reason, viz., that the raw material contains too many tarry constituents, which have to be removed by the process of purification, to allow of such a high gravity being attained, and when the oil is sufficiently refined to answer the other tests laid down by the British Pharmacopœia, it is found that the highest gravity attainable is 0 882, and it is generally reduced to even 0·880. If a new material could be found which did not possess tarry ingredients to such an extent, and which could be used for manufacturing the purest and most perfect article, we should be able to supply a heavier oil. Over twenty-five years' experience has shown us that American oil is not so suitable for this purpose, as white oils of best quality cannot be produced therefrom. We trust that these remarks will assist pharmacists in choosing the oil which is most adapted for their purposes.

London, April 21, 1898. Stern Bros.

New Drugs and Preparations.

Sir,—In my letter to the *Lancet*, I said: "I hope the new B.P. will contain all the drugs and preparations, new and old, that we can possibly require." In your Journal of April 23, p. 399, you say this is "a belated suggestion," because "the Pharmacopœia, so far as its contents are concerned, is an accomplished fact." But, in the same Journal, you say the B.P., 1898, is "not yet issued to the public," and "the date of its publication is not yet announced"; therefore, of course, it was not published three weeks ago, when I wrote to the *Lancet*. Before a book is published, it cannot be too late to express a hope that, when it is, it will be found to contain certain things, nor can such hope be called a "suggestion." I have not yet been able to buy or even to see a copy of the new B.P., and I still hope that, when I do see one, I shall find in it all the new and old drugs and preparations that a prescriber can possibly want.

9, Trinity Square, S.E., April 25, 1898. D. Hooper, B.A., M.B., *Physician to the Surrey Dispensary.*

*** Dr. Hooper does not seem to understand that at the time his letter was written the 1898 Pharmacopœia was already completed, printed ready for issue; between the printing and publication of a book it is impossible to make any alteration in the text. Lists of the new and old drugs official in the work appear in last week's Journal and this, and full particulars of all the preparations are given in our Synopsis, a copy of which has been sent for Dr. Hooper's information.—[Ed. *P. J.*]

Linimentum Terebinthinæ, B.P. 1898.

Sir,—Mr. Tocher's objection to the new lin. tereb. must be only "an expression of opinion." I have made half a pint of it, and the result is perfection.

April 23, 1898. T. D. (131/31).

*** The same result has been arrived at by another pharmacist, and we know for a fact that a specimen of liniment made by the formula in question has kept perfectly for more than two years. [Ed., *P. J.*]

The Council Election.

Sir,—The report of the meeting of the Glasgow Association was exceedingly interesting and opportune. On the eve of the election of members of Council, we are told that the opposition to our Pharmacy Bill by Mr. Cross was instigated by Mr. McKellar, who in his turn worked at the suggestion of Mr. W. Gibbons, of Manchester, who now seeks our votes to place him on the Council. —*Verb. Sap.*

April 26, 1898. Associate in Business (131/36.)

The B.P. (1898) Formulæ and Processes.

Sir,—Accept my thanks for reprinting in book form your "British Pharmacopœia (1898) Formulæ, Processes, etc." It is wonderfully comprehensive and singularly free from clerical errors. From the data supplied the new and altered preparations can be properly made. The inclusion of the tests for determining the strengths of such preparations as are standardised is unique. As a pocket guide to the 1898 Pharmacopœia it will prove serviceable long after the publication of the official volume.

Southwark Street, S.E., April 28, 1898. W. A. H. Naylor.

ANSWERS TO QUERIES.

Publishers of Pharmacopœia.—It is printed and published by Messrs. Spottiswoode & Co., Gracechurch Street, London, E.C. [*Reply to* P. G. and Co.—9/12.]

"Tablespoonsful" or "Tablespoonfuls."—The former term is totally incorrect, as usually employed. You do not, as a rule, take two tablespoons and fill them full; the general custom being to take one tablespoon and fill it twice. [*Reply to* J. J.—9,24.]

Work for the Minor.—Refer to the Students' Number of the Journal, published on September 11 last, for advice in the matter. The only advantage of a correspondence class is that it may ensure systematic working. Yes, every pharmaceutical student ought to possess a microscope and use it. [*Reply to* Anxious.—9/14.]

The New B.P.—Order an interleaved copy from your bookseller. It is not unreasonable to assume that candidates ought to know something about the contents of the book at the first examination after it is published, but ignorance on the subject is not likely to prove fatal to success before six months have elapsed since the date of publication. [*Reply to* C. G.—9/20.]

Botanical.—Both are specimens of *Polytrichum juniperinum*, one illustrating the sporophyte stage, the other bearing antheridia. Your request—which, by the way, is somewhat an unreasonable one—has been notified to the Curator, but why not send the specimen to a professional, such as Mr. Ernest Hinton, 12, Vorley Road, Upper Holloway, N.? [*Reply to* C. T. J.—9/13.]

Perfume Bottles.—If you have tried nearly all the English houses we presume you have applied to Messrs. Maw, Son, and Thompson, Aldersgate Street, E.C., who can usually supply anything that is required in this line. In that case you might try Messrs. Schindler and Co., 7, Aldermanbury Avenue, E.C.; Messrs. M. and J. Guggenheim, 70 and 71, Fore Street, E.C.; and the French Flint Glass Bottle Co., 6 and 7, Long Lane, Aldersgate Street, E.C. [*Reply to* Pomet.—8/32.]

British Pharmacopœia, 1898.—You do not seem to appreciate the difference between linear and cubic measure. A cubic decimetre equals 1000 cubic centimetres, not 10 as you seem to imagine. If, therefore, 1·00016 cubic centimetre = 1 millimetre, then 1·00016 cubic decimetre = 1000 millilitres or 1 litre. With regard to the matter of spelling you refer to, "Asafetida" is now the recognised form of the word, and you will observe that the form "Asafœtida" is only adopted in the notes referring to an old preparation. [*Reply to* Geohnz.—8/34.]

OBITUARY

Wright.—On April 12, at Hyères, France, Frederick Wright, Pharmaceutical Chemist, of Knutsford, Cheshire. Aged 24.

Green.—On April 13, at Deal, Herbert John Green, Pharmaceutical Chemist, eldest son of John Green, Pharmaceutical Chemist. Aged 32.

Foster.—On April 17, Edwin Foster, Chemist and Druggist, Morley, Yorks. Aged 66.

Hewlett.—On April 18, at Cannes, France, Caroline Julia, wife of John C. Hewlett, of Hillside House, Beckenham, Kent, and Charlotte Street, E.C.

Andrews.—On April 20, at St. George's Hospital, John Henry Andrews, Chemist and Druggist, 45, High Street, Kensington. Aged 32.

Tough.—On April 25, George Tough, Chemist and Druggist, late of Colpy. Aged 80.

Fielden.—On April 24, at 23, Madstock Road, Fairfield, Liverpool, M. Oliver Fielden, for very many years representative of Messrs. Meggeson and Co., 14 and 15, Miles Lane, London. Aged 66.

COMMUNICATIONS, LETTERS, etc., have been received from—Messrs. Alcock, Attfield, Beckett, Beckwith, Bird, Druce, Gardner, Garlett, Gibbons, Gibson, Grennan, Henry, Heron. Hill, Hirst, Holifield, Hooper, Jackson, Jinks, Johnson, Jones, Mackie, Naylor, Penistan, Pinkerton, Powell, Round, Scupham, Shorthouse, Skyrme, Slinn, Stern, Sykes, Thompson Tippetts, Watson, Whittle, Woolley, Wright.

ANNUAL REPORT OF THE COUNCIL.

In presenting the fifty-seventh Annual Report and Financial Statement, it is unnecessary to refer in detail to the work of the Council during the past year, as the proceedings have been fully reported each month.

Libraries. The value of the Libraries in London and in Edinburgh has been still further enhanced by the addition of important new books, partly by purchase and partly by donation. The attendances, and the circulation of books, remain satisfactory.

Museums. The materia medica collection of the Museum in London has been rearranged in accordance with the classification adopted in the lectures in the Socicty's School, and the new arrangement appears to have facilitated the work of students and to have given general satisfaction. Numerous donations have been received from home and foreign correspondents, and the Herbarium has been enriched by more than 300 specimens of medicinal plants.

Considerable alterations have been made during the year in the Museum of the Society in Edinburgh with a view to placing in position the College of Physicians and Scoresby-Jackson collections of materia medica referred to in the last report, and this work is still in progress. A handsome central floor case, presented by the College of Physicians, has been placed in the front portion of the ground floor apartment, the whole of which is now devoted to Museum purposes.

Examinations. For the "First" examination 1414 candidates were examined during 1897, and 678, or 47·95 per cent. were successful. The number examined was 119 less than in 1896, and the percentage of rejections shows an encouraging diminution. The statistics for the qualifying examination exhibit an unsatisfactory increase in the percentage of failures. The number of Candidates was 1441, but no fewer than 981, or over 68 per cent., failed. In the case of the Major examination fewer entries have to be recorded, 106 candidates having presented themselves as against 130 for the preceding year. The proportion of passes has, however, shown a considerable improvement.

Reference was made in the last report to the proposed changes in the "First" examination. The alterations in the Bye-laws of the Society to effect this object were finally approved by the Privy Council on November 11, 1897. The new regulations will come into force in August, 1900, and it is confidently hoped that they will tend to materially advance the interests of pharmacy. In his last report on the examinations in London, Dr. Stevenson, the Government Visitor, expresses to the Lords of the Privy Council the opinion that the necessity for the chemist and druggist "receiving something more than the knowledge "attainable in a chemist's shop is year by year becoming "better recognised," and he further endorses the policy which the Council has followed in the matter of preliminary education by saying that the change effected by the Bye-laws "ought to secure a better educated class of students, "and appears to be a change entirely for the good of the calling "of chemist and druggist."

During the year the Government Visitor, Dr. Balfour Marshall, made his first report to the Privy Council on the Examinations in Edinburgh. After deploring the evidence of "cram" in candidates, and want of sufficient training in the subjects so closely allied to the pharmacist's everyday work, Dr. Marshall expresses an opinion that the remedy lies in the establishment of a regular curriculum.

Benevolent Fund. At the Decennial Festival in May, a total sum of £2260 was subscribed, which is by far the largest amount realised at any festival since the establishment of the Fund. Of this amount £2084 has been added to the invested capital, and the remaining £176 has been transferred to the current account. The present charge on the Fund in respect of annuities now amounts to £2055, and, thanks to the liberality of subscribers, the Council has been able to distribute in relief during 1897 the sum of £3043—the largest expenditure in any one year.

Evening Meetings. Papers of much pharmaceutical interest have been contributed at the Evening Meetings, which have been well attended. In London they included "Pharmacy at Some of the American Universities," by Professor Reynolds Green; "Suppositories," by Mr. Edmund White and Mr. J. O. Brathwaite—former Bell scholars; "Notes on Official Extracts," by Messrs. Farr and Wright; and "Pharmacy of Cantharides," by Professor Greenish and Mr. Harold Wilson. Mr. Leo Atkinson also gave a lecture on "Bacteriology for Pharmacists," which was much appreciated. The Introductory Address in Edinburgh was given by Profcssor James Walker, D.Sc., and valuable papers were read at subsequent meetings by Dr. Gordon Sharpe, Dr. Dewar and Mr. Jack, Messrs. Storrar, Dott, Boa, Lunan, and others.

Hanbury Medal. The ninth award of the Hanbury Gold Medal took place in May, when the President, as one of the adjudicators under the Memorial Trust, announced that the choice of the Committee of adjudicators had fallen on Dr. J. E. De Vrij. The medal was presented at the Inaugural Meeting of the Society's School in October; a representative of the Netherlands Government attending officially to receive it in the absence of Dr. De Vrij.

Honorary Members. At the last meeting of the Council, Dr. D. J. Leech, Professor of Materia Medica and Therapeutics in the Victoria University; Professor W. Ramsay, of University College, London; and Professor Ira Remsen, the Professor of Chemistry at the Johns Hopkins University, Baltimore, were elected Honorary Members of the Society.

Legal. The number of cases of alleged infringement of the provisions of the Pharmacy Acts reported to the Registrar during the year was 309. Each case was carefully investigated, and those in which satisfactory evidence of an infringement of the law could be obtained were placed in the hands of the solicitors to the Society, that proceedings might be taken. As usual a large proportion of the offenders paid the penalties claimed without going into Court.

The only case to which special attention need be directed is that heard before the County Court Judge at Reading, where a sale of weed killer containing arsenic sufficient to poison 2000 persons was virtually admitted. The defence relied upon was that the weed killer had originally been procured for the private use of the defendant, that it was never intended for sale, that defendant did not sell by his own hand, and that he was not liable for the act of a servant who had sold the tin without authority. During the course of the evidence it transpired that the defendant had other branches and that he had a partner who was in charge of the Reading business. The case lasted five hours and, upon reviewing the evidence, the Judge held that the defendant did not intend to sell the tin in question. He also held that the word "sell" meant the physical act of sale, and on the question of partnership he was of opinion, having regard to the decision of

FINANCIAL STATEMENTS FOR 1897.

GENERAL FUND.

	£ s. d.	£ s. d.
Balance January 1, 1897:—		
London and Westminster Bank	1243 8 10	
In hands of Chairman of Executive (Scotland)	72 4 8	
In Treasurer's hands	3 11 6	
		1319 5 0
Interest on Investments:—		
Ground Rents	149 16 8	
Rent of 15, Bloomsbury Square	187 10 8	
		337 7 4
Subscriptions:—		
1296 Members, Pharmaceutical Chemists	1360 16 0	
549 ,, Chemists and Druggists	576 9 0	
1687 Associates in Business	1771 7 0	
936 Associates not in Business	491 18 6	
872 Students	457 16 0	
	4658 6 6	
18 Life Subscriptions	189 0 0	
Fees paid upon Restoration to the Society	5 18 0	
		4853 4 6
Examination Fees:—		
1557 First Examination	2814 11 0	
1550 Minor ,,	6331 10 0	
97 Major ,,	267 17 0	
	9413 18 0	
Fees for Restoration to the Register	19 19 0	
		9433 17 0
School of Pharmacy—Students' Fees		1598 12 0
London and Westminster Bank—An Advance, November, 1897		1500 0 0
		£18,842 5 10

	£ s. d.	£ s. d.
Annuities:—Mr Elias Bremridge and Mr. Joseph Ince		500 0 0
Carriage of Books and Parcels		17 9 8
Certificates of Death		22 8 6
Evening and other Meetings		43 11 5
Examinations:—	*England and Wales.* / *Scotland.*	
Minor and Major:—		
Fees to Examiners and Travelling Expenses	1458 16 6 / 894 11 0	
Refreshments	58 3 6 / 47 15 4	
Apparatus, Drugs, Chemicals, Printing, and sundry charges	370 6 6 / 65 1 7	
	1887 6 6 / 1007 7 11	
England and Wales	/ 1887 6 6	
		2894 14 5
First Examination:—		
Fees to Superintendents, Hire of Rooms, and other charges	329 6 11	
Fees to the College of Preceptors	183 19 0 / 513 5 11	
		3408 0 4
Gas, Water, Coal, Cleaning Materials, etc		319 4
House Servants—Wages		286 4
Journal: Balance of account		1978 14 6
School of Pharmacy:—		
Stipends of Professors and Share of Fees	1437 9 10	
Lecturer, Assistant Lecturer and Demonstrators, and Wages of Porters	640 12 0	
Subscription to Royal Botanic Gardens	21 0 0	
Apparatus, Chemicals, Specimens for Lecture Classes, Prize Medals, Certificates, and printing and posting prospectuses	477 2 1	
		2576 3 11
Law Charges—Balance of account		557 6 7
Library:—Librarian's Salary	275 0 0	
Purchase and Binding of Books	91 2 3	
		366 2 3
Museum:—		
Curator's Salary	400 0 0	
Assistant's Wages	58 10 0	
Curator attending Museums Association Meeting	10 10 0	
Herbarium Catalogue	54 6 0	
Specimens, Bottles, and Sundries	42 7 7	
		565 13 7
Expenses in Scotland:—		
Assistant Secretary—Salary	250 0 0	
Taxes and Insurance	58 17 9	
Members of Executive—Travelling Expenses, etc.	31 7 0	
Fuel, Light, Water, Cleaning, Service, and Miscellaneous Expenses	402 16 4	
		743 1 1
Postage:—General	208 10 7	
Journal	759 15 3	
		968 5 10
Pharmacopœia Committee of the Society (paid on account of)		61 4 5
Provincial Education (Balance of Grant to Liverpool Pharmaceutical Students' Society)		2 0 0
Register—Balance of Account		21 2 7
Rent, Taxes, and Insurance (7 Years' Premium)		1012 12 0
Repairs and Alterations		569 13 8
Stationery, Engraving, Printing and Office Expenses		213 17 4
Calendar—Balance of Account		78 11 2
Salaries:—Secretary and Registrar, and Clerks		1599 13 0
Sundries		14 12 5
Travelling Expenses—Council and Committees		462 14 4
Refreshments for Council		46 9 8
Interest on Advance from Bankers		32 16 6
London and Westminster Bank—Amount repaid March, 1897		1500 0 0
Balance December 31, 1897:—		
London and Westminster Bank	726 3 4	
In hands of Chairman of Executive (Scotland)	82 18 6	
In Treasurer's Hands	65 10 3	
		874 12 1
		£18,842 5 10

BENEVOLENT FUND.

CURRENT ACCOUNT.

	£ s. d.		£ s. d.	£ s. d.
Balance, January 1, 1897 :—		*Annuitants.*		
London and Westminster Bank	386 7 10	32 at £50 per annum for 5 quarters	2000 0 0	
In Treasurer's hands	5 17 0	8 at £40 ,, ,,	400 0 0	
Interest on Invested Capital and Ground Rents	1097 4 2	1 at £35 ,, ,,	43 15 0	
Subscriptions	1916 15 4	1 at £50 ,, 3 ,,	37 10 0	
		1 at £50 ,, 2 ,,	25 0 0	
		4 at £50 ,, 1 quarter	50 0 0	
		1 at £40 ,, ,,	10 0 0	
				2566 5 0
		Grants.		
		Members and Associates of the Society and Registered Chemists and Druggists (19)	205 0 0	
		Widows of ditto (28)	268 0 0	
				473 0 0
		Surveyor's Fees		3 3 0
		Interest on £1000 borrowed from the Orphan Fund		35 0 0
		Printing, Stationery, Postage and Sundry Expenses		56 3 3
		Balance, December 31, 1897 :—		
		London and Westminster Bank		267 19 4
		In Treasurer's hands		4 13 9
	£3406 4 4			£3406 4 4

DONATION ACCOUNT.

Balance, Jan. 1st, 1897 :—London and Westminster Bank	345 13 5	Purchase of £4000 Consols	4535 1 0
Donations and Legacies	4468 11 0	Balance, December 1st, 1897 :—London and Westminster Bank	279 3 5
	£4814 4 5		£4814 4 5

ORPHAN FUND.

(FOUNDED BY THOMAS HYDE HILLS, 1891.)

Balance, Jan. 1st, 1897 :—London and Westminster Bank	115 14 9	London Orphan Asylum (Minett)	30 0 0
Subscriptions and Donations	28 5 6	Balance, December 31st, 1897 :—London and Westminster Bank	158 15 3
Interest on Invested Capital	9 15 0		
Interest on £1000 lent to the Benevolent Fund	35 0 0		
	£188 15 3		£188 15 3

AUDITORS' REPORT.

We, the undersigned Auditors, have examined the accounts of the Pharmaceutical Society of Great Britain, as presented in the Financial Statements of the General Fund, the Benevolent Fund and the Orphan Fund Accounts, and find them correct. We have inspected the Deeds relating to the House Property and Ground Rents named below, and also find that there were standing to the account of the Society at the Bank of England, and in the hands of the Society's Bankers, on the 31st December, 1897, the following, viz. :—

General Fund	Freehold Ground Rents at Paddington Green, London, W., cost	£5551 5 6		
	House in Edinburgh, cost	1931 10 0		
	,, ,, Additional Building, cost	3111 4 9		
	Leasehold Premises :—Galen Place, cost	10,606 10 2		
	,, 15 and 16, Bloomsbury Square, cost	9527 5 3		
				30,727 15 8
Benevolent Fund	Two and three-quarters per cent. Consols	£6050 0 0		
	Freehold Ground Rents at Strawberry Hill, cost	£1020 12 6		
	Do. Battersea, cost	12,213 0 0		
	Do. Broomwood Park Estate, cost	7454 7 10		
	Do. West Kensington, cost	5809 2 1		
			26,497 2 5	
	St. Paul, Minneapolis and Manitoba Railway 4 per cent. Bond		100 0 0	
	Chemists' Aërated and Mineral Waters Association, Limited, fully paid-up £1 Shares		100 0 0	
				32,747 2 5
Orphan Fund	Two and three-quarters per cent. Consols			355 0 0

In addition to the above the following Securities were standing to the credit of the Society on December 31st, 1897 :—

Pereira Memorial Fund	Two and three-quarters per cent. Consols	100 0 0	
Bell Memorial Fund		2050 0 0	
Hanbury Memorial Fund		400 0 0	
Redwood Memorial Fund	Great Indian Peninsula Railway Stock		400 0 0
Hills Prize Fund	Russian Bonds		316 8 0
Manchester Pharmaceutical Association Scholarship Fund	Manchester Ship Canal Co. 4 per cent. Debentures	700 0 0	
	Two and three-quarters per cent. Consols	52 4 6	
			752 4 6
The Burroughs Scholarship	4 per cent. New Zealand Consolidated Stock		720 0 0

F. HARWOOD LESCHER,
CHARLES UMNEY,
FRANCIS YATES,
Auditors.

February 22, 1898.

the House of Lords in the London and Provincial Supply Association case, that partnership was on the same lines as a corporation, He therefore reluctantly decided against the Society, but willingly granted leave to appeal.

The issues involved being considered of great importance, especially with regard to the partnership question, an appeal was made to the Court of Queen's Bench. This came on for hearing in December last, before Mr. Justice Hawkins and Mr. Justice Channell, who concurred with the views put forward on behalf of the Society, that a master, whether he was a member of a partnership or not, is liable under the Pharmacy Act for offences committed by his servant, if there is reasonable ground for supposing that such servant was acting under the ostensible or implied authority of either of his masters. Seeing, however, that the County Court Judge had found, as a fact, that the weed killer had been sold by the assistant without any authority, and that the defendant did not intend it for sale, they dismissed the appeal with costs, but expressed the opinion that the Society had succeeded in all points of public interest.

Parliamentary. For many years successive councils have given evidence of a desire to remove certain anomalies of the Pharmacy Act, 1868, which Act has shut out from direct representation on the Council all who are registered by virtue of having passed the Minor or the Modified Examination. The Council having reason to believe that a large measure of support would be given to a proposal for amending the law in this direction, has prepared a Bill with this for its chief object. The draft Bill has been generally approved by registered persons, in fact, the only opposition from within was due to misconception, and the Council is glad to be able to record that after an amicable exchange of opinions resulting in a clearer comprehension of the aim of the proposed amendments, the opposition has been loyally abandoned. The Bill was introduced into Parliament on February 24 by the Hon. W. F. D. Smith, supported by Mr. Brodie Hoare, Dr. Farquharson, Mr. Boulnois, Mr. Thomas Shaw, Mr. Brookfield, Mr. Kearley, and Mr. Schwann, and it passed the second stage on March 7. Since that time Mr. A. Cross, M.P. for one of the divisions of Glasgow, has given notice to amend the Bill by the insertion of words which are intended to effect a repeal of the Pharmacy Act, 1868, so far as insecticides and other poisonous pest destroyers used in agriculture are concerned. The effect of the notice has been to prevent the further progress of the Bill, but the Council is hopeful of overcoming the difficulty before the end of the Session.

The influence which every Local Secretary is capable of exerting has been admirably exemplified in the case of the Pharmacy Acts Amendment Bill. The Council recognises and appreciates this loyalty and devotion to the interests of the Society.

North British Branch. The Report of the Executive of the North British Branch was presented to the Council at its May meeting. The Council has cause for congratulation in the zealous and efficient service rendered by its officers north of the Tweed.

Obituary. The deaths during the year include Dr. Julius von Sachs, Sir Richard Quain, Bart., F.R.S , and Professor G. Dragendorff, Honorary Members of the Society; Professor P. C. Plugge, Corresponding Member; T. Glaisyer, Founder and Member of the first Council); R. W. Giles and F. M. Rimmington (former members of Council); W. Bower and J. B. Mackey (former Auditors); A. H. Squire, Pope Roach, C. W. Lea, and the following local officers of the Society: W. P. Hoare (Cromer), W. Donald (Perth), W. A. Waters (Rye), C. Wheeler (Haggerston), F. R. Bell (Swaffham), Henry Bates (Oldham), and P. H. Davies (March).

PHOTO-MICROGRAPHY.

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

In the last article (*ante*, p. 326) the description of the subject of photo-micrography was divided into three sections—low, medium, and high power work. It was then endeavoured to explain the general arrangement of the limelight, condenser, object-holder, and camera, and the most suitable forms of lenses for the work were indicated. It was further explained that no microscope or microscopical objective is required for low power work, whilst I was permitted to add, through the courtesy of the proprietors of the Journal, a supplemental plate showing reproductions of photographs taken by my son and myself, which were produced by the methods described.

There were a few remarks, however, directly bearing on the subject which I might have then made, but which were purposely deferred until now, as they will be the better appreciated by those who may in the interval have been attempting to try their skill in the direction indicated. It was stated that the camera and object-holder should be firmly supported, and that to obtain the right amount of magnification the camera must be pushed up to the

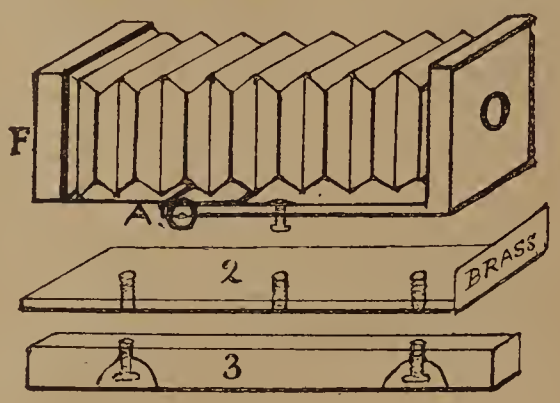


Fig. 1.

object to be photographed, or away from it, according to whether it required enlarging more or less. Those who have been making any attempt at trying this, the most primitive form of photo-micrography, will have already found such apparently simple movement of the camera is often a very troublesome matter. After having put the specimen in the centre of the ground glass, and made the light uniformly even over the whole field, they may have proceeded, as it was pointed out they should never neglect to do, to measure the image, and note by comparison with the object the amount of magnification they were obtaining. Perhaps they then found the image too large or too small. It seems now such a simple matter to shift the camera forwards or backwards, but, as a matter of fact, they most likely found it a very troublesome operation because, unless it was shifted exactly in the same axis, all the centreing of the light and the placing of the object into the middle of the plate, had to be done over and over again until the magnification was exactly what was wanted. I recognised this trouble when commencing the work some years ago, and then devised a simple form of arrangement which was so cheap and effective that I feel it may be of service to others to describe it somewhat fully. In Fig. 1 is shown my camera—roughly depicted, but clear enough, I hope, for the purpose— thoroughly extended to about 12 or 13 inches, the base-board of the camera being seen at A, the focussing screen marked F.

The dotted lines through the base-board indicate where the ordinary screw hole is placed, by which in the field the camera is attached to the tripod. Below the camera in the drawing is seen another board marked 2; it is large enough to hold the camera, the face of which fits well against the metal end marked "Brass" in the diagram. Three holes are seen in it (the board), the centre one to take the ordinary tripod head screw (shown in its place in the base-board of the camera) which fastens the board

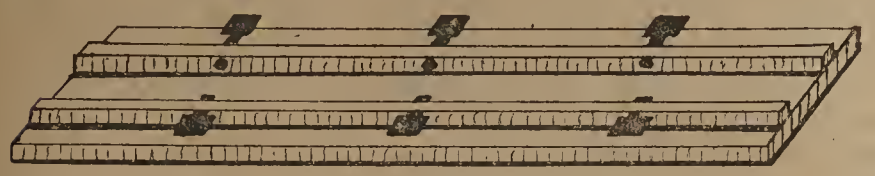


FIG. 2.

quite securely to the camera. It should be mentioned a little exactness is here required, so as to make the camera fit well home against the brass end referred to, but it repays the trouble, for if well done the camera should be quite firm and rigid, even though it is secured by this single screw. The other two holes are tapped to take the thumb screws which attach No. 3 board firmly to No. 2.

It may be convenient to give the exact dimensions of my apparatus :—

Camera length from end to end	13	inches.
Width	$5\frac{3}{4}$	,,
Board 2.—Length	$13\frac{1}{2}$	,,
Width	$5\frac{3}{4}$	,,

Five-eighths of an inch thick with a thin piece of brass at the end.

Board 3.—Length	16	inches.
Width	$3\frac{1}{2}$	,,
Thickness	2	,,

All these three pieces are seen fixed together in Fig. 3, but the camera is not shown fully extended. When all three pieces shown in Fig. 1 are firmly fixed, it is easy to see the camera will travel in the slide shown in Fig. 2. This can be made to fit piece 3 in Fig. 1 without any trouble, but the board of which it is made should be constructed of $1\frac{1}{2}$ inch stuff, and the guide rails (which are tapped

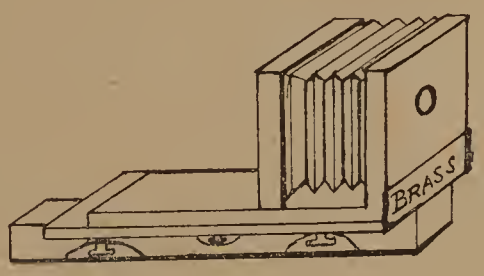


FIG. 3.

for the thick wooden screws shown black in the drawing) not cut out of too thin material. Mine were made of mahogany 1 inch wide and $1\frac{1}{2}$ inch thick. The length of the board I have found most convenient is 3 feet, and the width about 8 or 9 inches. Care should also be taken to get a well-seasoned flat piece of timber for this purpose.

It is very obvious now that if to the end of the railed board, Fig. 2, the object holder (shown at S in Fig. 1 of our last article) be firmly attached, the whole apparatus can be easily placed on an ordinary studio camera stand and clamped in position. One important convenience of this arrangement lies in the fact that a great amount of possible shake is thereby lessened, for, even if the camera, lens, or object be jarred the whole piece is thereby shaken in one mass, which does not effect the centreing of the picture or its adjustments; whereas, if the object had been separately supported apart from the camera, any touch to either would immediately have imperilled the focussing of the picture. This little point is well worthy of notice, as it is a help towards getting perfect results, saves time, and reduces failures.

In taking the photograph then, as described at the conclusion of the previous article, the camera can be slid with perfect trueness to and fro, until, in fact, the magnification required is obtained; and it has only to be clamped by the wood screws passing through the mahogany rails, for all to be complete.

Another convenient arrangement is that shown in Fig. 4, for attaching to the support S in the diagram with the previous article. It is practically something like a stage of a microscope. The slide is seen *in situ* and is capable of being moved in two

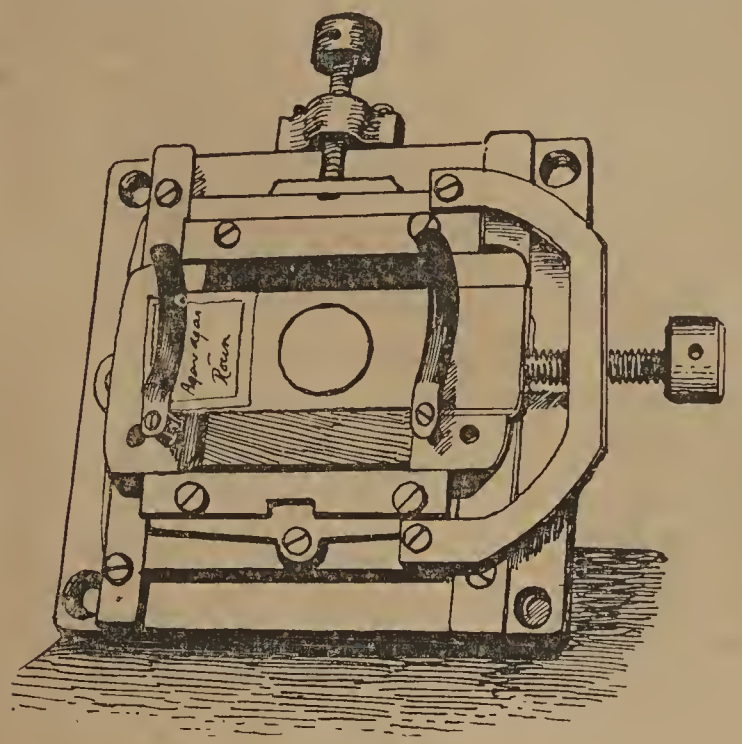


FIG. 4.

directions by the capstan-headed screws shown in the drawing. A further improvement is to have the whole made to revolve on its axis. It may seem an unnecessary extravagance to have an arrangement of this costly description for low-power work; but the comfort obtained by its use, and the time saved thereby, must be experienced to be believed.

Before quitting the manufacture of apparatus, let another board be made about two-thirds the length of Fig. 2, to place on the studio stand when required. This should have no support for the object, but should have two levelling screws, one at each end, for purposes to which we shall refer very shortly.

I have been reminded of one more application of low-power photo-micrography which has been omitted, and it is this, how to produce large pictures—say to fill a sheet of this Journal, for example—of an insect or other object, such as a specimen of botanical nature. It is obvious this can easily be done by using a 10 by 8 camera instead of a quarter-plate one; but it is an expensive method, and the same object can be attained by using the apparatus already described quite easily, without further expense. The arrangement is shown in the annexed diagram (Fig. 5), wherein it is seen the large condenser and limelight are again used, but the camera is reversed in position.

We proceed as follows :—The object, say a house fly, is obtained, mounted on a slip. Care should be exercised to get as transparent a one as possible, especially about the body, and with perfect wings; if a botanical or other specimen with plenty of contrast and not too dense. A negative on the quarter-plate (Edwards' isochromatic medium) is obtained, using either a 75 or 50 Mm. lens of the planar type, as they photograph so well in the yellow at F/16,

exposing for about 16 seconds with mixed jet. This is dried and placed in the ordinary dark slide, both shutters being drawn up, as shown in the diagram. The light will now pass through the negative first (the plane side being turned towards the condenser), and after that through the lens, which should be of about 6-inch focus, or more will not matter. There is no lens in our experience, after absolutely trying several kinds, save perhaps one of the new anastigmatic series, equal to an old-fashioned triplet by Ross or Dallmeyer, which can often be purchased second hand for a few shillings. If it can be had with rack and pinion it is all the better.

The photographer now pins on the wall a piece of paper and projects the rays on to it. Having got the picture the right size, he waits for night-time. Before doing more he must obtain an old champagne box and fit over the front a piece of red glazed calico, sold at any photographic dealer's. He must also purchase a gas burner with tap, having attached to it a piece of rubber pipe tubing of sufficient length to fit on to the gas-pipe of the apartment. A little hole in the back or bottom of the box (covered with a loose-fitting piece of red calico) is to be made, through which the gas can be ignited with a taper. He must also purchase two iron elbows about

1½ inch diameter, and having fitted one into the other thus fix one end by means of a common socket to the side of the box, that side which when the box stands on end will become the top. These allow the fumes to escape, the gas bracket being fixed to the opposite side, that side which is to be the bottom of the lamp. Night having come, he focusses the specimen carefully on a piece of paper pinned to the wall, which is then removed, having carefully marked the place. The bromide paper, upon which the enlargement is to be made, is then taken out of the packet, the light being turned out *pro tem.* A piece of deep yellow glass should now be fixed over the lens or held there by an assistant whilst the photographer turns up the limelight to see if the position is quite correct. Yellow glass will be quite enough to prevent the limelight from acting on the paper, and red we have usually found too dense. The focus had better not be touched, even though it appears to require it, for the yellow rays often seem to spoil the sharpness of the image on the screen. He now removes the yellow glass and exposes, if with Ilford Rough Rapid Paper for about three minutes at F/16 and mixed jet at full work. Development by ferrous oxalate is the cheapest, but some prefer amidol. Bromides do well with hydroquinone, the same formula as used for the plates, mixing equal parts of Sol. 1 and 2 and no extra bromide, but it is costly for large size enlargements, although the solution can be used over and over again, the strength being kept up by adding a little more of both solutions each time. We hope to be able to give an illustration shortly.

I promised before quitting "low-power work," however, to add a paragraph or two upon the subject of photographing the culture tubes of bacteriologists at about 1¼ to 2 diameters. Culture tubes are really test tubes plugged with cottonwool and occasionally paraffin wax in addition, which contain gelatin or some other cultivating medium, and which the bacteriologist either stabs down its centre, or streaks along its surface after inclining the tube at an angle of about 45° to the vertical. Each requires speaking about.

The appearance of the stabbed culture is readily imagined, but it requires some knowledge of the subject to know what the bacteriologist requires to be especially shown in the photograph of it. Sometimes he wishes features illustrated that necessitate the use of reflected light, whilst at others that which requires transmitted rays for its reproduction.

(*To be continued.*)

PHARMACEUTICAL SOCIETY.

MEETING OF THE COUNCIL.

WEDNESDAY, MAY 4, 1893.

Present:

Mr. Walter Hills, President.

Mr. G. T. W. Newsholme, Vice-President.

Messrs. Allen, Atkins, Bateson, Bottle, Carteighe, Corder, Cross, Grose, Hampson, Harrison, Johnston, Martindale, Savory, Southall, Symes, and Warren.

The minutes of the previous meeting were read and confirmed.

The Late Dr. Dragendorff.

The President announced that, since their last meeting, they had lost another of their distinguished honorary members by the death of Dr. Geo. Dragendorff, who died at Dorpat on April 7. Knowing that Professor Greenish was formerly a pupil of the late Professor Dragendorff, he had asked him one or two particulars of his career, and he thought he could not do better than read what Professor Dragendorff's former pupil had written, which was as follows:—

"Professor Dragendorff was a native of Rostock, in Meeklenberg. He was trained as a pharmacist; he took the degree of Doctor of Philosophy in Rostock in 1861, and went soon afterwards to St. Petersburg as editor of the Russian Pharmaceutical Journal and Director of the Chemical Laboratory of the Russian Pharmaceutical Society. In 1864 he was called to the Chair of Pharmacy and Directorship of the Pharmaceutical Institute of Dorpat, where he remained till 1891, when the Russification of the University forced him to resign. On leaving Russia he returned to Rostock, and was engaged in a compilation of an important work on medicinal plants when he died. His first important work—perhaps the most important of all—was the detection of poisons, which was followed by smaller contributions in the same field. He then turned his attention to the assay of drugs, and established many valuable contributions to a subject of which little at that time was known, but which from the foundations laid by Dragendorff has assumed the importance it possesses to-day. This has been mainly brought about by the work done by Dragendorff himself, and by numerous pupils working in his laboratory under his superintendence. These experiments and this work enabled him to write in 1881 his work on the "Analysis of Plants," which has been of the greatest service to all who have taken up the chemical examination of drugs. These are only the principal works he published. Innumerable smaller contributions have appeared from time to time, mostly in the Russian Pharmaceutical Journal. As a scientific man he was gifted with great acumen, quick to see the course to take, and prompt in action, imbued with a rare enthusiasm for his favourite subject, and capable of imparting that enthusiasm to his pupils. Under his directorship the Pharmaceutical Institute in Dorpat acquired a world-wide reputation, and boasted for several years of over 100 students. Dragendorff was awarded the Hanbury Gold Medal in 1885, and was an Honorary Member of the Society from 1875."

He was sure they would all regret that such a distinguished man had been called away, and would wish that their sympathy should be conveyed to the family of the deceased in their great loss.

Diplomas.

The undermentioned, being duly registered as pharmaceutical chemists, were respectively granted a diploma stamped with the seal of the Society:—

Barlow, Thomas Oldham
Black, Wm. Reynolds
Blackmore, Frank
Burnett, John
Chapman, Edgar Marsh
Coley, Jas. Wm. Ernest
Day, John Edwin
Evans, John Richard
Exelby, George Henry
Farrow, Tom
Happold, Carl
Henderson, Henry John
Hornby, Frederick Wm.
Laird, James Craigie
Matthews, Harold Evan
Morgan, Harold Marston
Nelson, William Brown
Perrédès, Pierre Elie Felix
Priestman, William
Smith, Fredk. Alfred Upsher
Swinn, Charles Gosling
Todd, Arthur Higgs

Election of Members.

Pharmaceutical Chemists.

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

Allen, Samuel Joseph; London
Barlow, Thomas Oldham; Kensington
Blackmore, F.; Weston-super-Mare
Burnett, John; Pickering
Chapman, Edgar Marsh; Scarborough
Coley, James William E.; Stroud
Day, John Edwin; Horncastle
Evans, John Richard; Llanrhaiadr
Farrow, Tom; Stokesley
Hankinson, Herbert Stanley; Ilford
Happold, Carl; Barrow-in-Furness
Hornby, Frederick W.; Bournemouth
Matthews, Harold Evan; Cirencester
Nelson, William Brown; Thorney
Perrédès, Pierre Elie Félix; Jersey
Smith, Frederick Alfred U.; London
Swinn, Charles Gosling; Manchester
Thomspon, Sidney Cooke; Rock Ferry

Election of Associates in Business.

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

Anderson, James; Edinburgh
Ault, Percy; Usk
Bristow, Ralph Pratt; High Wycombe
Cashmore, Montague; Johannesburg
Cleave, Thomas William; Ealing
Coulson, Thomas; London
Cruikshank, Alexander; Musselburgh
Day, Charles Frederick; Lewisham
Dodge, Morten; Manchester
Donald, James Jameson; Perth
Faraday, George; Saffron Walden
Fernie, James; Newport-on-Tay
Flood, Frank; Leamington
Gelling, John Alexander; Douglas
Gelling, William Clucas; Douglas
Gilchrist, Robert; Scarborough
Gordon, John Alexander; Stirling
Griffiths, Alfred; Cardiff
Haining, Edward; Sheffield
Holroyd, James; Ashton-under-Lyne
Hunter, Andrew; Edinburgh
Hurst, Richard Proudman; Gt. Grosby
Killon, Alfred Ernest; Liverpool
Lewis, David Evan; Mardy
Lloyd, John Ambrose; Liverpool
Moore, Francis Henry; London
Oliver, Arthur; Salford
Pilsbury, William; Birmingham
Pratt, Charles Andrews; Saltash
Riddell, James Hamilton; Glasgow
Roberts, William; Beaumaris
Rose, James D., jun.; Jarrow-on-Tyne
Ruff, William; Whitby
Shattock, John Bellett; Lancaster
Spencer, John Christopher; Nottingham
Steel, Cecil Thomas; Southampton
Sturrock, James N. L.; Edinburgh
Taylor, Percy William; Notting Hill
Thomson, John Henry; Singapore
Volans, John Russell; Sunderland
Wade, Thomas; Lees
Walker, William; Dundee
Wilkinson, George Henry; Wednesbury
Williamson, Frederick Arthur; Preston
Wilson, William Wood; Glasgow

Election of Associates.

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

Allen, William F.; Market Bosworth
Bailey, Edward Arthur; Boston
Baker, Thomas; Oldham
Barton, Harold; Southport
Baylis, Arthur Edward; Redditch
Biffin, Frank; Brighton
Blake, Ernest Alfred; Leighton Buzzard
Boyes, William Cotnam; Bradford
Brewer, Walter Joseph; Redhill
Brunyee, Nathaniel; Thorne
Cain, John; Douglas
Chandler, Richard Walter; Bristol
Chapman, Frank; Aylesbury
Churchill, Lionel A.: Burton-on-Trent
Clarke, John; Rotherham
Clement, William Henry; Barnstaple
Collins, Samuel Morrison; Norwood
Davies, John Osborne; Llanfyllin
Davies, William John; Pontypridd
Doig, William, Jun.; Dundee
Dolman, Thomas Tustin; Cheltenham
Doughty, Thomas Herbert; Lewisham
Duncan, Robert; Leeds
Dyson, Joshua; Brighouse
Ellis, William Frederick; London
Fawcett, Frank Dalby; Bebington
Franklin, A. Cawte; Stamford Hill
Fullerton, David Noble; Aintree
Gale, George Thomas; Barnstaple
Garnett, John Benbow; Manchester
Greatrex, Ernest J. McW.; Liverpool
Hardman, James Chevalier; Leeds
Harrison, John Duffin; Cudworth
Henshaw, William H.; Macclesfield
Hoare, Austin; Ilfracombe
Hodgson, John Edward; Scorton
Holdsworth, Joseph; Bradford
Jelly, John William; Pendleton
Johnson, Cornelius Trim; Falmouth
Jones, George Maurice; Birmingham
Jones, Thomas; Llanybyther
Jones, William Luther; Menai Bridge
Key, Harry; Birmingham
Kluge, Herman James; Swansea
Laverack, Clyve Cordukes; Malton
Lawrence, Edmund W.; Knaresboro'
Le Dain, Nicholas John F.; Jersey
Livesey, Henry Ayrton A.; Bradford
McIntosh, John William; Portsmouth
McKenzie, James; Cullen
McVitie, David William; Maryport
Manning, Henry Reginald; Modbury
Manson, John; Glasgow
Masson, Hedley George; Torquay
Middleton, Frank; Rainford
Newey, Walter; Stechford
Orme, Arthur John; Nottingham.
Percival, Thomas Henry; Walthamstow
Platt, George; Ashton-under-Lyne
Plowright, Alfred; London
Plumb, Alfred; Cambridge
Pollard, Evelyn William; Ryde
Powell, Harold; Dover
Pugh, John James Edgar; Leominster
Rayner, Alfred; Camberwell
Robbins, Robert William; Bath
Sloan, Charles Alexander; Dumfries
Speechly, Guy A.; Bishop Stortford
Stokoe, John Calvert; Sunderland
Stubbs, William Campion; Easington
Tarry, William C.; Hemel Hempstead
Tew, Arthur Wilson; Warwick.
Trunchion, Herbert Fawdon; London
Venn, Samuel Ernest M.; Devonport
Waddingham, George Albert, Batley
Walton, John; Margate
Walton, Ralph; Maidenhead
White, Gilbert; Litcham
Whitworth, Frederick W.; Nottingham
Wilkie, John Matthew; Montrose
Wrather, Thomas Edward; Bewdley

Election of Students.

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

Arnold, Stanley; Southsea
Atkinson, John Wilson; York
Baker, Cyril Henry; London
Bingham, William Arthur; Balham
Blundell, Nellie Muriel K.; Caterham
Cart, John T.; Shrewsbury
Coulthard, Abram; Silloth
Cross, Ernest Llewellyn; Shrewsbury
Cruse, Thomas Edward C.; Southsea
Davies, John; Treherbert
Francis, Aaron; Llanidloes
Gibbs, Harold Rodeir; Birmingham
Hackforth, J. E. Swithin; Leyland
Haslegrave, Edward E.; Wakefield
Hey, Frederick Cooper; York
Hills, James Stuart; London
Hines, Frank Gladstone; Ipswich
Howitt, Walter Henry; London
Kemp, Leonard John; Southsea
Kieft, Edward James; Swansea
Knowles, Fred.; Melbourne
Lewis, Edward Davies; Cardiff
Lewis, George Walter; Kidderminster
Lloyd, Edward Neville; Bridgend
McKinnell, Donald F.; Northampton
Morgan, Daniel; Llanfyrnach
Morgan, Edwin Abraham; Callington
Northey, Sydney Moore; Bodmin
Overton, Percy John S.; Liverpool
Palmer, Collis Unwin; East Molesey
Power, James; Manchester
Poxon, Alfred; Brownhills
Prosser, Thomas William; Oxford
Richards, Thomas Teverson; Ashford
Smith, Thomas Connell; Edinburgh
Snook, John Francis; London
Taylor, Samuel; Southport
Walker, John Philip; Shipley
Wardle, Arthur Hampton; Maidenhead
Wilbourne, E. W.; Hucknall Huthwaite
Williams, David John; Cardiff

Restorations to the Register.

The names of the following persons, who have severally made the required declarations and paid a fine of one guinea, were restored to the Register of Chemists and Druggists:—

Thomas Edmunds Morris, 83, Northumberland Terrace, Everton, Liverpool.
Clement Thomas Rutter, 61, Bartholomew Close, London, E.C.
Charles Henry Walker, 9, Oxford Street, Liverpool.

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

Honorary Members.

The President moved that the following be elected Honorary Members of the Society:—

Dr. Daniel John Leech, Professor of Materia Medica and Therapeutics at the Victoria University.

Dr. Wm. Ramsay, Professor of Chemistry at University College, London.

Prof. Ira Remson, Professor of Chemistry at the Johns Hopkins University, Baltimore.

In accordance with the Bye-laws, these names were selected last month, and had since then been exhibited in the Library, and he had no doubt the resolution would be cordially accepted, and it was hardly necessary to say anything of the merits of these gentlemen as they were so well known. Dr. Leech was a member of the General Medical Council, representing Victoria University, and was also an active member of the Pharmacopœia Committee, and took a great interest, not only in materia medica and therapeutics, but also in the cause of pharmaceutical education in its widest sense. Professor Ramsay was well known as one of the greatest authorities in the science of chemistry, and his name had been very prominent recently in connection with the valuable work which he had done with regard to the discovery of argon and helium, in conjunction with Lord Rayleigh. Professor Ira Remson had a world-wide reputation as a teacher of chemistry, and was, perhaps, best known in this country by his admirable text-book on Organic Chemistry.

The Vice-President seconded the motion, which was carried unanimously.

Report of the Benevolent Fund Committee.

The report of this Committee included a recommendation of grants to the amount of £81 in the following cases:—

A registered chemist and druggist (56) who was in business for some years, but is now a hopeless invalid. (Edinburgh.)

A former associate (80), who has had a grant annually for the last seven years. (Croydon.)

A former member (73) formerly in business, is very deaf and hardly capable of doing anything. (London.)

The widow (55) of an associate in business, who died in 1896. She endeavours to support herself by needlework. (Liverpool.)

The widow (73) of a chemist and druggist who has had eleven previous grants. (Birmingham.)

The widow (53) of a chemist and druggist member and subscriber, who has had two previous grants. (Morecambe.)

The widow (53) of a chemist and druggist who was dispenser at a workhouse and died in March last, leaving her without any means. (London.)

A former associate (57), in business, and subscriber, who suffers from epilepsy. (Horncastle.)

One case was deferred for further information, and one was not entertained.

The VICE-PRESIDENT, in moving the adoption of the Report, said there was nothing that need be specially referred to, except that the applications were, perhaps, more numerous than usual.

The resolution was carried.

REPORT OF THE FINANCE COMMITTEE.

The SECRETARY read the report of this Committee, which was of the usual character, and recommended sundry accounts for payment.

The PRESIDENT, in moving its adoption. said there was nothing to which special attention need be called.

The resolution was carried.

LIBRARY, MUSEUM, SCHOOL, AND HOUSE COMMITTEE.

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

	Attendance.	Total.	Highest.	Lowest.	Average.
March	Day	464	33	6	17
	Evening	144	16	1	6

Circulation of Books.	Total.	Town.	Country.	Carriage paid.
March	226	125	101	19*s.* 8*d.*

Several donations had been received (*Ph. J.*, April 23, p. 403), and the Committee had directed that the usual letters of thanks be sent to the respective donors.

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

For the Library in London :—
Pharmacopée Homœopathique Française.
Strasburger, Text-book of Botany, 1898.
British Pharmacopœia, 1898. (3 copies).
For the Library in Edinburgh :—
British Pharmacopœia, 1898. (2 copies).
Scottish Medical and Surgical Journal for 1898.

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

	Attendance.	Total	Highest.	Lowest.	Average
March	Day	727	43	13	27
	Evening	54	6	1	2

Several donations had been received (*Ph. J.*, April 30, p. 417), and the Committee directed that the usual letters of thanks be sent to the respective donors.

The SECRETARY read the report of this Committee, from which it appeared that Mr. H. A. Lee had resigned the office of Lecture Assistant.

The PRESIDENT, in putting the resolution, said a good of detail work had occupied the attention of the Committee, but there was nothing deserving of special mention, with the exception of the Annual Report, the draft of which was before the members, and which, in accordance with custom, would be considered in Committee later.—The resolution was carried.

The following report was presented :—

REPORT OF EXAMINATIONS.
April, 1898.

	Candidates.		
	Examined.	Passed.	Failed.
England and Wales :—			
Major	39	21	18
Minor	310	103	207
Scotland :—			
Major	3	1	2
Minor	145	44	101
First Examination	438	189	249

Forty-seven certificates were received in lieu of the Society's examination.

THE BRITISH PHARMACOPŒIA, 1898.

The President said he might take the opportunity of saying a word in reply to many inquiries which had been received as to the use of the new Pharmacopœia in the Minor examination. It had been decided that whilst it was of the highest importance that candidates for the Minor examination should, without delay, make themselves acquainted with the British Pharmacopœia, 1898, which was now official, their knowledge of what was special to that Pharmacopœia would not be tested by the Board of Examiners before the examination in January, 1899.

Dr. SYMES said he understood the President to say that the new Pharmacopœia was now official, and he was sure that statement would be of great interest in the country, for many chemists were feeling very uncertain about it, especially as to whether it became compulsory immediately it was published. He was not aware that any official statement had appeared whether there would be one, two, or three months' interval allowed, or whether it became official immediately on publication. This was a matter of some importance in case they were favoured with the attention of public analysts, and supplied articles in accordance with the old Pharmacopœia, when they ought to be guided by the new one. There was a general feeling that there should be some time given, and he should be glad to know if the President, the highest authority they knew of in the matter, could make any statement on the subject. He was sorry there should be so much secrecy about the matter altogether, and did not see what necessity there was for it. At the same time, he was not criticising it in any way, only asking for information for the benefit of the country members.

The PRESIDENT said he should like to give an answer to the rather rambling question which had been put, but was not in a position to give one with any authority. He found the British Pharmacopœia was published in the *London Gazette* last Friday, and that being so, technically it came into operation at once, both for prescribers and dispensers, but practically it was obvious it could not. When it actually would he could not say. He deplored equally with Dr. Symes that the law was as it was, and that apparently there was so much secrecy about this sort of thing. He should like different conditions altogether to obtain with regard to the preparation of future pharmacopœias, but it was prepared under the authority of an Act of Parliament, and neither the General Medical Council nor anyone else could make any alteration except by another Act of Parliament.

Mr. HARRISON said this question was both interesting and important. They could all understand the practical difficulty of the new Pharmacopœia coming into actual operation at once, but the great point was when would that practical difficulty be removed? Probably the new book had not been seen by nine-tenths either of chemists or medical men He thought, therefore, it would be a wise thing if some arrangement could be come to with the Medical Council by which a date might be fixed when it would be understood all round that the new Pharmacopœia should come into practice, and all prescriptions written after that date should be made up in accordance with it; and before that date the old Pharmacopœia should be followed. Otherwise he feared they might be in serious difficulties. Many alterations, some of them serious, had been made, and it would be awkward if one thing were ordered and another thing were supplied.

Dr. HAMPSON said there was no question that it was rather an anomalous position, but he was rather hopeful that the time would arrive when a greater anomaly would be removed. When the Medical Act was altered an opportunity would arise by conference with their medical friends who had taken an interest in the Pharmacopœia, for giving the Society their proper status with regard to the preparation of the Pharmacopœia. He did not know that his remarks were perfectly opportune, but he could not resist the opportunity of referring to the humiliation of the Society with regard to the Pharmacopœia. They should be on equal terms with the medical profession with regard to its preparation. The Society had occupied the position simply of servants. They had no voice in the actual selection of preparations even. The pharmaceutical chemists of this country did not want any special authority; but he thought the chemists of this country should rank with foreign countries in the compilation of their Pharmacopœia. In other countries which had a Pharmacopœia, pharmacy was more distinctly recognised.

Mr. CROSS could not help thinking that a great deal of fuss was being made about nothing. One would imagine that pharmacists, on reading the discussion which had taken place at that meeting, had come suddenly to the conclusion that there had never been a Pharmacopœia before. He remembered the last Pharmacopœia coming out, and the conditions that then obtained were pretty nearly the same as the conditions which existed at the present time. On that occasion they had no fuss about it. In due course the preparations were prescribed and properly dispensed, as they would be now. The medical men were no better acquainted with the volume than the chemists were.

The PRESIDENT said he thought the debate was entirely out of order. It was not quite the time to raise the general question, but he might just supplement the remarks he had made in answer

to Dr. Symes by saying that he believed the Pharmacopœia was really not obtainable until the 11th inst.; therefore, it was obvious that no one would be under any special disability until that time. He did not think there could be any possibillty of an agreement between the General Medical Council and the Pharmaceutical Society as to the date when the new Pharmacopœia should actually come into practical use, because the Act of Parliament already defined it. His suggestion would be that they should each endeavour to get their own medical men to indicate for a little time which Pharmacopœia they wished to be used in the preparation of their prescriptions.

Dr. SYMES said he had not raised an imaginary difficulty. He knew of two cases, one where a chemist intimated to his medical man that he should dispense every prescription according to the new Pharmacopœia, and another chemist had intimated to the medical men that he should not use the new Pharmacopœia until he found that the medical men so desired. For himself he rather favoured the latter view of not using the new Pharmacopœia until he found that medical men were doing the same.

REPORT OF THE NORTH BRITISH BRANCH.

The PRESIDENT said they had a very interesting report from the Executive of the North British Branch, which showed how careful those who represented the Society there were of its interests. He would move that the report be received and entered on the minutes.

The motion was put and unanimously carried.

The report was as follows :—

"The Executive of the North British Branch has now to submit the following report on the work of the year March, 1897, to March, 1898.

"At a meeting of Executive held on April 23, 1897, it was arranged that the Annual Election should take place on Friday June 18, 1897, and the present Executive was accordingly elected at a meeting of Members and Associates in business of the Society residing in Scotland, held on the above date.

"The Executive has held three meetings during the year. At the first meeting on June 25, 1897, Mr. James Laidlaw Ewing, Edinburgh, was elected Chairman, and Mr. William Little Currie, Glasgow, Vice-Chairman.

"The resident members, with the Chairman and Vice-Chairman, were appointed a General Purposes Committee to attend to business arising between meetings of Executive, or remitted to them by the Executive.

"A Committee was also appointed to prepare a report on the nomination of Examiners.

"The General Purposes Committee has met six times and has had charge of the Evening Meetings, and of the important and extensive alterations connected with the rearrangement of the Society's House, consequent on the transference of examination work to the new premises and the adjustment of the older portion of the House for Museum, Library and Office purposes.

"The Committee for nomination of Examiners met twice and reported to the Executive on November 26, 1897, when the following were nominated for election by the Council as the Board of Examiners for Scotland for 1898 :—Professor Isaac Bayley Balfour, Edinburgh; Professor John Gibson, Edinburgh; Alexander Davidson, Montrose; James Laidlaw Ewing, Edinburgh; James Jack, Arbroath; George Lunan, Edinburgh; Thomas Maben, Hawick; and John Nesbit, Portobello.

"The financial statement for the year ending December, 1897, showing a total expenditure of £1489 6s. 2d., as compared with a total of £1533 10s. 11d., or deducting exceptional and ordinary expenditure, of £1401 7s. 7d. for the previous year, has already been forwarded to the Council. There is, therefore, an apparent increase of £87 8s. 7d. There is an increase of £87 18s. 9d. under the heading of furnishing and repairs, due to exceptional expenditure for fittings and electric light installation for new Library. Thus this item alone accounts for the total increase for the year. There is an increase of £6 14s. 9d. in the item of cleaning and service, due to special service in connection with alterations. There is also an increase in the item of fuel, light, and water, which may be expected to increase still further, on account of the extension of the premises and the larger number of meetings. The examination expenses amount to £1007 7s. 11d. as compared with £1151 18s. 1d. last year—a decrease of £144 10s. 2d.

"The following particulars indicate that the departments connected with the Branch continue in a satisfactory state :—

"THE EXAMINATIONS.—The number of candidates continues large, though not quite so large as last year.

"During the year 9 Major candidates were examined, of whom 1 passed and 8 failed; and 548 Minor candidates were examined, of whom 181 passed and 367 failed.

"There has been a marked decrease in the number of Major candidates, 9 as compared with 16, and the fact that only 1 candidate has passed at Edinburgh during the year cannot be regarded as satisfactory. The total number examined is so small as to render a percentage statement of passes misleading, but it is significant that the figures for three years are 44·4, 25, and 11 per cent. respectively.

"The number of Minor candidates shows a decrease, 548 as compared with 623. Again, the results indicate a further slight decrease in percentage of passes, 33 per cent. as compared with 33·87 per cent. last year and 40 per cent. in the previous year. The Executive have observed with much interest the valuable and exhaustive report on this examination submitted to the Council by the Board of Examiners for Scotland at the meeting of Council in February last. The particulars there given, the Executive believe, throw a great deal of light on the causes of failure, and a careful study of the report on the part of students as well as those engaged in the training of them, would, the Executive feel sure, be productive of very beneficial results. The lighting of the Examination Hall has been much improved by the introduction of a handsome electric light installation. The ventilation of the laboratories is still engaging the attention of the Executive, some difficulty having been encountered in deciding on a plan which would be at once efficient and reasonably economical.

"EVENING MEETINGS.—The Executive determined to hold these meetings on Wednesdays instead of Fridays, and it was arranged to have a meeting on the third Wednesday of November, December, January, February, March, and April. The opening address was given by Professor James Walker, D.Sc. of University College, Dundee, and the whole six meetings were successfully carried through. With the exception of the opening meeting, the attendance was not so large as it might have been, and for this and other reasons it is not yet quite clear that the change from Friday to Wednesday has been justified. The Executive has to express thanks to those gentlemen who, by contributing papers or otherwise, assisted in making the meetings a success.

"LIBRARY.—The Library continues to grow, and a number of valuable books have been added during the year. The large room on the first floor, formerly occupied as a Board Room, has now been handsomely fitted up, and supplied with electric light, as a new Library and Reading Room. It is admirably adapted for this purpose and a very great improvement on the former arrangement. The number of volumes circulated during the year is seen from the following statement :—

		To provincial readers.
April, 1896, to March, 1897.....	1242	185
" 1897 " " 1898.....	1086	212
Decrease	156	Increase 27

This shows a decrease of 156 in the total circulation, which may be accounted for partly by the fact that the Library was in disorder for some time during the alterations and removal to the new room, and partly by the fact that it is becoming more the custom to read volumes in the now comfortable Reading Room instead of taking them away. There is, again, a satisfactory increase of 27 volumes circulated to readers outside Edinburgh and Leith, indicating an extended usefulness of the Library for provincial readers.

"The Library and Reading Room continue to be largely utilised for purposes of reference, and there are not wanting indications that the greatly improved accommodation is likely to lead to a considerable increase in this department of its useful ness.

"The Executive has to record thanks to those who have given donations of books during the year.

"MUSEUM.—The removal of the Library to the first floor has enabled the Executive to devote the whole of the ground floor to Museum purposes. It has been found easy to transform the former book-cases into very suitable cases for museum specimens, and an electric light intallation has also been introduced. The Executive were fortunately successful in arranging with the Royal College of Physicians so that they generously made the Society a gift of their large centre floor-case, containing the Martius' collection, and this very handsome case has now been fitted up in the Society's Museum. The large collection of specimens is at present being arranged, but some time must necessarily elapse before this work can be completed.

"THE ATTENDANCE.—The Library and Museum continue to attract large numbers of visitors. The Executive feel that some apology is due to many visitors, who were put to some unavoidable inconvenience during the progress of the alterations that have been going on for several months. The Society's House has come to be recognised as the headquarters for all organisations in which pharmacists, as such, are interested, and there has been a considerable increase in the number of meetings held during the year.

"HOUSE.—The Society's premises in Edinburgh are in thorough repair and good order. During the fitting up of the electric light in the Examination Hall in December it was discovered that damp was making its appearance, in a rather alarming way, in the west wall of the Hall. A thorough examination, under the supervision of Mr. Hippolyte J. Blanc, architect, revealed the fact that the water was flowing from a spring on the west side of the mutual wall between the Society's property and that of the neighbouring proprietor. Immediate and very ample means were at once taken to effectually cure the evil, and the Executive are now satisfied that this has been done, and that no further trouble from this source need be anticipated. This has involved an unexpected expenditure, which may amount to £25 or £30, but it is fortunate that the damp was discovered so soon, as otherwise it would almost certainly have involved a very much more serious expenditure. The Examination Hall and Laboratories have been thoroughly cleaned and painted. Very extensive alterations and improvements, which have been in abeyance for some time, have been carried out during the year to readjust the Society's House for the various departments. The alterations affecting the Library and Museum have been already referred to. The former Laboratory and Examiners' Cloak Room and Lavatory have been entirely cleared out, and fitted as a Board Room and Office, and supplied with electric light. These rooms have also been put in telephonic communication with the Examination Hall and Laboratories. The larger room is admirably adapted for meetings of Executive and other business purposes, while the smaller room has been fitted up as a private office for the Assistant Secretary. The work is practically completed, but the accounts have not yet been made up, and the cost cannot, therefore, be accurately determined. But the whole estimates have been very fully considered, and the carrying out of the work has been carefully supervised so as to secure the utmost economy consistent with thoroughness and efficiency.

"*36, York Place, Edinburgh, April 29, 1898.*" "J. LAIDLAW EWING, *Chairman.*"

CORRESPONDENCE.

The PRESIDENT said a letter had been received from Messrs. Matthews and Upsher Smith, thanking the Council for the privilege extended to them of working in the Research Laboratory during the summer term.

JURY SERVICE.

The PRESIDENT said the Secretary had received a letter from the Hon. Secretary of the Edinburgh and District Trade Association, communicating a resolution passed at a meeting of that body on April 26 :—

> That it be referred to the Committee to communicate with the Council of the Pharmaceutical Society as to the best means of obtaining exemption of chemists from jury service, and to take action in whatever way was thought best to obtain this end.

Attention was drawn in the letter to a precedent for including an exemption clause in the next Pharmacy Bill, in the fact that dentists did so in their Act in 1878. He would suggest that the letter be referred to the Law and Parliamentary Committee.

Dr. SYMES thought a good point was made in referring to what had been accomplished by the dentists, as they were often told that exemption from jury service could only be dealt with in a Jury Bill.

Mr. CARTEIGHE said Dr. Symes and the gentlemen at the meeting in Edinburgh evidently did not remember the discussions which had taken place since the Dentists Bill passed. He had pointed out scores of times that the Government would probably refuse to agree to any Pharmacy Bill if it contained a clause referring to jury service. The whole question of jury service had been under consideration, and it was the feeling that exemptions should not be increased, but rather the reverse, and the Privy Council, therefore, would not give their sanction to any Bill which included such a clause. If the Society ever got so strong as to be able to dictate to the House of Commons, anything could be done, no doubt, but at present it was not in a position to dispense with the support of the department (the Privy Council) which was supposed to control its operations in the interests of the public. He had every sympathy with chemists and druggists in this matter. They were as much entitled to exemption as pharmaceutical chemists, lawyers, or doctors, but he had been told more than once in the lobby of the House of Commons that chemists could not be exempted because they were the most intelligent members of the community. He was convinced, however, that these exemptions would come to an end. No recent effort to extend them had met with any encouragement, and the permanent officers of the State were distinctly in favour of sweeping away such exemptions, so that the burden of fulfilling this duty should be more evenly distributed. He was quite satisfied that whichever party were in power the result would be the same, and that no Government would consent to exempt intelligent men from this important public duty.

THE ANNUAL REPORT.

The Council went into Committee to consider the draft annual report.

On resuming, the report, as verbally amended, was adopted, and ordered to be printed (see p. 429).

GENERAL PURPOSES.

The Council then went into Committee to consider the report of the General Purposes Committee dealing with legal matters.

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

NORTH BRITISH BRANCH.

A meeting of the Executive of the North British Branch was held in the Society's House, 36, York Place, Edinburgh, on Friday, April 29, 1898, at 11 a.m. Mr. W. L. CURRIE in the Chair. The Executive met for the first time in the new Board Room. Present: Messrs. Bowman, Coull, Currie, Fisher, Henry, Jchnston, Kerr, Lunan, McAdam, Mitchell, Russell, Storrar, and Strachan. Apologies for absence were received from Messrs. Ewing, Hardie, McLaren, Moir, and Paterson. The minutes of last meeting were read and approved.

The ASSISTANT SECRETARY read the report of the

General Purposes Committee,

from which it appeared that various estimates had been accepted, and the work all carried out in a thoroughly satisfactory manner. The report also mentioned that during the fitting up of the elcctric light in the Examination Hall, it was discovered that there were serious indications of damp, which was traced to a spring. Very stringent measures had been immediately adopted, and it was believed with entire success to check the evil. The Committee also reported that the following proposal of Mr. Russell, which had been remitted by the Executive, had been considered at one of their meetings.

> That this Executive of the North British Branch of the Pharmaceutical Society of Great Britain resolve itself into a Committee to consider the constitution and objects of the Branch and the functions of the Executive, with a view towards increasing their usefulness, also to consider the question of pharmacy law administration in Scotland.

The CHAIRMAN had ruled that the proposal was out of order, inasmuch as it dealt with matters outside the scope of the functions of the Executive, and consequently no further action could be taken regarding it. The Committee had also considered the proposal remitted to them as to framing standing orders. The Chairman had, at the request of the Committee, consulted the President when in London. After full consideration, and in view of the fact that the Executive really acted under the instructions of the Council, to whose control it was subject in all its procedure, it was considered best to adhere to the compromise which was unanimously agreed to on both sides when the Executive was instituted by a resolution of the Council in 1886. The Committee therefore recommended to the Executive that no further action should be taken. With regard to the remit anent nomination of local secretaries, the Committee was of opinion that it would be an advantage to appoint local secretaries for a period of, say, five years instead of annually as at present. And, further, that it might be an advantage if the Council would select and appoint local secretaries directly without the formality of a local nomination. This, of course, would leave it open to local associations or other parties to make a recommendation to the Council if they so desired. The Committee regretted that pharmacists in so many districts manifested so much apathy in regard to this matter. The service that could be rendered by local secretaries was of the highest value, and this had been illustrated in many conspicuous examples, which deserved the grateful recognition of the Executive. The Committee felt that the power of the Society for ready and effective public action depended largely on the maintenance of a fully manned and thoroughly efficient staff of local secretaries. The Committee also submitted a suggestion that there might be a meeting of Executive on the same date as the annual meeting for the election of the Executive.

On the motion of Mr. MCADAM, seconded by Mr. STRACHAN, the report was adopted.

The Executive then went into Committee to consider the annual report to the Council.

On resuming, the CHAIRMAN said he thought they could congratulate themselves on the admirable re-arrangement of the Society's House, which had now been nearly completed. It reflected great credit on Mr. Ewing, who, he regretted, was not present to receive their expression of thanks. It was mainly due to him and to the confidence placed in him by the Council that this excellent result had been attained.

On the motion of Mr. FISHER, seconded by Mr. JOHNSTON, the report was approved of and ordered to be forwarded to the Council.

It was moved by Mr. BOWMAN, seconded by Mr. LUNAN, and agreed—

> That the next election of Executive take place on Friday, June 17, 1898, and that the Chairman and Vice-Chairman act as scrutineers of the voting papers, with power to add to their number.

On the motion of Mr. RUSSELL, seconded by Mr. COULL, it was agreed that the Executive should meet on Friday, June 17, 1898, at 10.30 a.m.

Mr. HENRY said that in view of the present position of pharmaceutical politics he had deemed it advisable to postpone consideration of the motion of which he gave notice at last meeting, and he now begged leave to withdraw it.

This was agreed to, and the meeting closed.

FRAENKEL'S NARCOTIC.—Tatschmer chronicles having obtained very favourable results with the combination of morphia atropine chloral chloroform invented twenty-two ycars ago by Fraenkel, and has yielded surprisingly favourable results in almost all departments of surgery. The injection is composed of morphine hydrochloride, 15 centigrammes; atropine sulphate, 15 milligrammes; chloral hydrate, 25 centigrammes; distilled water, 25 grammes. 1 C.c. of this liquid is injected and the coma completed by the use of Billroth's chloroform mixture (chloroform, 3; ether and alcohol āā, 1) or with pure ether. The author states that with the exception of alcoholic patients, the narcotic was taken in every instance very quietly, the narco-excitement of ordinary narcotics being entirely absent. Vomiting resulted only in very few cases, although several amputations were carried out, and some of the patients were operated on when the stomach was full. The greatest advantage was noticeable in the universal well-being of the patients after the operation, freedom from cerebral excitement, or depression, or loss of appetite.—*Journ. f. Zahnheil*, xii.

PHARMACEUTICAL JOURNAL.

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LONDON: SATURDAY, MAY 7, 1898.

THE COUNCIL MEETING.

Before entering upon the regular business, the President referred to the death of Dr. Georg Dragendorff, and mentioned some particulars relating to his scientific career, which had been furnished by Professor Greenish, who was formerly one of his pupils at Dorpat.

The additions to the Society comprised 18 members, 126 associates, and 41 students.

The President then moved the election, as honorary members of the Society, of Dr. Daniel John Leech, Professor of Materia Medica and Therapeutics at Owens College, Victoria University; Dr. William Ramsay, Professor of Chemistry at University College, London; and Dr. Ira Remsen, Professor of Chemistry at Johns Hopkins University, Baltimore, giving a brief *résumé* of their several contributions to the advancement of science. The motion was seconded by the Vice-President and carried unanimously.

On the recommendation of the Benevolent Fund Committee eight grants amounting in all to eighty-one pounds were ordered to be paid.

The report of the Finance Committee was adopted without comment as of the usual character.

The report of the Library, Museum, School, and House Committee was also adopted without comment.

After the report on the examinations had been read, the President said he would take that opportunity of replying to numerous inquiries as to the use of the new Pharmacopœia in the Minor examination, by stating that candidates would not be tested as to their acquaintance with it before the examinations to be held in January, 1899. At the same time he remarked that it was, nevertheless, of the highest importance that candidates should without delay make themselves familiar with the new Pharmacopœia that has now become official.

Dr. Symes, referring to the feeling of uncertainty prevailing among chemists as to when the new Pharmacopœia became compulsory, said that he was not aware of any official statement on this point, though it was a matter of considerable importance to chemists. He, therefore, wished to know whether the President could give any information as to whether the Pharmacopœia became official immediately it was published, or whether some time would be given before it did so. He also expressed regret that there has been so much secrecy about the production of the Pharmacopœia altogether. Though he thought such secrecy was unnecessary, he did not speak critically, but only with the view of obtaining information for the benefit of country members.

The President, in reply, said he should have been glad to give an answer to the question, but was not in a position to do so with any authority. Judging from the fact that the publication of the British Pharmacopœia was announced in the *London Gazette* last Friday, he inferred that technically the Pharmacopœia came into operation at once, both for prescribers and dispensers; but it was obvious that it could not do so practically. He agreed with Dr. Symes in deploring that the law created this difficulty, and that there was so much secrecy about a matter of great public interest. He should like very different conditions to prevail in the preparation of future Pharmacopœias, but under existing conditions the work had been produced under the authority of an Act of Parliament, and neither the General Medical Council nor any other body could alter the procedure without an amendment of the law.

Mr. Harrison suggested that some arrangement might be made by which the unavoidable practical difficulty of a new Pharmacopœia coming into operation could be mitigated for general convenience, either by fixing a future date when it should be understood that the new Pharmacopœia would be in force for the making up of prescriptions, or by some other plan for avoiding the serious difficulties which might arise in consequence of differences between the preparations of the new and the old pharmacopœias.

Mr. Hampson recognised the anomalous position, and drew attention to a still greater anomaly which he hoped would be removed in future. He trusted that when the Medical Act was amended opportunity would arise for giving the Pharmaceutical Society a proper status in regard to the revision of the Pharmacopœia. He could not resist the opportunity of referring to the humiliating position of the Society in that respect, and of expressing the opinion that pharmaceutical chemists should be in a position of equality with the medical profession instead of simply servants. He thought the pharmaceutical chemists of this country should have the same rank that they held in other countries.

Mr. Cross objected to the apparent exaggeration of the difficulties attending the substitution of a revised Pharmacopœia for the one which had been in force. On the last occasion the conditions were nearly the same as at present, but in due course the new preparations were prescribed and dispensed properly, as he thought they would be now.

The President was of opinion that the whole discussion had been entirely out of order, and it was not the time to raise the general question as to the revision of the Pharmacopœia. In further reply to Dr. Symes, he mentioned that the Pharmacopœia would not be obtainable until the 11th inst., and no one would be under any special disability until then, and he suggested that meanwhile they should each endeavour to get medical men to indicate which Pharmacopœia they wished to be followed in dealing with their prescriptions.

The annual report of the North British Branch was presented and ordered to be entered on the minutes. It is printed in full at page 437.

A letter was read from Messrs. Matthews and Upsher Smith, thanking the Council for permission to continue work in the Research Laboratory, and another from the Secretary of the Edinburgh District Trade Association, enclosing a resolution passed at a meeting of that body in reference to

exemption of chemists from jury service (see p. 437), and stating that, in seconding the resolution, he had drawn attention to a clause in the Dentists Act, 1878, as constituting a precedent for inserting a similar exemption clause in the next Pharmacy Act. On the suggestion of the President, the letter and resolution were referred to the Law and Parliamentary Committee.

Dr. Symes remarked that the exemption from jury service obtained by dentists might be useful, since chemists had been told hitherto that this was a matter which could only be dealt with in a Juries Bill.

Mr. Carteighe reminded Dr. Symes that he and the members of the Edinburgh Association had overlooked the discussions of the subject since the Dentists Act was passed, and the fact that the Government has for many years refused to agree to any Pharmacy Bill containing a clause referring to jury service. The feeling was that these exemptions should not be increased, and the Privy Council would not sanction a Bill in which such a clause was included. Though he sympathised with chemists and druggists in this respect and thought they were as much entitled to exemption as pharmaceutical chemists, lawyers, or doctors, he was convinced that there was no prospect of exemption from jury service being extended, but rather the contrary. No doubt if the Society ever became so strong as to be able to influence the House of Commons anything might be done, but at present it was not in a position to dispense with the support of the Government department which controlled its operations in the interest of the public.

The annual report of the Council was considered and ordered to be printed (see page 429).

After considering the report of the General Purposes Committee dealing with legal matters, special resolutions were passed authorising proceedings to be taken in several cases of alleged infringement of the Pharmacy Acts.

COMPANIES ACTS AMENDMENT BILL.

Mr. Faithfull Begg (Glasgow St. Rollox) has at last given to the world his Companies Acts Amendment Bill, which was ordered to be printed as far back as Feb. 11. It has the support of Sir John Lubbock, Mr. Gordon (Elgin and Nairn), Mr. Hedderwick (Wick Burghs), and Mr. Marks (Tower Hamlets, St. George's), and is chiefly directed to protect investors from the allotment fraud which is now so common a cause of loss. To prevent a company going to allotment on insufficient subscription, the Bill proposes that the directors shall, in the prospectus, state the minimum amount on which they intend to allot. If, therefore, investors care to subscribe to a doubtful concern, Mr. Begg's measure will at any rate enable them to do so with their eyes open. In the event of irregular allotment, the director is to be made liable for the loss sustained by the company and the allottee. Provision is made for a number of returns with the object of making the true position of companies easily ascertainable by the investing public. The Bill also deals with the vexed question of honesty in prospectuses and balance sheets, and plunges into troubled waters by establishing a public register of directors. As a whole the Bill is nothing like so thorough a measure as the Board of Trade Bill now in Select Committee of the House of Lords, and though good as far as it goes, it can only be regarded as an attempt to patch up a few of the evils in a notoriously rotten system. Mr Begg will no doubt be as surprised as we shall if the Bill gets beyond a second reading.

ANNOTATIONS.

The British Pharmacopœia, 1898, was formally gazetted on Friday, April 29, notice being given, in the London, Edinburgh, and Dublin gazettes, "that the British Pharmacopœia, having been revised, has been re-published under the direction and by the authority of the General Council of Medical Education and Registration of the United Kingdom, and that the same has been printed and published by Messrs. Spottiswoode and Company, of 54, Gracechurch Street, in the City of London." But we understand that the publishers have, so far, declined to supply copies to applicants and it is doubtful if any will be available until next week. This is decidedly inconvenient to pharmacists who are anxious to place themselves in a position to execute orders for the new and altered preparations, but the inconvenience has been minimised by the publication, in the *Pharmaceutical Journal*, of full working details of all the formulæ and processes, and judging from the number of copies of the reprinted synopsis that have been applied for and distributed, there cannot be many chemists and druggists in a position to say they are, as yet, unable to make the preparations. The third edition of the reprinted synopsis is now nearly exhausted, and further applications for copies should be sent to the Publishers, 5, Serle Street, Lincoln's Inn, W.C., without delay.

The Question of the Authority of the 1898 Pharmacopœia has been raised, and, in this connection, it is noteworthy that the leading wholesale firms have notified their customers that from Monday last, May 2, all B.P. preparations ordered from them would be supplied in accordance with the formulæ of the new Pharmacopœia, unless the orders specified otherwise. There would appear to be no great objection to this course being pursued, so long as there is unanimity in the matter, but it is not altogether obvious that dispensers are bound as yet to adopt the new work as their sole standard and guide for medicinal preparations. The legal position of new editions of the British Pharmacopœia is sadly lacking in definiteness, and the officials of the General Medical Council are careful not to commit themselves in an attempt to define that position. All that was done by the Medical Act of 1858 was to empower the then newly-created General Medical Council to publish a book to be called the "British Pharmacopœia," and to authorise that body to alter, amend, and re-publish that work as often as it should deem necessary. The Act of 1862, again, whilst recapitulating the provisions of the previous Act, did no more than authorise the substitution of the British Pharmacopœia for all kindred works previously published in the United Kingdom. Notice in the London, Edinburgh, and Dublin Gazettes was to be deemed sufficient evidence of the publication of the Pharmacopœia, but nothing was stated with regard to re-publication, and no powers were granted to make the work in any way binding on anyone as a standard.

The Actual Position, of course, is that the British Pharmacopœia is not a legal standard except for the compounding of medicines described in that work. The Pharmacy Act, 1868, makes it an offence, punishable by a fine, for any person to "compound any medicines of the British Pharmacopœia, except according to the formularies of the said Pharmacopœia." As regards prosecutions under the Sale of Food and Drugs Acts, they have been successful when it has been proved that the article required by the purchaser, but not supplied by the seller, was asked for by a name given as a synonym in the British Pharmacopœia. Supposing, however, a case were brought against a registered chemist during the next few weeks for selling tincture

of myrrh not in accordance with the requirements of the British Pharmacopœia, and it were argued that he ought to be convicted because he had supplied the 1885 preparation, and not that of the 1898 Pharmacopœia, the case would almost certainly be dismissed, because it could not be proved that it was yet customary to supply tincture of myrrh containing four ounces of myrrh to the pint, instead of two ounces and a half. For it may fairly be assumed that the Pharmacopœia can only be accepted as a standard in respect of the sale of medicines when it accords with what is customary throughout the country. When the articles mentioned in its pages are sold for other than medicinal purposes it is not a standard for legal purposes. Accordingly, before the 1898 Pharmacopœia is entitled to rank as a standard for ordinary trade purposes, its formulæ must become the customary ones; and for compounding purposes, the intentions of the prescriber must supply the chief clue to what ought to be supplied. For the rest, the chemist must freely exercise his common sense, whilst it is greatly to be desired that uniformity in practice should prevail.

As to Examination Purposes, it will be observed (see p. 436) that a decision has been arrived at postponing a compulsory knowledge of the new Pharmacopœia on the part of Minor candidates, until January next. Eight clear months are, therefore, available in which the differences between the new and old Pharmacopœias may be mastered by candidates, and that period ought to prove more than sufficient to do the work thoroughly. It is satisfactory to be able to record this concession, which places candidates in a position to know definitely when they will be required to show an acquaintance with the pages of the new medicine book, but as we have already had occasion to point out, it will be far from a disadvantage if candidates entering for examination at an earlier date than January, 1899, are able to show that they know something about the contents of the work. Examiners are sometimes charged with asking questions outside the syllabus of some given subject, but we doubt whether any candidate has ever suffered from inability to answer such a question, whilst ability to give a satisfactory answer is certain to be amply rewarded and may even be regarded as sufficient to compensate for deficiency in what candidates quite understand they ought to know.

The Annual Dinner of the Pharmaceutical Society will be held on Tuesday, May 17, and persons intending to be present should communicate with the Hon. Secretary, Mr. Richard Bremridge, not later than Saturday next, the 14th inst., in order that the necessary arrangements may be made. As an additional attraction it may be mentioned that the Dinner Committee has secured the services of the Calliope Trio (ladies) for the musical entertainment of the guests after dinner. The inclusive price of the tickets is one guinea each, and friends who wish to be seated together at the dinner table should not neglect to notify that fact promptly.

The Edinburgh District Chemists' Trade Association has resolved to institute a prize scheme for answers to questions bearing on the legal and commercial aspects of Pharmacy. Two prizes will be given this year, viz., a First Prize of £2 2*s*. 0*d*. and a Second Prize of £1 1*s*. 0*d*. The competition is open to all assistants and apprentices engaged in the practice of pharmacy within a distance of about thirty miles from Edinburgh. The questions are:—1. What does the law require in regard to the storage and sale of Benzol? 2. What are the regulations as to the retail sale of Methylated Spirit? 3. State particularly what constitutes a medicated wine of ginger, coca, pepsin or quinine, such as may be sold without a licence? 4. You receive two orders for Arsenic from two farmers, one for seven pounds and the other for twelve pounds. How would you execute these? 5. What regulations govern the use of stills by chemists? 6. What is your opinion of the liability, or otherwise, to Medicine Stamp Duty of the following label? Further, if you consider it "liable," in what respects is it so, and if you think it "not liable" what alteration would make it "liable"? The information required may be derived from any source, and the answers must be sent to Mr. Claude F. Henry, 1, Brandon Terrace, Edinburgh, the Hon. Secretary. The idea of the competition is a capital one, and much benefit from increase of knowledge will accrue to all who attempt to answer the questions.

A Kekulé Memorial has been proposed and a circular issued on the subject, in which it is pointed out that the death of August Kekulé two years ago terminated a career rich in scientific achievement, as in him was lost an investigator who has exerted a profound influence on the development of chemistry. The theory of valency and of the linking of atoms, and present views as to the structure of carbon compounds, have acquired their definite form and clearness by the labours of Kekulé, his theory of benzene derivatives in particular having given the most powerful impulse to investigation in the domain of pure chemistry; while no scientific theory has done more to promote the development of chemistry as a branch of industry. But while Kekulé is eminent by his scientific achievements, he is not less so by reason of the effects produced by his teaching. The publication of his 'Lehrbuch der Organischen Chemie' is claimed to mark an epoch in the history of chemistry, as that treatise has done more to familiarise chemists with modern views than any other work of the kind. It is proposed that the memorial should take the form of a statue in bronze of the founder of structural chemistry, which would fitly be placed in front of the Chemical Institute at Bonn, where for thirty years he lived, taught, and worked. Subscriptions should be forwarded to Dr. Hugo Müller, 13, Park Square East, Regent's Park, London, N.W., who will transmit them to the Central Committee at Bonn.

The Proprietary Medicine Question and its solution have occupied the attention of Dr. C. C. Fite, of New York, with the result that he arrives at the sage conclusion that "the farther the Pharmacopœia gets away with the physician's needs, the farther the physician gets away from the Pharmacopœia." But this self-evident remark helps to solve no problem. What is required is to convince medical practitioners that there is a work worth consulting in the national Pharmacopœia, and that they may do better to refer to it rather than to the lists of wholesale makers of proprietary medicines. As things are, the young practitioner gets no real training in pharmacy or prescribing, he is hardly cognisant of the existence of the Pharmacopœia, and has no opportunity of becoming acquainted with its object of supplying a uniform standard for prescribing and dispensing. Hospital pharmacopœias are much to blame for this, and their total abolition would be an unmixed advantage for everyone concerned.

Glycerinated Calf Vaccine is increasing in favour, and in a recent number of the *Lancet* a suggestive report is published on results obtained by its use, Mr. Thomas Bond, surgeon to the Metropolitan Police, having submitted for inspection a statement showing the failures experienced by him in his weekly use of glycerinated calf lymph during the whole of the year 1897. An analysis that is quoted, shows that glycerinated calf vaccine has been produced by the Association for the Supply of Pure Vaccine Lymph, which will remain equally active throughout the whole year, and is not injuriously affected by the heat.

NOTICES OF BOOKS.

'THE BRITISH PHARMACOPŒIA (1898) FORMULÆ AND PROCESSES —ALTERATIONS, ADDITIONS, AND OMISSIONS' (London : *Pharmaceutical Journal* Office, 5, Serle Street, Lincoln's Inn, W.C. Price 4*d.*) is exactly what its name implies, a complete account, with full working details, of all the changes in the formulæ and processes of the new B.P. It also contains complete instructions for preparing diluted alcohol of the various official strengths from old and new rectified spirit. The first edition of the book was sold out the day of publication, a second edition was gone a few days later, and a third edition will probably be exhausted before this note meets the eye of our readers. The new Pharmacopœia was gazetted on Friday last, and its formulæ and processes are now held to be official, but copies of the B.P. 1898, may not be available before May 12, or later. Pharmacists, therefore, all over the country, are making the new and altered preparations in accordance with the very complete instructions given in this synopsis reprinted from the Journal, and find no difficulty in so doing. Leading wholesale firms are doing the same, and lecturers on pharmacy are placing copies of the synopsis in the hands of their students. As pointed out by the Secretary of the B.P. Conference last week (see p. 428), the working details of the standardisation processes and tests for standardised preparations have not yet been published anywhere except in the *Pharmaceutical Journal*, and in the synopsis to which attention is here directed. Nor has full information been published elsewhere regarding the dilution of both the old and new rectified spirits to the various weaker spirits ordered in the new Pharmacopœia.

THE 'PRACTICE OF PHARMACY,' by Joseph P. Remington (London : J. B. Lippincott Company, 6, Henrietta Street, Covent Garden, 1898), is the most important work on the subject of which it treats in the United States, and nothing approaching it in size or thoroughness has ever been attempted in this country. The third edition of the book was published in 1893, and commented upon shortly afterwards in these pages, but the continued demand for copies rendered necessary the publication of a reprint of that edition early in the present year. Altogether the book contains 1497 pages, of which 63 are devoted to the very comprehensive index, 18 to a glossary of uncommon names that occur at times in pharmacy, 110 to a reprint of the 'National Formulary,' 6 to formulæ of preparations of the U.S.P. 1880, omitted from the U.S.P. 1890, and 29 to a formulary of unofficial preparations collected with the view of saving the labour and time of the pharmacist when, as frequently happens, he is suddenly called upon to supply some unusual remedy. The introduction treats of pharmacopœias and dispensatories, and part I. contains 20 chapters on metrology and the various operations resorted to by pharmacists in the practice of their art—such as distillation, solution, filtration, crystallisation, extraction, percolation, and many others. Part II. deals with official pharmacy, in 11 chapters; part III. with inorganic substances used in medicine —17 chapters; part IV. with organic substances—14 chapters; and part V. with magistral pharmacy—5 chapters. Each chapter is concluded with a list of questions, complete answers to which will constitute a fairly exhaustive summary of the chapter, and it would be difficult to mention any point in connection with the practice of pharmacy which is not considered more or less fully in the book. In fact, the work is a library in itself for pharmacists and their pupils, and though based on the U.S. Pharmacopœia, is yet of great value as a work of reference for British pharmacists.

THE 'ANNOTATIONS ON THE BRITISH PHARMACOPŒIA OF 1898,' by Thomas Chase (Birmingham : 312, Broad Street. Price 1*s.*), form a dainty little book of forty-eight pages, which the author has compiled for distribution amongst his medical friends in Birmingham and the Midlands. The notes are more brief than those in the *Pharmaceutical Journal* Synopsis, which numerous chemists are utilising for a similar purpose, and bear evidence of being based on the Journal summary. At the end of the book Mr. Chase gives a posological synopsis of the new B.P., together with lists of additions, omissions, and substances the names of which have been altered. There are also a number of blank pages for notes, and the medical men who chance to be recipients of this booklet should be very grateful to the compiler.

'PASTEUR,' by Dr. and Mrs. Percy Frankland (London : Cassell and Co., Ltd. Price 3*s.* 6*d.*), is a sketch of the life and work of one of the most remarkable men of this century, whose achievements, as the authors point out, are so interwoven with circumstances by which our daily life is surrounded that it is all but impossible to find anyone who is not directly or indirectly concerned with some part or other of his great life-work. The sketch begins with a most interesting account of Pasteur's early years at Arbois, where his father owned a tannery ; at Besançon, where he took his degree ; and at the École Normale, Paris. His chemical researches and fermentation studies are next discussed in a sympathetic manner, whilst separate chapters are devoted to the discovery of anaërobic life, the spontaneous generation controversy, and Pasteur's studies on the vinegar organism, the diseases of wine, silkworms, beer, and infectious diseases. The researches on anthrax did not occupy Pasteur's attention until he was fifty-five years old, and his work on immunity and rabies came still later. A description of the Institut Pasteur fitly follows, and in the final chapter is a pathetic account of the closing years of the latest French hero of science, whose scientific life has been described by Rénan as being like "a luminous trail in the great night of the infinitely little, in those ultimate abysses of being where life is born." Everyone should read this book, and pharmacists in particular may learn much from it.

THE 'PROCEEDINGS OF THE CHEMISTS' ASSISTANTS' ASSOCIATION' for 1896-97 (price 2*s.* 6*d.*) constitute a volume of 84 pages, in which are reprinted the various papers that have been read before the Association. Lists of members, patrons, and officers are also given, together with the rules of the Association, etc. The Association appears to be in a very flourishing condition, and this record of the last session's work will be an interesting reminder to the members and their friends.

THE 'YEAR-BOOK OF PHOTOGRAPHY' (London : 9, Cecil Court, Charing Cross Road, W.C. Price 1*s.* net.) comes to hand later than most similar works, but the originality of its contents obviates the necessity of any apology on that score. The first section of the book—Progress and Practice—opens with some extremely useful notes by the Editor, E. J. Wall, F.R.P.S., on chemicals used in photography, which could not well be improved upon. Then follows a practical article on portraiture in rooms, by John A. Randall, and a comparison of the virtues of hand and stand cameras, by C. W. Piper. The "Photographer's Gazetteer," that useful fund of information about holiday resorts, comes next, whilst in the third section Winter Work receives attention. Lanterns and Lantern-Work are very fully treated by R. Child Bayley,

the well-known Secretary of the Royal Photographic Society. Section four is a mass of facts and formulæ, various useful tables being given, including several lists of metric equivalents of Imperial weights and measures, reprinted by permission from the *Pharmaceutical Journal*. Numerous excellent reproductions of photographs are scattered throughout the book, and the novelties of the year are described in an illustrated article, which will be, perhaps, as useful a part as any of this wonderfully good shillingsworth, for chemists and druggists.

'First Stage Electricity and Magnetism,' by R. H. Jude, M.A., D.Sc. (London: W. B. Clive, 13, Booksellers' Row, Strand, W.C., price 2*s.*), is a text-book specially prepared for the elementary examination of the Science and Art Department, the subject being treated from the standpoint of Potential and Potential-Gradient. It is freely illustrated and contains numerous exercises and examination questions. Each chapter concludes with a summary of the most important points dealt with in that chapter, and the book is divided into three parts, the sections being devoted to electrostatics, magnetism, and electrodynamics respectively. The subject is more satisfactorily treated than in any similar book written for examination purposes, and there should be a large demand for the work.

The 'Proceedings of the American Pharmaceutical Association' have always constituted a welcome addition to the pharmacist's library, and the record of the forty-fifth annual meeting, held at Lake Minnetonka, Minn., last year, forms no exception to that rule. Following the lists of present and past officers of the Association come the minutes of the annual meeting, including the reports of Committees on pharmacopœia revision, legislation, transportation, weights and measures, etc., etc. These reports afford indication of a very great amount of steady work being carried on in the interests of pharmacy and the American public, and it is matter of regret that something more on the same lines is not the rule on this side of the Atlantic. The numerous papers communicated at the annual meeting of the Association are also published in this volume, together with a voluminous report on the progress of pharmacy, by C. L. Diehl, consisting of abstracts of all important articles on pharmacy and allied subjects published between July 1, 1896, and June 30, 1897. As a convenient work of reference, this section of the book, covering some four hundred and twenty pages, is unsurpassed.

Chavasse's 'Advice to a Wife,' revised by Dr. Fancourt Barnes (London: J. and A. Churchill, 7, Great Marlborough Street. Price 2*s.* 6*d.*), has now reached its two hundred and ninetieth thousand, that fact affording sufficient evidence of the demand that exists for the information supplied in the work, and also of the satisfactory manner in which the demand has been met. Nearly three hundred pages of this new (fourteenth) edition are filled with advice on the management of the wife's health and on the treatment of complaints incidental to pregnancy, labour, and suckling. The book is eminently suitable for sale by chemists.

Chavasse's 'Advice to a Mother,' revised by Dr. George Carpenter (London: J. and A. Churchill. Price 2*s.* 6*d.*), is identical in character with the work previously mentioned, but it deals especially with the management of children and on first aid in cases of pressing illnesses and accidents. This book is in its two hundred and fortieth thousand, and the present is an entirely new (fifteenth) edition. About a hundred pages of fresh matter have been added to the original work, and most of the older portion has been re-written.

Pharmaceutical Transactions.

FORFARSHIRE DISTRICT CHEMISTS' ASSOCIATION.

At the annual meeting of this Association, held in the Imperial Hotel on Wednesday, April 27, Mr. Charles Kerr, President, in the chair, Mr. J. Rutherford Hill opened a discussion on

Regulations for the Sale of Poisons.

Mr. Hill related the circumstances under which the poisons regulations were drafted, as briefly explained in the Journal a few weeks ago (see *ante*, p. 333), and proceeded to show how the carrying of them out is to the interests of the public. At the close of his remarks Mr. Hill expressed his willingness to answer any questions that might have arisen in the experience of the members.—The Chairman said he frequently had to deal with cases in which very young children were sent by their parents for such articles as laudanum. It was very annoying and sometimes difficult to know what to do when children of tender years were sent as messengers for such articles. There was no legal restriction as to what age one might supply such articles.—Mr. Jack, Arbroath, said there was a matter in Arbroath which was regarded both by the medical practitioners and all the chemists as a grievance and a scandal. They had a public infirmary supported by charity, and poor people were visited by the doctors and prescribed for. These prescriptions were taken to the infirmary and dispensed by the matron, who possessed no qualification for such responsible work. He would like to ask Mr. Hill if no means could be taken to stop such a practice, and if it was not a breach of the Pharmacy Act? Representations had been made to the directors repeatedly, but the Town Clerk, who was a solicitor, had insisted that they were quite entitled to go on, and all representations had been ignored.—Mr. Storrar, Kirkcaldy, said the practice referred to was certainly very wrong, but whether it was illegal was a different matter. He did not think it could be said to be illegal to dispense medicines for patients inside the institution, but this matter of dispensing for out-patients was a different thing, and he thought it should be easy to put a stop to what was so manifestly wrong. Speaking of Mr. Hill's paper, he was glad he had emphasised the point that pharmacists had no wish to harass other trades, or that the Society worked the Pharmacy Acts for trades union purposes. It had never done so, and they should take every opportunity of denying such accusations whenever they were made, as they too frequently were in connection with prosecutions. The regulations for sale of poisons had been put upon pharmacists, and it was well to trace where these hard and fast rules had come from. They were not calculated to secure public safety, and, in fact, frequently defeated themselves. For instance, they were compelled, if they followed out the law, not only to put a poison label upon morphine solution, but also upon morphine lozenges. Such a thing destroyed the value of the warning label, and it was immensely better to leave the whole matter to the discretion of the properly qualified pharmacist, who might be trusted to label so as to secure the public safety.—Mr. Harley, Perth, said he had come across an instance of the grave dangers attending dispensing by hospital nurses. A nurse had put 4 ounces of corrosive sublimate in a Winchester quart of water, and when the latter portion came to be used there was some serious trouble, although the pharmacist who was called in was in time to prevent a disaster. He thought the practice complained of in Arbroath was a very serious matter.—Mr. Naysmith, Arbroath, said he also complained about the loose way in which dispensing was done. At the infirmary the chemist got the scum work to do when the matron was away for a holiday, and the drugs for the infirmary were all procured from a chemist in Bristol.—Mr. J. Russell, Dundee, said they had a case of this kind in Dundee, where an unqualified dispenser at a public institution dispensed a mixture which killed the patient. He was a poor man and had not friends, or the directors would probably have had to pay heavy damages, and as it was a public institution the fiscal would not take proceedings.—Mr. Ruxton said he had only recently come to Arbroath, and he had been worried by this practice at the infirmary ever since he came. He thought the Pharmaceutical Society should interfere.—Baillie Ferrier, Dundee, also strongly condemned the practice.—Mr. Davidson, Montrose, said they had a similar institution in Montrose, and the dispensing was done by the local pharmacists, each one taking his turn. The plan worked perfectly, and he thought the same plan ought to be adopted in Arbroath.

The present system was certainly bad.—Baillie Doig, Dundee, said something ought to be done. They must avoid the appearance of trades unionism. That was not their object, but simply the protection of the public. It might be best if a body such as the Pharmaceutical Society, were to interfere. The poor people especially had a claim to have some guarantee that they were getting what the doctor prescribed, and the present practice was strongly to be deprecated in the interest of the poor.—Mr. Hill, in reply, said there could be no doubt whatever that the practice complained of was a very distinct violation of the spirit and intention of the Pharmacy Act, and he was amazed that such a thing should be done in connection with a public institution, where one would expect most loyal regard to the intentions of the Legislature. The policy of the Act was to prevent poisonous substances being distributed to the general public in any other way than by the hands of duly qualified persons. In all the original drafts of the first poison regulation Bills, giving or delivering was held to be equivalent to selling, but it was found impossible to embody such wide language in an Act, and it was thought that the word "sell" would be enough to effectually strike at the evil to be remedied. Such a case as this might, therefore, not be technically illegal. That was a fine point capable of being argued. But whether technically illegal or not it was unquestionably a flagrant instance of the very evil the Act was meant to stop, and its effect was to frustrate the intention of the Legislature. There must be something seriously wrong in this ancient burgh if the attention thus publicly called to the practice did not lead to its speedy termination and the adoption of the very reasonable and satisfactory plan which Mr. Davidson explained as obtaining in the neighbouring town of Montrose.—Baillie Doig moved a vote of thanks to Mr. Hill, which was cordially awarded, and the meeting closed. The

Annual Dinner

was subsequently held, Mr. James Jack, Arbroath, in the chair, and Mr. Andrew Naysmith, Arbroath, acting as Croupier.—After an excellent dinner, Mr. John Robertson, Arbroath, proposed "The Pharmaceutical Society," and Mr. David Storrar replied.—Mr. Rutherford Hill proposed "The Forfarshire District Chemists' Association," and Mr. James Russell, Dundee, replied.—Baillie Ferrier, Dundee, proposed the "North British Branch and the Board of Examiners," and Messrs. Charles Kerr, Dundee, and James Jack, Arbroath, replied.—Mr. Alexander Davidson, Montrose, proposed "The Chairman," and Mr. J. W. Russell, Dundee, proposed "The Croupier."

DEWSBURY AND DISTRICT CHEMISTS' ASSOCIATION.

A meeting of the above Association was held on Monday evening, May 2, in the Town Hall, Dewsbury, Mr. A. Foster, President, in the chair. Mr. W. Stead, Heckmondwike, gave a short, but interesting paper on the new Pharmacopœia; afterwards a discussion took place on the subject, in which all the members took part. It was resolved to take the matter up again after the Pharmacopœia had been issued. A hearty vote of thanks was accorded to Mr. Stead, to which he briefly replied. It was also resolved that the Secretary should write and obtain two or three dozen copies of the Government Poisons Bill, and let each member have a copy, with a view to a discussion on it at the next meeting. A unanimous vote of thanks was accorded to Mr. J. F. Wilkinson, medical label printer, Manchester, who has kindly given 2000 printed post-cards, envelopes, etc., to the Association.

PHARMACEUTICAL SOCIETY OF IRELAND.

At Dublin on Monday, the evening scientific meetings of this Society for the winter session were brought to a close by an open meeting held at the Pharmaceutical Society's House, 67, Lower Mount Street. The President (Mr. R. J. Downes) occupied the chair, and was supported on the right by Dr. J. A. Walsh, M.C.P.S.I., and on the left by Mr. George H. Grindley, M.C.P.S.I. (Hon. Treasurer). There was an appreciative attendance of members and their lady friends, and amongst those present were:—Mr. W. F. Wells, sen., Dr. McWalter, M.P.S.I., Miss Ada Wyatt, M.P.S.I., Mr. A. L. Doran, M.P.S.I., Mr. J. Smith, M.P.S.I., Mr. and Mrs. W. F. Wells, jun. and Miss Wells, Mrs. Grindley, Mr. J. Tyrie Turner, M.P.S.I., Mr. M. R. Whitla, M.P.S.I., Mr. P. Kelly, M.C.P.S.I., Mr. W. Vincent Johnston, M.P.S.I., Mr. R. Simpson, M.C.P.S.I., Mr. H. O'Connor, M.P.S.I. (Hon. Secretary), Mr. S. Curham, M.P.S.I., Mr. J. Michie, M.P.S.I., Mr. A. T. Ferrall (Registrar), etc., etc. Apologies for non-attendance were received from Mr. G. D. Beggs (Vice-President) and others.—The President regretted they had to close the session at a most interesting period in the development of pharmacy. The new B.P. was on the verge of being made public, and they were all anxious to examine its merits or demerits. However, the volume would give them some occupation in the interval, and he expected they would all be able to discuss it when they reassembled for the winter session. Owing to the work being as yet semi-private, Professor Tichborne was unable to deliver his promised lecture thereon, but they had that treat in store. From what he knew the new pharmacopœia was more exacting and complex than the existing one, and greatly increased their responsibility as chemists. The large number of appendices contained a lot of useful information. He thought it would have been a good move on the part of the compilers if they had sent an advance copy to the Society, but, as a copy had not yet reached the Apothecaries' Hall, they could not say they were slighted. The sessional report for 1897-8 was then read by Mr. H. O'Connor, and went on to say that the evening meetings were opened on November 8 last, and since then lectures and papers had been contributed by members and friends of the Society, amongst whom were Mr. A. L. Doran, Dr. McWalter, Dr. M'Dowel Cosgrave, Dr. Carpenter, Professor Tichborne, and Dr. H. A. Auchinleck, together with discussions on matters of pharmaceutical interest, reports of which have appeared in the *Pharmaceutical Journal*. The present effort to efficiently work the Society as an educational and social body showed that something more was required to encourage the licentiates to become members and stimulate the energies of the existing members. The Committee recommended for the consideration of the Council the providing of accommodation in connection with the classes for post-graduate study, that the books at present in a book-case in the office should be arranged, numbered, and catalogued, and the catalogue published with the Calendar of the Society, and that the books be available to any member of the Society, also that a special glass case be provided for the holding of rare materia medica and other specimens, to be collected by members and presented to the Society. That a reading-room be opened, where the *Pharmaceutical Journal* and periodicals, trade and otherwise, could be read, and the fitting up of an unoccupied portion of the house as a gymnasium, and given over to a Committee who would be responsible to the Council. If these suggestions were acted upon a great boon would be conferred on the juniors, particularly those from the country and without City friends.—Thanks were accorded to those gentlemen who had contributed to the success of the past session, coupling therewith the name of Mr. G. D. Beggs, who worked the lantern on the occasion of Dr. E. M'Dowel Cosgrave's lecture.—On the motion of Mr. W. V. Johnston, seconded by Dr. Walsh, the report was adopted.—The President fully endorsed the Committee's recommendations, and said there was plenty of work for the Council to do, and he hoped they would do it.—Mr. W. F. Wells, in moving a vote of thanks to the Committee, spoke in flattering terms of the President's zeal and ability. It was gratifying to know that the evening meetings had been so successful, and the assistants themselves could do a lot to help on the Society in carrying out its programme during the next session.—The President concurred with the latter part of Mr. Wells' remarks. The co-operation of the assistants was of considerable value to the Society, and he hoped not only they, but the members, would take a more active part than heretofore in the evening meetings. Those who lived afar off and could not possibly attend got the benefit of the proceedings through the medium of the pharmaceutical press. The reports of their meetings circulated all over the world and set people thinking. They had had correspondence, in reference to their discussions, from the provinces of Ireland and from various parts of England, and he was agreeably surprised to find a full report of their discussion on "Pill Making" in a recent issue of the *Bulletin of Pharmacy*. It showed that their friends in America took an interest in their sayings and doings. He invited the country members to send up for discussion memoranda and notes of interest to pharmacy and its followers. This would give them a lively interest in the evening meetings, as the trade press would enable them to see what was said or done in connection.—Mr. Smith, Examiner to the Society, considered that the four members constituting the Committee were insufficient to carry on the work, and proposed the co-option thereto of Messrs. J. Michie and J. S. Ashe.—Mr. Johnston seconded the resolution, which was carried *nem. con.*—Further kind references to the President were made by

Councillor Kelly, who described him as the grand old man of pharmacy, and superior to past presidents in that he had solved the problem of how to inform instinct and amuse the pharmaceutical fledglings. He agreed with all the Committee's recommendations, and said it was a pity that good books should be allowed to get blue mouldy for want of use. In Mr. Downes they had a ruler, a guide, and a friend.—The President gracefully acknowledged the compliment, and said it was his earnest desire to make their meetings as intellectual and popular as possible. He wanted the Society to stand second to none in the kingdom, and believed the fulfilment of his hopes was coming gradually. It was in their power to achieve his desires, and if the members gave the Society their loyal support there was nothing to fear for the future. — At this juncture Dr. Walsh and Mr. Grindley left the platform and shortly afterwards re-appeared, bearing a massive solid silver bowl on an ebony stand, together with a handsome silver frame containing the names of those who had subscribed to the testimonial.—The President said they were now come to a most interesting part of the evening's business, and it was his privilege and duty to make a presentation, on behalf of the subscribers, to their good friend Mr. W. F. Wells, ex-president of the Society. He was a very old friend of Mr. Wells, his acquaintanceship dating back to the time when that gentleman was arrayed in bib and tucker. It was doubly pleasing to see present that evening Mr. W. F. Wells, senior, who claimed the distinction of being the oldest member of the trade in Ireland, perhaps in the United Kingdom, being close on ninety years of age, and still actively engaged at his business. He was proud to say he recognised in Mr. Wells, senior, his old master, under whom, many years ago, he served his lawful apprenticeship, and there was not one in the country who bore a better reputation or was more respected than that venerable gentleman. To inherit a good name was a thing to be desired, but it was a still more honourable distinction enjoyed by the ex-president, and that was the transmission of an honoured name to his own children. In the good old Book which changed not its wisdom it was written that "a good man leaves an inheritance to his children's children," and in the present instance holy writ was exemplified to the full. In the same volume was found the expression, perhaps more congenial to the pharmaceutical mind, that "a good name is better than precious ointment." As ointment was used in ancient times to embalm the body of the illustrious dead, even so the ointment of a good name preserved the memory of the man who had served his people well and truly ; and so it was with Mr. Wells and his respected son, who had earned that good name, which was better than the costliest ointment. It was some twenty-one years ago that Mr. Wells, jun., passed his examination, and since that time he had been in the forefront of all their legal battles, which he fought nobly and won. He was not infallible, but he generally managed to carry the day. Some years ago he and Mr. Wells were at issue on certain matters pharmaceutical, but they were now pulling together in harnesss, and intended to continue doing so through thick and thin. He begged Mr. Wells' acceptance of the testimonial, which had been subscribed by a number of friends as a slight token of their esteem and admiration, and as a tribute of their respect to his answering principles of right and justice.—Mr. Wells expressed thanks for the beautiful and valuable present. He was gratified beyond measure that his discharge of duty should have been deemed worthy of so choice an expression of his colleagues' goodwill. From the moment he joined the council he had but one object in view, and that was to serve the licentiates, advance the interests of the Society, and conserve to the full the right and privileges of pharmacy and those lawfully connected with it. He had the name of being a fighting man. He had no desire to fight, except in defence of the right, and so long as he believed his cause was a good and honourable one he would not count the odds, and was ready to face all comers. Without going over old ground, he took the credit of turning even the President from his— well, into the present happy state of mind, and enabling that gentleman to see matters pharmaceutical in a clear light. It was about nine years ago, when he (the speaker) was elected vice-president of the Society, that he was the recipient of an address as a memento of the crisis of 1890, when the Pharmacy Amendment Bill was enacted. He was one of three sent over to London in connection therewith, and the result was a matter of trade history—a chemical classic in fact. All did not agree with his policy and some thought it a wrong one, but such as it was he would follow as long as he remained on the council. In working for the Society he simply worked for the right, and looking back on the past events he would do the same thing over again if necessary. He thanked the President for his kindly reference to his father, who might justly be called the patriarch of the drug trade, seeing that he was sixty six years in harness and still actively engaged in his business daily, although a good deal over eighty years of age. He believed his father and Mr. E. M. Hodgson were the last of the old stock. He again thanked the subscribers to the testimonial, and hoped it would be handed down to posterity as an honoured memento of his connection with the Society.—Dr. McWalter, Mr. Grindley, Mr. Turner, and others, having spoken in complimentary terms of Mr. Wells and the Society, the proceedings then terminated.

PUBLIC DISPENSERS' ASSOCIATION.

A very interesting lecture on the "Production of Toxin, the Testing of its Strength, the Cognisance of the Animals Employed for the Purpose of the Preparation of Antitoxin, and the Method of Its Preparation, and the Testing of Its Strength," was given by Dr. Dean, of the British Institute of Preventive Medicine, on Friday last, at Bloomsbury Hall. The lecture was well illustrated with lantern slides. Among the number present were several nursing sisters from St. Bartholomew's Hospital, and about twenty-five other members of the Association, including several members of the Poor Law Dispensers' Association. The lecture occupied about two hours. After the lecture a few questions were asked and answered. — The proceedings were then brought to a close by Mr. Duff, of Banstead, who proposed a vote of thanks to the lecturer, which was ably seconded by Mr. Jones, of Poplar, who remarked that it was a large subject and a very complex one, and he had never enjoyed a lecture so much since his student days, and thought that they must be very dull indeed who could not follow all that the lecturer had said.—Dr. Dean, in replying, said he thanked them very heartily for the attention and kindness he had received, and the meeting then terminated. Sundry refreshments had been provided, and were afterwards served to those present.

MEETINGS OF SCIENTIFIC SOCIETIES

MANCHESTER MEDICAL SOCIETY.

On Friday, April 29, Professor Leech, at the request of the Committee, gave an address to the above Society on

The New British Pharmacopœia.

In reviewing the work which had been done by the Therapeutic Committee of the British Medical Association and the Pharmaceutical Society in compiling statistics of the frequency with which certain remedies were used, he threw a curious side-light upon the value of statistics obtained by such and similar methods as those which had been used. The answers elicited by the Therapeutic Committee regarding some preparations were so greatly at variance with anticipation that further inquiry was made in these particular cases with a view to ascertain if there were not conditions which might throw further light upon the apparent anomalies. The further answers in very many cases were such as to quite justify the extra trouble involved. One case which Professor Leech mentioned is typical of a number of others:—A medical man had stated that he frequently used extractum aconite, but when asked further as to the dose and the conditions under which he gave it, he replied that when he bought his practice there was a quantity of the extract in the surgery, and he used it continuously until it was exhausted, and intended to purchase no more. Saffron, Dr. Leech said, was omitted until it was found that its absence from decoct. aloes composit. produced a preparation which was more nauseous than heretofore, hence it was restored to the Pharmacopœia. He specially referred to the liquores concentrati, pointing out that the remarks in the preface do not justify the pharmacist in using them when infusions are prescribed. The medical men, he appeared to think, would quickly avail themselves of the opportunity of using these "concentrated infusions" now that they can be obtained of known and constant composition. Professor Leech spoke with approval of most of the new remedies. The ointments as a class are greatly improved. Upon the whole the Pharmacopœia of 1898 is a great advance upon any which have preceded it.

INSTITUTE OF CHEMISTRY.

The annual dinner of the Fellows and associates of the Institute of Chemistry was held on April 28, at the Trocadero Restaurant, Piccadilly Circus. The President, Dr. T. Stevenson (official analyst to the Home Office), occupied the chair, and the large company present included Lord Reay, Mr. Justice Byrne, Sir J. Evans (treasurer Royal Society), Sir E. Frankland, Sir H. T. Wood (secretary of the Society of Arts), Mr. K. E. Digby, Dr. Bernard Dyer, Dr. M. J. Russell, Dr. Thorpe, Mr. T. H. Elliott, Mr. J. F. Moulton, Q.C., Mr. H. Kearley, M.P., Mr. H. H. Cozens-Hardy, M.P., Professor Dewar, Dr. J. H. Gladstone, Dr. Ludwig Mond, Mr. W. Hills (President of the Pharmaceutical Society), Dr. H. E. Armstrong, Dr. J. A. Voelekler, Mr. Otto Hehner, Professor J. M. Thomson, Mr. D. Howard, Mr. R. J. Friswell, Mr. T. Fairley, Dr. Corfield, Dr. Mynter Blyth, and Mr. R. B. Pilcher (secretary). —The President, after proposing the usual loyal toasts, gave that of "The Houses of Parliament," Lord Reay and Mr. Cozens-Hardy, M.P., responding. — Mr. D. Howard proposed "The Learned Societies."—Professor Dewar, in reply, observed that the learned societies had an enormous piece of work to do, which they were gradually becoming alive to, in the way of cataloguing what had already been done. What was most seriously required in this country was a clear recognition that the time was past when our great public schools should rely entirely on a classical education. As long as that monstrosity remained in our time we should never be able to hold our own as a country, however great we might be as individuals. It was essential that the scientific culture should be recognised.—Mr. Justice Byrne proposed "The Institute of Chemistry" and the President, in responding, mentioned that the register of the Society now contained the names of 826 Fellows and 120 Associates, while there were over 180 registered students training for the examination at the various colleges recognised by the institute. He looked forward to the time when professional chemists would be endowed with the power of conferring diplomas and exercising the same restrictive functions as were already possessed by the professions of the law and physic. Other toasts followed.

PARLIAMENTARY NOTES.

The Pharmacy Bill.—This little non-contentious family re-adjustment of purely family matters is stirring up a good deal of strife. Mr. Weir, the well-known Member for Ross and Cromarty, and Mr. Yoxall, the honourable representative of education and W. Nottingham, have pounced upon the unfortunate measure with all the ardour and lack of reason of modern crusaders. Mr. Weir merely duplicates one of his friend Cross's amendments just to keep up the effectiveness of the block, should the political seedsman be unable to devote every night to the service of his country. Mr. Yoxall's amendment, however, is inspired by some of the candid critics of the Society within its ranks, who, wisely or unwisely, are prepared to demonstrate to the whole world the impossibility of effecting union amongst chemists and druggists on even the simplest matters.

The Effect of Mr. Yoxall's amendment would be to make Clause 3 read as follows:—

"Every person . . . . . who shall hereafter become registered as a chemist and druggist, *and who shall be also an Associate of the Society*, shall be eligible to be elected a member *of the Council* of the Society, according to the Bye-laws thereof, *one-third of the total number of members of the Council shall consist of chemists and druggists who are Associates of the Society.*" The added words are in italics. Which of the persons registered as pharmaceutical chemists has inspired this? It is obviously done in the interests of those whose views were patiently listened to and carefully considered in the early days of the history of the Bill. One would be glad to know the name of the author of this latest attempt to prevent progress, so that it might be preserved for the instruction of pharmacists yet unborn.

On Monday and Thursday the Bill was down on the notice paper, but the opposition is not to be caught napping even after midnight. Mr. Smith deserves well of the promoters and supporters of the Bill for steadfastness with which he carries on the campaign. He is in the habit of being on the winning side and will do his best to maintain the custom.

PHARMACEUTICAL SOCIETY.

"FIRST" EXAMINATION RESULTS.

A meeting of the Board of Examiners for England and Wales was held on Tuesday, May 3.

Certificates by approved examining bodies were received from the undermentioned in lieu of the Society's examination:—

Dunn, Percy; Birmingham.
Emerson, John Scott; Newcastle.
Hanbury, Fredk. Capel; London
Hearle, Joseph; London.
Hills, James Stuart; London
Horton, Albert John; Maidstone.
Hughes, Thomas Kiernan; Llandrillo.
Morrish, Charles Henry; London
Snook, John Francis; London.

The report of the College of Preceptors on the examination held on April 12 was received. 438 candidates had presented themselves for examination, of whom 249 had failed.

The following 189 passed, and the Registrar was authorised to place their names upon the Register of Apprentices and Students:—

Abdurahman, Abdulkariem; London.
Armitstead, John; Middleton.
Armstrong, Robt. Elliot; Alnwick.
Arthur, James Wm.; Peterborough.
Ashworth, Chas. Stanley; Blackpool.
Banner, John F. H.; Sunderland.
Barham, Joseph; Louth.
Barker, Frank H.; Northampton.
Barker, Percy J. W.; Brighton.
Baxter, James R.; Grangemouth.
Bebb, Arthur Percy; Walsall.
Bingham, Arthur H.; Spalding.
Blackhurst, J. F.; Carlton-on-Trent.
Boulton, Jesse; Kidsgrove.
Bowe, James H.; Ulverston.
Bowskill, Ernest Wm.; Grimsby.
Briddon, John E. W.; Ventnor.
Briggs, Ernest E.; Derby.
Brown, Alexr.; Edinburgh.
Brown, Jno. Smeaton; Campbeltown.
Bryce, John; Dumfries.
Bryden, John A.; Barrow-in-Furness.
Bryson, Robt. Dickson; Walker Burn.
Butcher, Arthur R.; Blackpool.
Cable, Alice Mildred; London.
Campbell, Duncan; Doug'as.
Cantwell, Arthur S.; Retford.
Carine, Fredk. Wm. R.; Manchester.
Carson, James; Edinburgh.
Carter, Arthur I.; Blackpool.
Cassie, Rhona C. H.; Hopeman.
Chard, Harold; Louth.
Cook, James; Thornhill.
Cooper, Arthur C.; Plymouth.
Cooper, Walter Mell; Sheffield.
Cornell, James R.; Ipswich.
Cottrell, Clarence; Oldham.
Cowe, John Geo.; Elgin.
Cragg, William; Lincoln.
Crawford, Geo. Whyte; Glasgow.
Crook, Thomas; Darwen.
Crooks, Jno. T. J.; Bishop Auckland.
Daft, George; Southwell.
Dale, John Geo.; Stockton-on-Tees.
Davies, William; Talgarth.
Davis, Albert Hy.; Warwick.
Dickie, John Gibb; Glasgow.
Dinwiddie, Wm. D.; Dumfries.
Dolton, Robt. Wm.; Caversham.
Done, Thomas; Chester.
Dotchin, Wm. A.; Gateshead.
Douglas, Norman McLeod; Aberdeen.
Duncan, Samuel C.; St. Helens.
Duthie, Robt. James; Aberdeen.
Eden, Peter McCulloch; Workington.
Enderby, Geo. Alfred; Boston.
Flew, Wm. Norman; Bradford.
Gardiner, Adam B.; Lockerbie.
Gemmell, Matthew; Paisley.
Gilmour, James P.; Glasgow.
Girdlestone, Walter; Manchester.
Good, Thos. Hy.; Hull.
Graham, Walter; Edinburgh.
Gray, George; Elgin.
Green, Herbert Hy.; Ashbourne.
Gregory, Edward; Stockton-on-Tees.
Guthrie, Robert; Glasgow.
Hamblen, Richd. R. P.; Bournemouth.
Harrop, Samuel; Ashton-under-Lyne.
Harwood, Albert E.; Edinburgh.
Hay, James; Newcastle-on-Tyne.
Hays, Fredk. J. A.; London.
Heggie, John; Lochee.
Henderson, David; Edinburgh.
Hetherington, Hector A.; Tillicoultry.
Hirst, Benjn. A.; Ilkley.
Holroyd, Asa; Queensbury.
Horton, Alexr. H.; Birmingham.
Hunter, Alexr. Sime; Perth.
Huntly, Hilda M.; Preston.
Hutt, Joseph R; Cheltenham.
Irving, Grave; Maryport.
Jack, Robt. Martin; Lochgilphead.
Jenkins, Hy. Watkins; Brecon.
Jessop, Fred.; Oldham.
Joyner, Lily Frances; London.
Kendall, Allan H.; Rawdon.
Kendall, Augustus C.; Rawdon.
Kerr, Wm. Reid; Paisley.
Koop, Charles F. R.; Brighton.
Lees, Herbert Chas.; Nottingham.
Lewis, Edwd. Arnott; Bristol.
Loader, Harry; Leyburn.
McBride, Fredk.; Grantham.
McCrae, Alexr. C.; Newton Stewart.
McKee, Isaac; Glasgow.
McLean, John; Glasgow.
McMillan, James A.; Newton Stewart.
McMurray, Andrew; Castle Douglas.
McNally, David; Wigtown.
McPhail, John; Newcastle-on-Tyne.
Marsden, Joseph; Manchester.
Mathieson, Donald McP.; Leith.
Mellor, Wm. Ernest; Newcastle, Staffs.
Miles, Edwin G.; Penarth.
Moffatt, Wm.; Barnard Castle.
Morgan, Hy. Jones; St. Clears.
Morgan, Wm. Emlyn; Blaenyffos.
Mortimer, Arthur; Shipley.
Mumford, William Jno.; Cardiff.

Murray, Wm. Baxter; Rhynie.
Ness, James F.; Kirkcaldy.
Nicolas, Violet; London.
Norman, Alfred C.; Bromsgrove.
Norman, Geo. E.; Skipton-in-Craven.
Northey, Wm. Geo.; Alford.
Old, Herbert A.; London.
Oliver, John T.; Thornhill.
Ough, Thomas; Liskeard.
Palmer, Washington; Manchester.
Parkinson, Hy. James; Driffield.
Piquet, Arthur Fred.; Winchester.
Pratt, George H.; Huddersfield.
Preece, Percival R.; Hitcham.
Prime, Wm. Arthur; Birmingham.
Raine, Frank H.; Darwen.
Ralston, Thomas; Campbeltown.
Raper, George; Liverpool.
Rayne, Wm. Allan; Dumfries.
Righton, Harry H.; Cheltenham.
Ritchie, Andrew W.; Edinburgh.
Robertson, Andrew; Burntisland.
Robertson, James; Coatbridge.
Robertson, John; Glasgow.
Ross, David; Tain.
Russell, Jas. Reddie; Anstruther.
Rutter, Arthur D.; Warrington.
Sayle, Ernest E.; Huntingdon.
Schofield, John Edwd.; Huddersfield.
Scott, Charles, Falkirk.
Searle, Fredk. Wm.; Plymouth.
Seers, Philip B.; Stafford.
Sewell, Arthur E.; Peterborough.
Shorthouse, Ronald G.; Bilston.
Siddle, Charles Hy.; Hull.
Smith, Alexr. Hunter; Falkirk.
Smith, Arthur N.; Blackburn.
Smith, Hy. Edgar; Padiham.
Spence, Wm. Wilson; Linlithgow.
Stewart, Ernest A.; Glasgow.
Stocks, Alfred B.; Queensbury.
Tait, Adam; Biggar.
Tattersall, Edmund G.; Manchester.
Taylor, Jas. Russell; Dundee.
Tebb, Harry, Hull.
Terry, Louis Geo.; Folkestone.
Thompson, J. H. Osborn; Liverpool.
Tildesley, Robt. Wm.; Rotherham.
Tomkinson, Albert E.; Liverpool.
Toohig, Jno. Hy.; Narberth.
Tout, Wm. Hy.; Plymouth.
Troughton, Charles A. J.; Belfast.
Unthank, Wm. R. E.; Bedale.
Veitch, George T.; Castle Douglas.
Waddell, Robt. Arthur; Sunderland.
Wade, Ernest; Halifax.
Waters, Robt. S.; Wick.
Watson, John; Thirsk.
Watts, Albert A.; Sheffield.
Webb, James T.; Dukinfield.
Weir, Thomas; Innerleithen.
Wells, Wm. Sidney; Newark.
White, Wm. Harold; Cheltenham.
Whitley, Wm. Owen; Rhyl.
Wicks, Fredk. C. G.; Oxford.
Wilbourne, Jno. Hy.; Chesterfield.
Wilkie, Robt. B.; Leven.
Williams, Allan O.; Pontypridd.
Williams, Gwilym E.; Abergele.
Wilson, Edwin O.; Bridlington Quay.
Wilson, Frank; Barnard Castle.
Wilson, Fredk. Chas.; Leeds.
Wood, Denys Richd.; Malvern Link.
Woodward, Geo. Edgar; Truro.
Wright, Ernest James; Witney.
Wright, Robert; Manchester.
Wynne, Edwd. Williams; Aberystwith.
Young, Frank James; Watford.
Young, John; Dumfries.

The questions set at this examination were published in the *Pharmaceutical Journal* for April 16, p. 374.

The following is a list of the centres at which the examination was held, showing the number of candidates at each centre, and the result:—

	Candidates.				Candidates.		
	Examined.	Passed.	Failed.		Examined.	Passed.	Failed.
Aberdeen	15	4	11	Leeds	23	12	11
Birmingham	19	8	11	Lincoln	11	6	5
Brighton	3	2	1	Liverpool	16	6	10
Bristol	2	1	1	London	29	8	21
Cambridge	3	1	2	Manchester	49	20	29
Canterbury	2	1	1	Newcastle-on-Tyne	20	6	14
Cardiff	13	4	9	Northampton	1	1	0
Carlisle	19	9	10	Norwich	4	1	3
Carmarthen	6	4	2	Nottingham	12	6	6
Carnarvon	8	2	6	Oxford	4	3	1
Cheltenham	4	3	1	Penzance	5	1	4
Darlington	15	7	8	Peterborough	3	3	0
Dundee	4	3	1	Plymouth	8	4	4
Edinburgh	38	17	21	Sheffield	11	5	6
Glasgow	47	22	25	Shrewsbury	6	2	4
Hull	8	6	2	Southampton	9	3	6
Inverness	9	4	5	York	4	1	3
Lancaster	8	3	5				

Chelidonine as a Substitute for Morphine.—It was proposed some years ago by Meyer, that chelidonine might be used as a substitute for morphine, and favourable results were said to have been obtained in a large number of cases. Guth now reports that it is useless for the purpose. The sulphate of the alkaloid was tried in nine cases, in doses of 5 to 30 centigrammes, in various painful affections. Not a single patient was benefited by its use and neither a sedative or analgesic action could be detected; on the contrary, in three cases violent nausea and salivation resulted. *Therap Monats.*, ix., 515.

NOTICES TO CORRESPONDENTS.

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

Advertisements and Orders for copies of the 'Pharmaceutical Journal' must be addressed to the Publishers, 5, Serle Street, Lincoln's Inn, London, W.C. Cheques and money orders should be made payable to "Street Brothers."

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

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

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

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

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

LETTERS TO THE EDITOR.

The Council Election.

Sir,—The letter of "Associate in Business" is, so far as I am concerned, absolutely untrue, I am therefore not surprised that he conceals his name, and I should have treated it with silent contempt but for the danger of it misleading those who have not the opportunity of obtaining correct information. I have before me now letters which make my position perfectly free from the blame he would like to saddle me with. On February 5, Mr. KcKellar brought Mr. Cross under my notice for the first time, and at a later date wrote and asked him to see me in London. This letter Mr. Cross, in one of his, states he received on March 10 (note the dates). That day Mr. Cross wrote to me, and by return of post I informed him that I had withdrawn all opposition to the Bill; and by the same post I wrote and made the same statement to Mr. McKellar, so that whatever was done afterwards could not have been done at my instigation. At a later date I again wrote to Mr. Cross urging him not to slaughter the Bill. Now I have before me an abstract copy of a letter from Mr. Cross to another pharmacist, in which he states he had information of the Bill and had been put on the alert before receiving Mr. McKellar's letter. Who supplied him with it? Why the Glasgow and West of Scotland Association, for on March 8 their Chairman announced that they had communicated with all their Members of Parliament. Mr. Cross has also stated that his amendments were not framed by Mr. McKellar. Where now is instigation"? In conclusion, I fear I have been as guilty as "Associate in Business" in implying that your readers are so dense that they could imagine for one moment the amendments proposed by Mr. Cross could possibly have been thought of or suggested by any chemist. Perhaps, however, he has one or two odd friends whose intelligence is so defective, and I must thank him for giving me the opportunity of enlightening them.

Manchester, May 4, 1898. Walter Gibbons.

The New Pharmacopœia Test for Quinine Sulphate.

Sir,—Mr. Cownley's note on the new test for quinine is somewhat disappointing, in that he proposes no alternative. The defects he mentions were pretty fully discussed at the meeting of the Pharmaceutical Society, reported in your columns on December 12, 1896, but the discussion did not either then or since elicit any suggestions for improvement. The new test, and all the ammonia tests except the Ph. Ger. III. are empirical, in that they fail to give direct indication of the amount of impurity, and that they allow an amount, not clearly defined, of impurity. The Ph. Ger. III. avoids this by requiring chemical purity, but does so at the cost of being practically ignored in commerce. The suggestion that an amount of impurity should be stated,

and no test given to ascertain it, is so attractively simple that it would no doubt have been adopted everywhere but for the certainty of such a definition leading to hopeless uncertainty. If indirect methods are to be allowed, the literature on quinine-testing "passim" shows how hopeless it is to find doctors agree; if direct determination is required, every chemist who attempts to test quinine must have a skill and patience in fractional crystallisation that is certainly not universal.

Stratford, London, E., May 2, 1898. David Howard.

The New Pharmacopœia.

Sir,—Amongst glycerin preparations of the new Pharmacopœia, one is surprised to see omitted a familiar preparation, and one introduced in the B.P.C. of 1891, viz., glycerinum belladonnæ. Surely this preparation, which has largely supplanted the old breast plasters, etc., is worthy of position, and how convenient for a standard formula, instead of having to prepare 1 in 2, and 1 in 3, or any other strength!

West Norwood, April 29, 1898. Hubert H. Mason.

Sir,—I should like to ask the compilers of the 1898 Pharmacopœia how pharmacists are to obtain 90 per cent. alcohol of s. g 0·8340. So far as my experience goes it is impossible to obtain a specimen in which those two factors agree. If real 90 per cent. alcohol be diluted with the same quantity of water as spirit of s. g. 0·8340, the respective products will be of different strengths. Then, again, there is surely some mistake about the s. g. of spt. ammon. aromat., given as 0 888 to 0·893. The old spirit was officially stated to be of s. g. 0·896, but 0 900 would have been nearer the mark. How can the slight difference in the s. g. of the old and new spirit. rect. cause so great a variation in a preparation the formula for which is otherwise unaltered? Finally, why should the alcohol be weighed in preparing the menstruum for liq. senegæ conc, as would appear to be required by the official instructions?

May 4, 1898. Pharmaceutical Chemist (132/45).

ANSWERS TO QUERIES.

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

Headache Powder.—The powder you send is acetanilide, [*Reply to* Curious.—9/8.]

Detection of Metals.—They will be completed shortly. [*Reply to* Countryman.—9/5.]

Botanical Handbook.—See reply to W. H. W., three weeks ago, on page 341. [*Reply to* Percontator.—9/2]

The B.P., 1898, and the Minor.—See note at page 441. [*Reply to* H. C. T. G.—9/23]

Combined Toning and Fixing Bath.—Dissolve gold chloride, 2 grs.; potassium sulphocyanide, 60 grs.; and sodium hyposulphite, 2 ozs., in sufficient water to make 8 ozs. of solution. [*Reply to* A. H. P.—9/17.]

Smoke Producer.—Probably a mixture of powdered resin, sugar, and soot, with just enough nitre to make it burn, would answer best. Do not use too much nitre, or the mixture will burn too quickly, or even deflagrate. If it is required to burn in a confined space you must use more nitre than if for the open air. [*Reply to* Acacia.—9/22.]

Lemon Squash.—(1) Soluble essence of lemon, 1½ oz.; citric acid, 2 ozs.; freshly boiled water, 6 ozs.; syrup to make 40 fl. ozs.; colour, if desired, with a little saffron. (2) Lemon juice 20 fl. ozs.; boil and filter on to powdered sugar, 30 ozs.; dissolve, with agitation, and add 1 oz. of soluble essence of lemon. [*Reply to* C. G. S.—9/18.]

Crystalline Calcium Tungstate.—This occurs native as Scheelite. It may be obtained in crystals by fusing native wolfram with excess of calcium chloride and then boiling out the soluble chloride from the slowly cooled mass. You will probably find this answer better than the method of precipitation you name, as the slow cooling would enable the calcium salt to separate out in a crystalline form. Possibly you might convert your amorphous salt into the crystalline state, by heating it with lime in a stream of HCl, or even by again fusing with $CaCl_2$ and slowly cooling. [*Reply to* Radiography.—9/19.]

Developer Containing Glycerin.—Presumably you mean the glycerin pyro developer suggested in 1880 by B. J. Edwards, whose formula was:—No. 1: Pyrogallol, 28 Gm.; glycerin, 28 C.c.; methylated alcohol, 170 C.c.: mix the glycerin and alcohol, and add the pyro. No. 2: Potassium bromide, 4 Gm.; liq. ammonia (0 880), 28 C.c.; glycerin, 28 C.c.; water, 170 C.c. These stock solutions will keep for some time. To make the actual developer, mix 1 part of No. 1 with 1 part of No. 2, and add 30 parts of water. The new methylated spirit must not be used for the above. [*Reply to* A. H. P.—9/17.]

Preparation of Water Glass.—The water glass of commerce, or sodium silicate, approximates in composition to the formula $Na_2O \cdot 4SiO_2$. A mixture of 22 or 23 parts of sodium carbonate, 44 or 45 parts of white sand, quartz, or powdered flints (prepared by heating to redness, quenching in water and grinding), and charcoal 3 parts, are fused in a reverberatory furnace for eight or ten hours, then dissolved by prolonged boiling in water. One hundred parts of fused mass generally give 300 parts of solution: sp.g. 1·234 to 1·386. The above details are from 'Thorpe's Dictionary of Applied Chemistry,' vol. iii., 514, where you will find all the further information you require.—[*Reply to* J. F.—9/6.]

Dispensing Difficulty.—In dispensing the prescription—℞ Liq. Hyd. Perch. ℥j., Potass. iodid. gr. xv., quin. sulph. gr. xv., acid. hydroch. dil. ℥ss., aq. chlorof. ad. ℥viij—the mercuric chloride and potassium iodide react to form potassio-mercuric iodide, as in preparing Mayer's solution. This solution has the property of yielding insoluble double compounds with alkaloids, and is therefore used as an "alkaloid reagent." The composition of these precipitates varies to some extent, but usually they contain the hydriodide of the alkaloid, combined with mercuric iodide. There is no means of preventing the precipitation of the quinine ordered in the prescription, as the double quinine and mercury iodide is not soluble even in moderately dilute acid.—[*Reply to* Quæro.—9/21.]

Photographic.—(A) The usual charge for changing plates is 3*d.*, and for developing 1*s.* per hour, free to customers for changing. It is also a frequent custom to issue weekly tickets for 2*s.* 6*d.* You will note that the usual charge for changing is half what you propose to charge; still, many do charge 6*d.* (B) The usual charge would be 1*s.* 6*d.* for two 10 oz. bottles. (C) To make cloud negatives it is advisable to use colour-sensitive plates, such as the Ilford chromatic, Lumière's yellow and green sensitive, Mawson's ortho-chromatic, or Edward's medium isochromatic. The camera should be directed to the sky so as to include sufficient horizon to cover about one sixth of the plate. The clouds must be sharply focussed, the lens stopped down to about F/11, and a yellow screen inserted. An exposure of about one-tenth of a second would then be sufficient for sunlit clouds. The best developer is metol and hydroquinone (see Photographic Supplement, April 2, p. 12) diluted with an equal quantity of water, and development must not be carried too far, or too great contrast will be obtained. It is advisable to note time of day, direction of camera and sun. [*Reply to* S. H.—9/31.]

OBITUARY

Cripps.—On April 26, John Cripps, Pharmaceutical Chemist, Chiswick. Aged 69. Mr. Cripps had been a member of the Pharmaceutical Society since 1853.

COMMUNICATIONS, LETTERS, etc., have been received from Messrs. Allen, Beckett, Bird, Chase, Coverdale, Dow, Dunstan, Evans, Hankinson, Harkness, Harrison, Hogg, Howard, Kerr, Mason, Morgan, Morris, Parsons, Pickard, Pollard, Poole, Porter, Reade, Scott, Smith, Speedie, Stephenson, Stinger, Thomson, Thornton, Tweedy, Woodward, Wynne.

Pharmacy and the Allied Sciences.

A REVIEW OF CURRENT WORK.

Pilocarpidine. In reference to the results arrived at by Merck (*P. J. ante*, 385), Herzig and Meyer point out that they had already shown that pilocarpine contains only one methyl group attached to nitrogen, and had also expressed a doubt as to the identity of pilocarpidine with the base, obtained from pilocarpine, to which that name was given by Hardy and Calmels. Their view has now been confirmed by Merck, and they have now ascertained that the product obtained by heating pilocarpine hydrochloride, still contains a methyl group attached to nitrogen, while previous observations with true pilocarpidine showed the contrary result. Methyl determinations have also been made with gold salts of the two bases, which fully establish the difference between pilocarpidine and the altered pilocarpine, to which that name was applied by Petit and Polonowsky.—*Monatshefte*, xix., 56.

Cultivation of Pilocarpus in Italy. Gaylio has isolated 0·62 per mille of pilocarpine nitrate from the leaves of specimens o *Pilocarpus pinnatifolius* grown in the Botanical Gardens of Palermo. From commmercial leaves the author finds 0·56 per mille, which is a little lower than the figure of Merck, who found 0·7 per mille. Pilocarpus grows well in the open in Sicily, and its cultivation might, therefore, be a paying industry.—*Pharm. Ztg.*, xliii., 130, after *Arch. de Parmacol.*, 1897, 105.

Euphthalmine. In the first description of the hydrochloride of this base ($C_{17}H_{25}O_3N{\cdot}HCl$) it was stated to be very deliquescent, but C. Harries has since ascertained that by recrystallisation it loses this objectionable character, and can be obtained in the form of a very permanent snow-white crystalline powder, very soluble in water and soluble in about two parts of boiling absolute alcohol, separating again on addition of ether in crystalline aggregates. The salt is anhydrous; it melts at 183° – 184° C. and begins to run together at 181° C. The salicylate, $C_{17}H_{25}O_3N,C_6H_4(OH)COOH$—prepared by mixing ether solutions of the base and of salicylic acid, and recrystallising from absolute alcohol and ether—melts at 115° – 116° C. and is very readily soluble in water.—*Berichte*, xxxi., 665.

Detection of Annatto in Milk. Milk is often coloured with a trace of annatto to give it a fictitious appearance of richness. To detect this addition, A. Leys employs the following test. Fifty C.c. of the sample are shaken out with twice the volume of ether-alcohol mixture composed of alcohol 93 per cent. 240, ether 320, water 20. Solution of ammonia sp. g. 920, 8. After separation, the ethereal layer is rejected, the colouring matter being retained in the aqueous portion. This is transferred to another vessel and half its volume of a 10 per cent. solution of sodium sulphate gradually added, which causes the slow separation of the casein. The clear aqueous portion is decanted and shaken out with amylic alcohol, the washing being conducted in test-tubes to facilitate the separation of the solvent. After shaking, these tubes are plunged into a cold water-bath, the temperature of which is gradually raised to 80° C., when separation will be complete. The amylic alcohol solution is collected and evapo rated. The deep yellow residue is redissolved in warm water containing a little ammonia and alcohol, a strip of bleached cotton is immersed in the solution, and the whole evaporated to dryness. The cotton, which is now of a yellow tint, is washed and plunged into a solution of citric acid. If the colouring be annatto, the thread will at once assume a marked rose tint. Uncoloured normal milk imparts a very slight yellow tint to cotton by this method, but does not give the change of tint with citric acid, which is characteristic of annatto.—*Journ. Pharm.* [6], vii , 287.

MacLagan's Test for Cocaine Hydrochloride. Böhringer and Söhnc reply to the criticisms of F. Guenther, who has asserted that MacLagan's reaction depends on chance, that it does not reveal any definite impurities, and that there is no difference in the physiological action of a cocaine which fulfils the conditions of the German Pharmacopœia, whether it gives the MacLagan reaction or not. Böhringer states that he has always found that a cocaine which does not respond to the test contains isatropyl-cocaine to such an extent as to make it unfit for medicinal use. It is well known to manufacturers of cocaine that it is isatropyl-cocaine which prevents the crystalline separation of cocaine in the ammonia test. The following conditions are necessary to make the test thoroughly reliable. For 0·1 gramme cocaine hydrochloride dissolved 85 C.c. of water, and at least 0·15 to 0·2 C.c. of ammonia (spec. gravity 0 96) must be added. The stirring must be energetic, in a strong beaker, the sides of which must be rubbed with the glass rod immediately after the addition of the ammonia, and the fluid then well whipped. Without energetic stirring no deposition results. Guenther's statement that there is no difference in the physiological action in pure and impure cocaine is entirely without foundation. The absurdity of this will be seen by the report of Dr. Liebreich on isatropyl-cocaine. He states that it is a strongly poisonous alkaloid, differing in action from cocaine or atropine, but acting as a powerful heart poison.—*Pharm. Centralh.*, xxxix., 141.

Nitrogenous Pigments of Fungi. M. R. Van den Dries finds, in *Aspergillus niger*, *A. fuliginosus*, and *Polyporus sulphureus*, nitrogenous pigments of the nature of aspergillin. These substances are nearly related to one another, but are not identical. They have an acid reaction, and are probably true amides. Aspergillin is not a hæmatine; it does not contain a trace of iron, and does not exhibit its characteristic band in the spectrum. Aspergillin is very nearly related to the tannins. In other species of *Aspergillus* and in *Fusarium hordei*, pigments of a very different character were found, one of them having a basic character.—*La Cellule*, vol. xiii., p. 413.

Ammoniacal Fermentation Due to Mucedinæ. According to M. D. Semal, certain simple Mucedineæ, such as *Penicillium*, *Aspergillus*, and *Fusarium*, when cultivated in media containing organic compounds having the amidogenous radicle NH_2, are capable of producing ammoniacal fermentation. The doubling of the nitrogenous compounds takes place with the assistance of a soluble ferment secreted by different fungi. This ferment possesses an individuality belonging to each compound.—*La Cellule*, vol. xiii., p. 255.

Germination of the Mistletoe. Herr J. Weissner asserts, from observation, the inaccuracy of the prevalent idea that the viscin mucilage of the seeds of *Viscum album* is necessary for their germination. The seeds germinate even better without it. They require a six months' period of repose before germinating, while those of tropical species of *Viscum* need no such repose. Light is essential to the germination of the seeds of *Viscum album*, but not to those of *Loranthus europæus*.—*Ber. Deutsch. Bot. Gesell.*, vol. xv., p. 503.

THE ASSAY OF EXTRACTUM BELLADONNÆ LIQUIDUM.

BY HAROLD WILSON.

The details of the process for the standardisation of this preparation in the new Pharmacopœia are as follows :—

"10 C.c. of the strong percolate are agitated with 10 C.c. of chloroform, 50 C.c. of water, and a decided excess of solution of ammonia ; the chloroformic solution is separated, and the agitation with chloroform and subsequent separation is twice repeated. The mixed chloroformic solutions are shaken with 5 C.c. of dilute sulphuric acid mixed with twice its volume of warm water, the chloroformic solution being separated and the treatment with dilute acid repeated.

"The acid liquids are mixed and washed with 3 C.c. of chloroform ; 10 C.c. of chloroform and ammonia in excess are then added and the mixture is agitated ; the chloroformic solution is separated and the agitation with chloroform and separation twice repeated. The mixed chloroformic solutions are then washed with 5 C.c. of water containing one drop of solution of ammonia, run off into a tared dish, evaporated on a water-bath, dried below 100° C. and weighed. This residue is dissolved in 10 C.c. of a decinormal solution of hydrochloric acid ; centinormal solution of sodium hydroxide is then added until the liquid is neutral, tincture of cochineal being used as indicator.

"The measure of soda solution required is deducted from 100 C.c., the remainder being multiplied by ·00287 ; this giving the weight in grammes of alkaloid present in the quantity of the percolate operated on."

On determining the alkaloid in the extract by this process the following questions arose, and the results of some experiments made to settle these points may be of interest :—

(1) Is any alkaloid lost by shaking the spirituous percolate direct with chloroform and water, or should the alcohol be first removed by evaporation ?

(2) Is chloroform the best agent to employ in shaking out the alkaloid ?

(3) Why is the chloroformic solution of alkaloids directed to be washed with water containing 1 drop of solution of ammonia before running off into the tared dish ?

(4) Why are no conclusions drawn from the figure obtained on weighing the alkaloid ?

In order to answer the first query the following experiments were made :—

Ten C.c. of the liquid extract were placed in a separator with 50 C.c. of water, solution of ammonia was added in excess and the alkaloids removed by agitation with successive quantities of chloroform, this treatment being continued until the chloroform no longer extracted any alkaloid. This was ascertained by evaporating the chloroform after agitation with the extract, treating the residue with $\frac{N}{10}$ HCl, and titrating back with $\frac{N}{100}$ NaOH. The calculated quantity of alkali was required, showing that no more alkaloid was removed. The contents of the separator were then placed in a porcelain dish, very slightly acidified with sulphuric acid, and evaporated on a water-bath to a small bulk. This liquid was filtered into a separator, the filter being well washed ; it was then made strongly alkaline with ammonia, and shaken with successive quantities of chloroform ; the mixed chloroformic solutions were evaporated, the slight residue treated with $\frac{N}{10}$ acid, and titrated back with $\frac{N}{100}$ alkali.

This titration showed the presence of only 2 milligrammes of alkaloid. As this loss is very small—amounting to only about 1/40th of total alkaloid present—no serious objection can be raised to this part of the process on the ground of loss alone ; yet it is best to be perfectly accurate, and, moreover, it is a distinct advantage to first remove the alcohol. I have found it best to add water to the extract, and then very slightly acidify with sulphuric acid before dissipating the alcohol on a water-bath, and, after removal of the alcohol, to treat the residue, which is about the consistence of thin syrup, with warm water, filtering into the separator through a plug of cotton wool.

The advantage of having the solution slightly acid during evaporation is that there is no risk of losing alkaloid in the slight deposit formed on the sides of the capsule ; filtering removes much separated fatty matter, thus tending to prevent emulsification of the shaking-out agent by the soap solution, which is otherwise produced when the solution is made alkaline.

Experience gained in performing a number of these assays shows that a mixture of ether and chloroform (equal volumes) is to be preferred to chloroform alone for shaking out the alkaloids, as it is much less readily emulsified, especially if the contents of the separator are slightly warmed. Moreover, a mixture of ether and chloroform removes alkaloids generally in a purer condition than chloroform alone.

It is difficult to see why the operation referred to in the third query is carried out. The weak solution of ammonia, after being used in the manner directed, yields no residue on evaporation, and this step might well be omitted from what is necessarily a somewhat tedious process.

With regard to the last query, no connection is pointed out between the results arrived at gravimetrically and volumetrically ; though this would be patent to those in the habit of assaying drugs, yet in the Pharmacopœia we cannot be too precise. If it were stated that these results should not differ by more than a fixed quantity, it would act as a check on the accuracy of the work. I would suggest that the maximum difference be fixed at ·01 gramme, and think this standard would not be too exacting.

I suggest the following modification of the official process :—

Mix 10 C.c. of the strong percolate with 10 C.c. of water, and very slightly acidify with sulphuric acid ; evaporate in a porcelain dish to the consistence of a thin syrup. Add 20 C.c. of water and filter through a plug of cotton wool into a separator, washing the dish and filter with 30 C.c. of water. Add now 10 C.c. of a mixture of ether and chloroform (equal volumes) and excess of ammonia ; agitate, separate the ether-chloroform solution ; twice repeat the operation and separate as before. Shake the mixed ether-chloroform solutions with 5 C.c. dilute sulphuric acid mixed with twice its volume of warm water, separate and repeat the operation. Wash the mixed acid solutions with 3 C.c. of ether-chloroform ; then agitate with 10 C.c. of ether-chloroform and excess of solution of ammonia. Separate the ether-chloroform solution, and twice repeat the agitation and separation as before.

Place these solutions in a tared dish, evaporate on a water-bath, dry below 100° C., and weigh. Dissolve this residue in 10 C.c. of decinormal solution of hydrochloric acid, and add centinormal solution of sodium hydroxide until the solution is neutral, using tincture of cochineal as indicator. Deduct the measure of soda solution required from 100 C.c. and multiply the remainder by ·00287. The product will be the weight in grammes of alkaloids present in 10 C.c. of the liquid extract. This figure should not differ by more than ·01 gramme from that obtained by titration. From the quantity of alkaloid found by titrating calculate the amount present in the bulk of strong percolate and add to the latter sufficient of the alcoholic menstruum to make it contain 0 75 gramme of alkaloid in 100 C.c.

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

The British Pharmacopœia, 1898.

Vegetable and Animal Materia Medica of the Work.—(*Concluded.*)

OLEUM LIMONIS.—The method of obtaining the oil is not stated. The oil is to be obtained from the fresh lemon-peel, and should have the fragrant odour of the lemon. Sp. gr. 0·857 to 0·860. It should rotate the plane of a ray of polarised light not less than 59° to the right in a tube 100 Mm. long, and if 100 volumes be fractionally distilled the 10 volumes first collected should not produce a rotation differing by more than 2° from that produced by the original oil. Dose, ½ to 3 minims.

OLEUM LINI.—Sp. gr. 0·930 to 0·940. It is soluble in 10 parts of alcohol (90 per cent.) and in oil of turpentine. It forms, when spread on a thin layer of glass, a hard transparent varnish. It does not congeal above −4° F. (−20° C.).

OLEUM MENTHÆ PIPERITÆ.—Sp. gr. 0·900 to 0·920. It should dissolve in four times its volume of alcohol (70 per cent.). If a portion of the oil be cooled to 17° F. (−8°·3 C.) and a few crystals of menthol be added, a considerable separation of menthol should take place. Dose, ½ to 3 minims.

OLEUM MENTHÆ VIRIDIS.—Sp. gr. 8·920 to 0·940. The oil forms a clear solution with its own volume of a mixture of equal parts of absolute alcohol and alcohol (90 per cent.) Dose, ½ to 3 minims.

OLEUM MORRHUÆ.—Brandt and Ratzebnrg, 'Med. Zool.,' vol. ii., tab. ix., fig. 3. The solid fat is separated by filtration at about 23° F. (−5° C.). The odour is not rancid. Sp. gr. 0·920 to 0·930. Readily soluble in ether and chloroform and slightly soluble in alcohol (90 per cent.). When nitric acid is carefully poured into some of the oil contained in a test tube a precipitate of coagulated albumen should be formed at the surface of contact of the two liquids. No solid fat should separate on exposure of the oil for two hours to a temperature of 32° F. (0° C.). Dose, 1 to 4 fluid drachms.

OLEUM MYRISTICÆ.—No geographical source is given. Sp. gr. 0·870 to 0·910. The oil is soluble in its own volume of a mixture of equal parts of absolute alcohol and alcohol (90 per cent.). A little evaporated on a water bath should not leave a residue which crystallises on cooling (absence of the concrete oil of nutmeg). Dose, ½ to 3 minims.

OLEUM MYRISTICÆ EXPRESSUM.—Omitted.

OLEUM OLIVÆ.—Sp. gr. 0·914 to 0·919. At 50° F. (10° C.) it is liable to become of a pasty consistence, and at 32 F° (0° C.) to form a nearly solid granular mass. If 10 C.c. of the oil be shaken with 2 C.c. of a reagent prepared by dissolving 1 gramme of silver nitrate in 100 C.c. of absolute alcohol, with the addition of 20 C.c. of ether and one drop of nitric acid, no blackening should occur when the mixture is heated on a water bath for 10 minutes (absence of cotton seed oil).

OLEUM PIMENTÆ.—No geographical source is given. Sp. gr. not below 1·040. It should be converted into a semi-solid mass when shaken with an equal volume of a strong solution of ammonia. Dose, ½ to 3 minims.

OLEUM PINI.—*Pinus pumilio*, Haenke. (Lamb. 'Gen. Pin.,' i., plate 2.) Sp. gr. 0·865 to 0·870. It should rotate the plane of a ray of polarised light 5° to 10° to the left at 60° F. (15° C.) in a tube 100 Mm. long. Not more than 10 per cent. should distil below 329° F. (165° C.).

OLEUM RICINI.—Bentl. and Trim., 'Med. Pl.,' vol. iv., plate 237. Sp. gr. 0·950 to 0·970. Soluble in five times its volume of alcohol (90 per cent.). It dries slowly to a varnish when exposed to the air in a thin layer. If 3 C.c. of the oil be shaken with an equal volume of carbon bisulphide and 1 C.c. of sulphuric acid be then added, the mixture, on being shaken, should not become brown (absence of various fixed oils, including cotton seed oil). Equal volumes of castor oil and petroleum spirit do not yield a clear mixture if kept at 60° F. (15·5 C.), but they yield a perfectly clear solution if other fixed oils be present.

OLEUM ROSÆ.—Oil of rose. Synonym,—Otto of rose. The oil distilled from the fresh flowers of *Rosa damascena*, Linn. Redouté, 'Les Roses,' pl. 109. *Characters and Tests.*—A pale yellow crystalline semi-solid, with the strong fragrant odour of rose and a sweet taste. Sp. gr. 0·856 to 0·860 at 86° F. (30° C.). The congealing and melting points vary according to the proportion of crystalline matter, but should lie between 67° and 72° F. (19°·4 and 22°·2 C.).

OLEUM ROSMARINI.—Taste camphoraceous. Sp. gr. 0·900 to 0·915. It should dissolve in twice its volume of alcohol (90 per cent.) and should not rotate the plane of a ray of polarised light more than 10° to the right in a tube 100 Mm. long (absence of oil of turpentine). Dose, ½ to 3 minims.

OLEUM RUTÆ.—Omitted.

OLEUM SABINÆ.—Omitted.

OLEUM SANTALI.—Sp. gr. 0·975 to 0·980. It forms a clear solution with six times its volume of alcohol (70 p. c.), (absence of cedar wood oil). It rotates the plane of a ray of polarised light to the left, through an angle of not less than 16° and not more than 20° in a tube 100 Mm. long (absence of other varieties of sandal wood oil). Dose, 5 to 30 minims.

OLEUM SINAPIS VOLATILE.—Volatile oil of mustard. Distilled from black mustard seed after maceration with water. Sp. gr. 1·018 to 1·030. It distils between 297° F. (147°·2 C.) and 306° F. (152° 2 C.), and the first and last portions of the distillate should have the same sp. gr. as the original oil (absence of ethylic alcohol and petroleum). The solubility in alcohol, ether, and water is omitted.

OLEUM TEREBINTHINÆ.—Obtained from the oleo-resin of *Pinus sylvestris*, Linn. Bentl. and Trim., vol. iv., pl. 257, and other species of *Pinus*; rectified if necessary. It is soluble in its own volume of glacial acetic acid. It commences to boil at about 320° F. (160° C.), and almost entirely distils below 356° F. (180° C.), little or no residue remaining. Dose: 2 to 10 minims; as an anthelmintic, 3 to 4 fluid drachms.

OLEUM THEOBROMATIS.—A yellowish-white solid, breaking with a smooth fracture. It softens at 80° F. (26·6 C.) and melts at temperatures between 88° and 93° F. (31°·1 and 33°·9 C.) If 1 gramme be dissolved in 3 C c. of ether, in a test tube, at 62° or 63° F. (or 17° C.), and the tube placed in water at 32° F. (0° C.) the liquid should neither become turbid nor deposit a granular mass in less than 3 minutes, and if the mixture, after congealing, be exposed to a temperature of 60° F (15·5 C.) it should gradually afford a clear solution (absence of other fats).

OPIUM.—Any suitable variety of opium may be employed as a source of tincture of opium and extract of opium of the respective official alkaloidal strengths, provided that when dry it contains not less than 7½ p. c. of anhydrous morphine; but, when otherwise used for officially recognised purposes, opium must be of such a strength that when dried and powdered, and the powder heated to 212° F. (100° C.), until it ceases to lose moisture, and the product tested by the appended method, such dry powder shall yield not less than 9½ p. c., nor more than 10½ p. c. of anhydrous morphine. Opium yielding, when dried, more than 10 p. c. of anhydrous morphine may be diluted to that percentage with any opium containing, when dry, between 7½ and 10 p. c. of anhydrous morphine, or with milk sugar.

OS USTUM.—Omitted.

OVI ALBUMEN.—Omitted.

OVI VITELLUS.—Omitted.

PAPAVERIS CAPSULÆ.—The capsules do not now contain slate-coloured or blackish seeds. The geographical source is not given. The pericarp is thin, dry, and brittle.

PAREIRÆ RADIX.—The iodine test is omitted. The zones are described as crenated.

PEPSINUM.—It is described as an enzyme. The process of preparation is omitted. Tested as described in the following paragraph it should dissolve 2500 times its weight of hard boiled white of eggs. If 12·5 grammes of coagulated and firm white of fresh eggs, 125 C.c. of acidulated water containing about 0·2 per cent.

of hydrogen chloride (HCl), and 0·005 gramme of pepsin be digested together at 105° F. (40°·5 C.) for six hours, and shaken at intervals, the coagulated white of eggs dissolves, leaving only a few small flakes, in an almost clear solution. The "white of eggs" should be prepared by boiling quite fresh eggs in water for fifteen minutes, then immersing them in cold water, and, as soon as sufficiently cool for handling, separating the whites, washing off any fragments of yolk or membrane with water, removing the water with a clean towel, then at once rubbing the whites through a sieve having twelve meshes to a centimetre, and using the product before it has lost moisture. For the acidulated water mix the official hydrochloric acid with water in the proportion of 1 gramme to 155 C.c. This will give a solution containing about 0·2 per cent. of hydrogen chloride (HCl). Dose: 5 to 10 grains.

Physostigmatis Semina.—The ripe seeds. Bentl. and Trim., 'Med. Pl.,' vol. ii., pl. 80. The potash test and the solvents for its active constituents and the dose are omitted.

Pimenta.—Crowned with the remains of a four-toothed calyx.

Piper Nigrum.—The seed completely fills the cavity of the pericarp.

Pix Burgundica.—Obtained from *Picea excelsa*, Linke (Bentl. and Trim., 'Med. Pl.,' vol. iv., pl. 261).

Pix Carbonis Præparata.—Prepared by placing commercial coal tar in a shallow vessel and maintaining it at a temperature of 120° F. (48·9° C.) for one hour, frequently stirring. This name, strictly speaking, is incorrectly applied to coal tar, since literally translated it means coal pitch. Tar is Pix liquida, and the name should therefore obviously be Pix carbonis liquida præparata.

Pix Liquida.—Bentl. and Trim., 'Med. Pl.,' vol. iv., pl. 257.—Known in commerce as Stockholm tar. Sp. gr. 1·02 to 1·15. Water agitated with it assumes a red colour with dilute test solution of ferric chloride. Tar is completely soluble in ten times its volume of alcohol (90 p. c.).

Podophylli Rhizoma.—Bentl. and Trim., 'Med. Pl.,' vol. i., pl. 17. The fracture may be pale yellowish-brown and horny.

Virginian Prune Bark.—The bark of *Prunus serotina*, Ehrh. (Bentl. and Trim., 'Med. Pl.,' vol. ii., plate 97), collected in autumn. *Characters:* In curved pieces or irregular fragments, one-twelfth of an inch (two millimetres) or more in thickness. Young bark is frequently covered with a smooth, thin, reddish-brown, papery cork, or, if this has been removed, exhibits a greenish-brown inner layer; it is marked with transversely-elongated lenticels, and breaks with a short granular fracture. The outer surface of old bark is usually rough and nut-brown in colour. The inner surface is finely striated or fissured and reticulated; the fractured surface is reddish-grey. The bark contains numerous groups of sclerenchymatous cells of characteristic irregular shape. Taste astringent, aromatic, and bitter; the odour, which is developed upon maceration in water, resembles that of the bitter almond. Correctness is sacrificed here to convenience. There is a species named *Prunus virginiana*, from which the official bark is not obtained. The official plant is *Prunus serotina*, and the official title is therefore incorrect.

Prunum.—Dried ripe fruit. The geographical source is not given.

Pterocarpi Lignum.—The heart-wood. The raspings or small slices are not mentioned. The colouring matter is soluble in alcohol (90 p. c.), but only sparingly soluble in water. Red sanders wood is now the official vernacular name, instead of red sandal wood, which is given as a synonym.

Pyrethri Radix.—Tapering towards both extremities, the crown often bearing a tuft of nearly colourless hairs. The fractured surface shows the wood to be traversed by large medullary rays in which, as in the cortex, numerous dark resin ducts are scattered.

Quassiæ Lignum.—The wood of the trunk and branches, frequently exceeding 6 inches (15 C.c.) in diameter. The wood is easily split. Chips, shavings or raspings are not mentioned. The longitudinal section exhibits elongated cells containing single crystals of calcium oxalate. The transverse section exhibits medullary rays, mostly 2 or 3 cells in width. The test for tannin is not given.

Quercus Cortex.—Omitted.

Quillaiæ Cortex.—Quillaia bark. Synonym, Panama bark. The inner part of the bark of *Quillaja saponaria*, Molina, 'Bot. Mag.,' plate 7568. *Characters:* Quillaia bark is usually imported in large flat pieces, about $\frac{1}{6}$ in. (4 Mm.) thick and two feet (6 Dcm.) or more long, and 4 in. (10 Cm.) wide. The outer surface is brownish-white, or where the outer bark has been imperfectly removed, reddish-brown or blackish-brown; the inner surface is smooth and white or yellowish-white. The fracture is splintery, the fractured surface is laminated and exhibits under a lens, glistening, prismatic crystals. The transverse section is marked with fine radial and tangential lines. The taste is astringent and acrid; the odour is not marked, but the powder is extremely irritating to the nostrils.

Rhamnus Frangulæ Cortex.—Omitted.

Resina.—It is soluble in alcohol (90 p. c.), ether, benzol, and carbon bisulphide. It leaves no appreciable ash when burnt.

Rhamni Purshiana Cortex.—See Cascara Sagrada.

Rhei Radix.—The rhizome is erect. The surface of the drug is usually smooth, substance yellowish-brown or greyish, nearly always presenting small scattered star-like marks, and in some cases a rhomboidal network of reddish lines.

Rhœados Petala.—"Often nearly black at the base" omitted, also "unequal in size." They are transversely elliptical in outline, about 2 inches (5 Cm.) broad, have a smooth lustrous surface and an entire margin.

Rosæ Caninæ Fructus.—Omitted.

Rosæ Centifoliæ Petala.—Omitted.

Rosæ Gallicæ Petala.—Geographical source not now stated.

Sabadilla.—Omitted.

Sabinæ Cacumina.—Omitted.

Saccharum Lactis.—Syn., Lactose, $C_{12}H_{22}O_{11}H_2O$. Cylindrical masses not mentioned. It occurs in crystals or crystalline masses. It should not leave more than 0·25 p. c. of ash when incinerated with free access of air. One gramme dissolved in 10 C.c. of water gives a red colour with solution of phenol-phthalein after the addition of three drops of the volumetric solution of sodium hydroxide (limit of lactic acid).

Saccharum Purificatum.—Obtained from the juice of the sugar-cane. Colourless and inodorous separate crystals, completely soluble in half its weight of water. Heated to about 180° F. (82° C.) with solution of potassio-cupric tartrate and excess of solution of potassium hydroxide there should not result more than a trace of a red or yellowish precipitate (absence of glucose). Refined sugar should yield no reaction with the tests for calcium, chlorides, and sulphates.

Sambuci Flores.—Separated from the stalks. Geographical source not mentioned. Anthers yellow. The yellow anthers distinguish the flowers from those of *Sambucus ebulus*, which have pink anthers.

Santonica.—Omitted.

Sarsæ Radix.—Sarsaparilla. The root of *Smilax ornata*, Hook. f., 'Bot. Mag.,' tab. 7054. Imported from Costa Rica. The bundles are about 18 inches ($\frac{1}{2}$ M.) in length and 4 or 5 inches (10 to 12½ Cm.) in diameter. The roots are usually $\frac{3}{16}$ (5 Mm.) in thickness, and are deeply wrinkled longitudinally. The transverse section usually exhibits a reddish-brown cortex and yellowish-white wood. The cells of the endodermis are nearly square in transverse section and are uniformly thickened.

Sassafras Radix.—Unaltered.

Scammoniæ Radix.—Usually from 1 to 3 in. (2½ to 7½ Cm.) or more in diameter. Frequently contorted. The fracture is very coarsely fibrous: internally the colour is light or dark grey. The section exhibits an abnormal wood, consisting of numerous irregularly-arranged wood bundles, and, when examined under the microscope, appears beset with starch grains of characteristic shape, especially in the cortical region, with resin cells.

Scammonium.—In thin fragments the drug is brown and more or less translucent. It should afford only the slightest reactions with the tests for starch, and should yield at least 70 p. c. of resin soluble in ether, and not more than 3 p. c. of ash on incineration. An alcoholic solution should not afford a blue colour with test solution of ferric chloride (absence of guaiacum resin).

Scilla.—Practically unaltered.

Scoparii Cacumina.—Geographical source not given.

Senegæ Radix.—The sialogogue properly of the root not mentioned. The cortex is free from starch grains.

Senna Alexandrina.—Greyish-green. The greatest diameter is frequently below the middle of the leaflet. The epidermis bears one-celled, thick-walled hairs.

Senna Indica.—Bentl. and Trim., 'Med. Pl.,' vol. ii., pl. 91. The greatest diameter is usually near the middle of the leaflet.

Serpentaria Rhizoma.—Unaltered

Sevum Preparatum.—Melting point between 112° to 120° F. (44°·4 and 48°·9 C.), commences to re-solidify at about 100° F. (37°·8 C.). Freely soluble in petroleum spirit, slowly soluble in benzol, insoluble in cold alcohol (90 p. c.), slightly soluble in ether or boiling alcohol (90 p. c.).

Sinapis.—A cooled decoction is not rendered brown by a solution of boric acid (absence of turmeric).

Sinapis Albæ Semina.—About one-tenth of a grain in weight (6½ Mg.), almost inodorous when triturated with water. The geographical source is not given.

Sinapis Nigræ Semina.—About 1/50th of a grain in weight (1⅓ Mg.); when entire or when powdered, inodorous. Taste somewhat bitter at first.

Spiritus Vini Gallici.—Matured by age and containing not less than 36½ p. c. by weight or 43 p. c. by volume of ethyl hydroxide.

Staphisagriæ Semina.—Unaltered.

Stramonii Folia (Additions, 1895).—The mesophyll contains cluster crystals of calcium oxalate.

Stramonii Semina.—The surface is marked with reticulate depressions. The embryo is curved and embedded in a white oily albumen.

Strophanthi Semina.—The seeds of *Strophanthus kombé*, Oliv., 'Icon. Plant,' p. 1098. Sulphuric acid colours the endosperm and sometimes the cotyledons dark green (presence of strophanthin). It is to be noted that the term endosperm used in describing this seed is not generally applied to it by authorities on materia medica, who use either perisperm or albumen.

Styrax Præparatus.—Bentl. and Trim., 'Med. Pl.,' vol. ii., pl. 107.

Sumbul Radix.—Practically unaltered.

Tabaci Folia.—Omitted.

Tamarindus.—Practically unaltered.

Taraxaci Radix.—Geographical source omitted. Practically unaltered.

Terebinthina Canadensis.—The mode of obtaining it is not stated. The magnesia used to solidify it is moistened with a little water. Dose omitted.

Theriaca.—Omitted.

Thus Americanum.—Frankincense. Bentl. and Trim, 'Med. Pl.,' vol. iv., pl. 258, 259. By keeping, it becomes translucent. The odour is terebinthinate.

Thymol.—A crystalline substance, $C_6H_3 OH{\cdot}CH{\cdot}C_3H_7$. Process of manufacture omitted; otherwise unaltered.

Tragacantha.—Known in commerce as Syrian Tragacanth. Frequently about 1 inch (2½ Cm.) long and ½ inch (12 Mm.) wide. The temperature at which it becomes pulverisable is omitted, also the remark that after maceration in cold water the fluid portion is not precipitated by rectified spirit.

Uvæ.—Omitted.

Uvæ-Ursi Folia.—Geographical source omitted. The upper surface is reticulated and the veinlets are depressed. The iron test for tannin is omitted.

Valerianæ Rhizoma.—The statement "yields volatile oil and valerianic acid when distilled with water" is omitted.

Veratri Viridis Rhizoma.—Omitted.

Zingiber.—Fracture sometimes resinous.

Articles and Preparations included in the British Pharmacopœia of 1898, which were not in that of 1885, nor in the "Additions" of 1890.

Araroba
Aurantii Cortex Recens
Benzol. (In Appendix, 1885)
Bismuthi Salicylas
Caffeinæ Citras Effervescens
Caoutchouc
Carbonis Bisulphidum
Cocaina
Codeinæ Phosphas
Extractum Belladonnæ Liquidum
Extractum Ipecacuanhæ Liquidum
Extractum Jaborandi Liquidum
Extractum Nucis Vomicæ Liquidum
Extractum Strophanthi
Glycerinum Acidi Borici
Glycerinum Pepsini
Hydrargyri Oleas
Hyoscinæ Hydrobromidum.
Hyoscyaminæ Sulphas
Infusum Scoparii
Kaolinum
Lamellæ Homatropinæ
Liquor Calumbæ Concentratus
Liquor Caoutchouc
Liquor Chiratæ Concentratus
Liquor Cuspariæ Concentratus
Liquor Ethyl Nitritis
Liquor Hamamelidis
Liquor Hydrogenii Peroxidi
Liquor Krameriæ Concentratus
Liquor Morphinæ Tartratis
Liquor Pancreatis
Liquor Picis Carbonis
Liquor Quassiæ Concentratus
Liquor Rhei Concentratus
Liquor Sarsæ Compositus Concentratus
Liquor Senegæ Concentratus
Liquor Sennæ Concentratus
Liquor Serpentariæ Concentratus
Liquor Thyroidei
Lithii Citras Effervescens
Morphinæ Tartras
Naphthol
Oleum Pini
Oleum Rosæ
Paraffinum Liquidum
Physostigminæ Sulphas
Pilula Quininæ Sulphatis
Pix Carbonis Præparata
Pruni Virginianæ Cortex
Quillaiæ Cortex
Quininæ Hydrochloridum Acidum
Salol
Spiritus Anisi
Strychninæ Hydrochloridum
Suppositoria Acidi Carbolici
Suppositoria Belladonnæ
Syrupus Aromaticus
Syrupus Calcii Lactophosphatis
Syrupus Cascaræ Aromaticus
Syrupus Codeinæ
Syrupus Ferri Phosphatis cum Quinina et Strychnina
Syrupus Glucosi
Syrupus Pruni Virginianæ
Terebenum
Thyroideum Siccum
Tinctura Ergotæ Ammoniata
Tinctura Pruni Virginianæ
Tinctura Quillaiæ
Trochiscus Acidi Carbolici
Trochiscus Eucalypti Gummi
Trochiscus Guaiaci Resinæ
Trochiscus Krameriæ
Trochiscus Krameriæ et Cocainæ
Unguentum Aquæ Rosæ
Unguentum Capsici
Unguentum Cocainæ
Unguentum Hydrargyri Oleatis
Unguentum Hydrargyri Oxidi Flavi
Unguentum Paraffini

Articles and Preparations included in the British Pharmacopœia of 1885, or in the "Additions" of 1890, but omitted in the British Pharmacopœia of 1898.

Acetum
Acidum Lacticum Dilutum
Acidum Meconicum
Aconiti Folia
Alcohol Amylicum
Ammonii Nitras
Anisi Stellati Fructus
Aqua*
Argentum Purificatum
Aurantii Fructus
Beberinæ Sulphas
Belæ Fructus
Bismuthi Citras
Bismuthi et Ammonii Citras
Bismuthum
Bismuthum Purificatum
Calamina Præparata
Canellæ Cortex
Carbo Animalis
Carbo Animalis Purificatus
Cataplasma Carbonis
Cataplasma Conii
Cataplasma Fermenti
Cataplasma Lini
Cataplasma Sinapis
Cataplasma Sodæ Chlorinatæ
Cerevisiæ Fermentum
Cetraria
Charta Epispastica
Cinchonæ Cortex (Cinchonæ Rubræ Cortex is retained)
Cinchonidinæ Sulphas
Cinchoninæ Sulphas
Confectio Opii
Confectio Rosæ Caninæ
Confectio Scammonii
Confectio Terebinthinæ
Creta
Cupri Nitras
Decoctum Cetrariæ
Decoctum Cinchonæ
Decoctum Hordei
Decoctum Papaveris
Decoctum Pareiræ
Decoctum Quercûs
Decoctum Sarsæ
Decoctum Sarsæ Compositum
Decoctum Scoparii
Decoctum Taraxaci
Ecballii Fructus
Elemi
Emplastrum Ferri
Emplastrum Galbani
Emplastrum Saponis Fuscum
Enema Aloes
Enema Asafœtidæ
Enema Magnesii Sulphatis
Enema Opii
Enema Terebinthinæ
Essentia Anisi
Essentia Menthæ Piperitæ
Extractum Aconiti
Extractum Aloes Socotrinæ
Extractum Belæ Liquidum
Extractum Calumbæ
Extractum Colchici Aceticum
Extractum Conii
Extractum Gelsemii Alcoholicum
Extractum Hæmatoxyli
Extractum Jaborandi
Extractum Lactucæ
Extractum Lupuli
Extractum Mezerei Æthereum
Extractum Papaveris
Extractum Pareiræ
Extractum Quassiæ
Extractum Rhamni Frangulæ
Extractum Rhamni Frangulæ Liquidum
Farina Tritici
Ferri Peroxidum Hydratum
Ferri Sulphas Granulata
Glycerinum Acidi Gallici
Gutta Percha
Hordeum Decorticatum
Hydrargyri Persulphas
Infusum Anthemidis
Infusum Catechu
Infusum Cusso
Infusum Jaborandi
Infusum Lini
Infusum Maticæ

* Alluded to under "Aqua Anethi" and "Aqua Destillata."

Infusum Valerianæ
Kamala
Lac
Lactuca
Laricis Cortex
Liquor Ammonii Acetatis Fortior
Liquor Ammonii Citratis Fortior
Liquor Antimonii Chloridi
Liquor Calcii Chloridi
Liquor Ferri Acetatis Fortior
Liquor Ferri Dialysatus
Liquor Gutta Percha
Liquor Iodi
Liquor Lithiæ Effervescens
Liquor Magnesii Citratis
Liquor Morphinæ Bimeconatis
Liquor Morphinæ Sulphatis
Liquor Potassæ Effervescens
Liquor Sodæ
Liquor Sodæ Effervescens
Manna
Marmor Album*
Mastiche
Maticæ Folia
Mel
Mica Panis
Mistura Ferri Aromatica
Mistura Scammonii
Mori Succus
Morphinæ Sulphas
Mucilago Amyli
Nectandræ Cortex
Oleatum Hydrargyri
Oleatum Zinci
Oleo-resina Cubebæ
Oleum Myristicæ Expressum
Oleum Pini Sylvestris
Oleum Rutæ
Oleum Sabinæ
Os Ustum
Ovi Albumen†
Ovi Vitellus†
Physostigmina
Pilula Conii Composita
Pilula Ferri Carbonatis
Pilula Ferri Iodidi
Plumbi Nitras
Potassii Cyanidum
Potassii Ferrocyanidum
Quercûs Cortex
Rhamni Frangulæ Cortex
Rosæ Caninæ Fructus
Rosæ Centifoliæ Petala
Sabadilla
Sabinæ Cacumina
Santonica
Sodii Nitras
Sodii Valerianas
Spiritus Tenuior
Suppositoria Acidi Carbolici cum Sapone
Suppositoria Acidi Tannici cum Sapone
Suppositoria Hydrargyri
Suppositoria Morphinæ cum Sapone
Syrupus Ferri Subchloridi
Syrupus Mori
Syrupus Papaveris
Tabaci Folia
Theriaca
Tinctura Aurantii (Cort. Sicc.)
Tinctura Chloroformi Composita
Tinctura Ergotæ
Tinctura Ferri Acetatis
Tinctura Gallæ
Tinctura Laricis
Tinctura Lobeliæ
Tinctura Sabinæ
Tinctura Valerianæ
Tinctura Veratri Viridis
Tinctura Zingiberis Fortior
Trochisci Opii
Unguentum Antimonii Tartarati
Unguentum Calaminæ
Unguentum Elemi
Unguentum Potassæ Sulphuratæ
Unguentum Sabinæ
Unguentum Simplex
Unguentum Terebinthinæ
Uvæ
Vapor Acidi Hydrocyanici
Vapor Chlori
Vapor Coninæ
Vapor Creasoti
Vapor Iodi
Vapor Olei Pini Sylvestris
Veratri Viridis Rhizoma
Vinum Aloes
Vinum Opii
Vinum Rhei

THE DISPENSER'S ART—ITS DEMANDS, CLAIMS, AND RESPONSIBILITIES.‡

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So far we arrive at the end of the first half of this century, and only one other matter will I delay a moment to comment upon. An organ of opinion is necessary for the protection, advance, and education of any great public body or association. And we look back to the years 1839 and 1841 as the two of most importance in this century with regard to pharmaceutical progress, not only for the events I have referred to, but also because in these years the *Chemist* and the *Pharmaceutical Journal* respectively appeared. It is for you public dispensers to see that, in the pages of the journals that now so ably and fully represent the pharmaceutical chemists, and the chemists and druggists, your interests are protected and your grievances exposed.

From 1841 to 1898 we find in the progress of pharmacy a gradual crystallising process, and the emergence of the art from the colloid state in which the early part of the century found it, to its present stable and more permanent character. During this conversion pharmacy became more organised, and the disintegration of the older methods was followed by an integration, with the gradual evolution of a more complex art. In this metabolisation of pharmacy the name of Jacob Bell stands prominently out, and to him may be attributed the appearance of the 'Pharmaceutical Transactions,' publications which proved the scope and nature of the work of the future pharmaceutical chemists. This was further demonstrated by the appointment of such men as Ure, Percira, Redwood, Fownes, and Thomson to lecture, and thus were incorported in a physiological union the sciences of botany, chemistry, and therapeutics, as the tripod on which the art of pharmacy must rest. If I here dignify the subject of therapeutics by calling it a science, and further say that the pharmacist has to become acquainted with this branch of medicine, I may find some inside and outside your ranks to differ with me. To my mind, however, materia medica is not to be intelligently studied without combining with the knowledge of the physical appearance of drugs and their properties, some acquaintance with their physiological actions and uses. Thus were pharmacists compelled gradually to justify their claims to be called pharmaceutical chemists (though the correct pronunciation of their title was settled for them by a legal luminary)* by being at the same time chemists, botanists, and therapeutists, and having, to a minor extent, a knowledge of physiology. Nor indeed can another department of physical science be well omitted, as will be clear presently when I refer to your curriculum and studies, for, in the understanding of the physical properties and the action of drugs an acquaintance with the laws of hydrostatics, elementary mechanics, light, heat, and electricity is needful. Consequently experimental physics has to be included.

I must pass, without more than a cursory reference, to the part played by the Pharmaceutical Society during the last fifty years in the furthering and completion of those various legislative enactments that have tended to improve and define the position of chemists and druggists generally. A perusal of its history during this time shows how much you owe to this parent Society in securing for you public confidence as analysts, as custodians in whose hands the care, manipulation, and dispensing of subtle poisons might be safely placed. Also, the medical profession in the three divisions of the kingdom have been educated to see that no pharmacopœia could be acceptable or complete which did not bear on its face the evidence of the pharmaceutical chemist's revising finger. To this body also you owe those Pharmacy Acts which have, first in 1862, and again in 1868, placed you in the defined and recognised position you occupy to-day, with the conditions of your enrolment and registration settled, and your privileges secured.

Those years have brought to registered dispensers freedom of service from juries (1862 Act), protection from the competition of unqualified chemists and stricter regulations for the qualifications required for employment in the public services. They have seen many valuable public conferences and original communications, and the Society has of late years pressed in the service such men as Paul, Hanbury, Ince, Carteighe, Gale, Umney, Hill, and others. Now the Pharmaceutical Society of Great Britain, of which you form a part, stands prominently forth as a recognised corporation, with public functions to discharge and duties to fulfil of the utmost value to the State and to society.

Finally, it has been the means of stimulating in other centres

* Referred to under "Calcium Carbonate" in Appendix I.
† Referred to under "Albumen" in Appendix I.
‡ Inaugural address to the Public Dispensers' Association, delivered on Friday, February 25. Concluded from page 309.

* Lord Campbell, Court of Queen's Bench, June 22, 1854, case of Dickinson *v.* Pharmaceutical Society.

kindred bodies with like objects in the large provincial towns of England, thus fostering and developing in these local centres the cultivation of pharmacy, and encouraging that same zeal in the cause which was imbibed through the action of the parent Society.

When I take up these regulations of the Pharmaceutical Society of Great Britain which I hold in my hand, and glance through the subjects required for registration of a youth as apprentice or student, in Latin, arithmetic and English, the syllabus of subjects on examination in chemistry, theoretical and practical; in physics, botany, and materia medica ; in the art of writing prescriptions ; in posology ; in practical dispensing, pharmacy, and toxicology ; in all of which a knowledge is demanded for the Minor examination for registration as chemist and druggist, I find ample evidence of the educational standard that must be attained to before even a candidate can present himself for the Major examination for pharmaceutical chemist. In this latter examination he has to pass far severer tests in chemistry, physics, and materia medica, tests which place beyond doubt his intelligence, training, aptitude, and experience for the discharge of his dutics as a pharmacist. I do not think that the severity of these tests, the care with which they are applied, and the large amount of ground they cover in all the subjects, are as widely apprehended by the medical profession and the public generally as they ought to be, and your Association can do excellent service in drawing attention to the nature of the work your qualifications entitle you to do, its technical nature and its complex character.

A first-class dispenser must have certain qualities. He has to be a man endowed with considerable manipulative dexterity ; he has to be cool and precise in his work ; oftentimes under great pressure and difficulty ; he must have a good memory, and be endowed with a sound physical constitution. There is oftentimes great mental strain, and considerable demands are made by ignorant or thoughtless people on his patience and tact. That this must be so is clear when we remember the multifarious duties dispensers in many public institutions are called upon to discharge. The dispenser has to be occasionally the right-hand man of a medical staff ; not only has he to see to their prescriptions, but also to the provision of belts, bandages, splints, trusses, artificial limbs, and appliances of various descriptions. He may be called on to do a little rough eye-testing and dentistry ; he must be familiar with the use of the microscope, have some knowledge of photography and photo-micrography, and many are now acquainted with the use of the *x*-rays and radiographical examination. The preparation of macroscopic and microscopic specimens are often entrusted to him, so he must have a knowledge of the fixing and staining of sections reserved for pathological examination. In some instances he has to prepare materials for lectures and demonstrations. The care and repair of medical and surgical instruments and appliances is expected of him, and he has to have ready for use, and in working order, various forms of electrical batteries. He has frequently not merely to do the pharmaceutial work of the institution, but to take the position of instructor of pharmacy and demonstrator of materia medica. And while he is thus expected by the authorities and the medical staff to be efficient and ready in regard to all these duties, he has to work his department with the strictest economy, and to make all the pharmaceutical and chemical preparations that it is possible to prepare on the spot. The institutions in which public dispensers are employed comprise, amongst others, hospitals, infirmaries, asylums, prisons, etc., and the remuneration, considering the nature of the duties discharged and the qualifications of those who undertake them, is not, in the larger proportion of cases, more, and is in some instances actually less than that offered to the skilled artisan, the average salary being £100 per annum, though a maximum of £250 may in some exceptional cases be reached.

Taking the enormous number of prescriptions compounded daily in the United Kingdom, and the various other duties that involve risk which are discharged by the dispenser, it is marvellous how few accidents or errors occur. This is the best testimony that can be given to the high character of dispensers as a class and the type of work that they do.

Gentlemen, I think I have shown that your calling makes its special demands on you, demands which are absolute and irresistible if you are to be efficient followers of it ; also that it has its peculiar claims for consideration and recognition at the hands of the State, the medical profession, and the public. And, finally, I have proved that it has attached to it grave responsibilities, the fulfilling of which must often tax your abilities and resources to their utmost limits. It is no matter, then, for surprise that you are associating yourselves together to insure this consideration and recognition, and to safeguard and protect the rights and privileges which are attached to your position. And it is quite within your right to protect yourselves from the encroachments of those who have not your qualifications, and have not passed through the severe preliminary and pharmaceutical training that you have, in order to entitle you to hold certain positions. Such public posts are few enough, considering the number of highly-qualified pharmacists who are ready to fill them. The competition between such is keen enough without handicapping them still further by admitting as candidates ill-educated and unqualified men. Registration should be the *sine quâ non* for all such dispensing posts.

I have tried to show that you dispensers of to-day are the outcome of over two hundred years of growth and development ; that development has associated with it traditions and names of distinguished workers, of whom you may be justly proud, and whose memories you revere. These traditions are the heritage that has been left to you ; those names are the voices from the past urging you to hold them dear. They call upon you, not for any sordid and personal aggrandisements, to hold fast the principles they have bequeathed to you. They bid you to remember that before all other considerations must be placed enthusiasm for that art itself, and a determination that British pharmacy shall hold no second place in the laboratories of the world. In working out the objects you have in hand, you are taking the best means to perpetuate these traditions and principles which are your birthright. In being true to yourselves you are faithful to your parent association, to which you owe so much, while justly mindful of those material interests which are your due, and watchful with a jealous eye of any infringment by interlopers of those rights which the State has given to you, and for which your predecessors have struggled. You will inscribe on the banner of your Association the Greek word παρμακευτικος, and under it a motto : "Non sibi sed arti"—not for ourselves but for the love of our art.

Test for Sandal Oil.—The following test for sandal oil is proposed by Hendrix :—A solution of 3 parts of crystallised phenol in one part of alcohol is prepared. Half a C.c. of the oil is added to 2 grammes of this mixture, in which it is perfectly soluble. Half a gramme of concentrated hydrochloric acid is then added with shaking. Pure sandalwood oil gives a yellow coloration at the zone of contact, which develops to bright red. Copaiba oil gives a mauve coloration. Cedarwood oil gives a milky solution and a brown coloration.—*Annales de Chim. Analyt.*, ii., 298, after *Journ. de Pharm. d'Anvers.*

Royal Society Conversazione.

The annual conversazione was held at Burlington House on Wednesday, May 11, when a large and distinguished company was received by the PRESIDENT, Lord Lister, F.R.C.S., D.C.L.—The exhibits were of a varied and most interesting nature. Specially interesting to pharmacists were those dealing with X-rays and calf vaccine lymph. The leading features of the many exhibits are briefly referred to below.

Professor Hele Shaw, LL.D., described and exhibited some

Experiments on the Flow of Water.

The first series of experiments dealt with the flow of water in layers of appreciable thickness, the lines of flow being made visible by the injection of air. It was then conjectured that the clear film or border line which was visible at the sides of a solid over which the water passed indicated a condition of flow different from that in the main body of the water. The injection of air gave a very complete idea of the behaviour of water flowing round an obstacle or through a pipe; it also enabled the experiment to be reproduced on a screen, since the bubbles of air, which to the eye have a silvery appearance, showed themselves on the screen as dark lines. It was demonstrated conclusively that, if one end of a boat must be broad, it should be the bow, because a broad stern materially lessens the speed, creating a larger wash in the wake of the vessel. This is a point of extreme importance to shipbuilders. Subsequent investigation of the subject proved that in dealing with layers or sheets of inappreciable thickness, corresponding to the width of this thin border line, it was possible to produce stream line motion itself by means of colour bands. The stream lines thus obtained have been compared with those arrived at mathematically for the flow of a perfect liquid, with which they are found to be practically identical. Illustrations of the second investigation showed clearly that round the sides of a submerged obstacle the water for a certain distance glides with parallel flow, whereas further off the water is broken up into a state of sinuous motion, in which the particles are in a state of rotation or whirl. The same method can be used for investigating the flow of electricity and heat. Many photographs were handed round, illustrating the flow of water through pipes, porous diaphragms, and round obstacles of various forms.

Mr. J. Mackenzie Davidson, M.B., showed a useful

Röntgen Ray Apparatus for Localisation Purposes.

The localising apparatus consisted of (1) a horizontal bar with scale and level attached, upon which slides the holder for a Crookes' tube; (2) the cross-thread localiser whereby the paths of the X-rays, which produce two photographs from two different points of view, may be traced by means of fine silk threads. The point of crossing fixes the position of the bullet or other object, which may be embedded in the body.

Stereoscopic X-ray Photographs

were on view in a Wheatstone stereoscope, and Mr. T. Andrews, F.R.S., showed some choice

Micrographic Illustrations of Deterioration in Steel Rails.

The micrographs are illustrations, at a high magnification, of the effects of wear on steel rails under known conditions of main line service. The high power investigations of old rails, which have worn well, afford an indication of the microscopic structure and composition best adapted to ensure endurance and safety in rail service. The micro-crystalline structure of iron was explained. The micrographs show the crystalline structure of iron, and indicate the existence of a primary and secondary crystalline formation in large masses of iron which have been slowly cooled.

Mr. C. Orme Bastian's

Electric Current Meter is worth mentioning.

It acts by electrolysis. The height of a column of liquid (sulphuric acid and water) contained in a glass tube is caused to decrease by electro-decomposition, and this decrease in height is utilised to indicate the quantity of current (in ampère hours) that has passed through the meter in any given time. Assuming the voltage of the supply to be constant, a perfectly accurate measure of the electric energy, which has passed through the meter, is recorded by means of a scale in front of the above-mentioned tube, which can be calibrated in Board of Trade or other units. A hole in a rubber plug at the top of the tube allows the gases resulting from the electro-decomposition of the liquid to pass away into the atmosphere, through the gauze tray and holes in the top of the meter case. Paraffin on the surface of the fluid prevents atmospheric evaporation. The instrument starts registering with an infinitely small current; it is accurate at all temperatures and at all loads; its accuracy is unaffected by temporary excess currents; and it is not capable of being affected by outside disturbing influences.

Mr. Leonard Hill, M.B., and Mr. Harold Barnard, F.R.C.S., exhibited some

Simple Forms of Sphygmo-Manometers.

The instrument, in its simplest form, consists of a glass tube six inches or less in length, expanded at the upper end into a small bulb, at the lower end into a shallow cup. The upper end of the bulb is closed by a glass tap. The cup is covered with an india-rubber membrane, and is filled with coloured liquid. The glass tube is graduated, each division of the scale indicating a pressure of 2 Mm. of mercury. In using the instrument the membrane of the cup is pressed down on the radial artery, the tap being opened. When the fluid reaches zero on the scale the tap is closed. Pressure is then continued until maximal pulsation is obtained. The pressure at which maximal pulsation occurs is the mean arterial pressure, for the wall of the artery oscillates most freely when the pressures within and without are the same. By means of the tap the fluid can be set at zero before each observation; thus changes due to temperature or barometric pressure are avoided. Some interesting

Charts and Sections and Specimens

were displayed by Admiral Sir W. J. L. Wharton, K.C.B., F.R.S., and Professor J. W. Judd, C.B., F.R.S., on behalf of the Coral Reef Committee of the Royal Society, illustrating some of the results of the investigations carried on in the Atoll of Funafuti (Ellice Group), South Pacific. The work has been directed to the investigation of the form and structure of a typical atoll. It has been ascertained that the extent of the atoll is fourteen miles by ten, and the charts on view, drawn to scale, indicated its form; but the structure will not be thoroughly understood until an examination has been made of the materials from a boring about to be carried to a still greater depth; the greatest depth yet attained is 698 feet.

Canadian Insects,

collected by Professor Poulton, F.R.S., formed a pleasing contrast to the display of machinery and apparatus which formed the greater part of the exhibits. The insects were selected from those collected during a visit to Canada in 1897, and served to convey an impression of the general characteristics of the fauna of a part of the Southern Canadian boundary. The common white English butterfly was represented; this butterfly has migrated thither from England. The most remarkable feature in the collection was the general similarity of the *Hepidoptera* to those of Europe.—

The next exhibit of interest was

A Series of large Stone Implements,

collected by Sidney Ryan, Esq., from the tin-bearing gravels of the river Embabaan, in Swaziland, South Africa. These implements mostly consist of siliceous schist, black fine-grained quartzite or chert, and quartzites composed of grit and breccia of quartz, lydite, jasper, etc. The implements measure up to 8 by 4 inches, and weigh from less than 1 lb. to 2 lb. 7½ oz.

A number of attractive experiments by Mr. Alan A. Campbell Swinton dealt with

X-Rays and their Useful Applications.

By experiments upon the circulation of the residual gaseous matter in Crookes' tubes, it was demonstrated that in addition to

the well-known negative stream from the cathode, discovered by Crookes, there exists also a positively electrified stream from the anode, which travels in the opposite direction to the cathode stream, and is exterior to the latter. Mill wheels of various forms and of both non-conducting and conducting material were employed to show these effects.

The Röntgen Ray Camera

should prove a useful appliance. Röntgen ray photographs must be sharp, to be of use for medical purposes. And this quality may be ensured by examining the ray by means of this camera, which shows the position, dimensions and form of the source of the X-rays in a Crookes' tube. The Röntgen rays not being capable of refraction the use of a lens is inadmissible, but by means of a pin-hole the image of the active anti-cathode area is thrown upon a fluorescent screen, or a sensitive plate may be substituted for the screen, and the image photographed. The active area is found to be a small solid spot, or a hollow ring, depending as the anti-cathode intersects the cathode stream at the focus or in the divergent cone. In some cases there are two concentric rings with a central nucleus. X-rays are also given off feebly by all the fluorescent portions of the glass of the tube.

Cathode Ray Lamps

are at present a novelty. It remains to be proved whether they will be used for illuminating purposes. The cathode rays from two concave cathodes placed opposite to one another and supplied with an alternating electric current of about 20,000 volts pressure, are focussed upon a button of refractory material, which is thus raised to a very high temperature and becomes brilliantly incandescent. The efficiency in terms of the amount of light produced for a given quantity of energy supplied to the lamp, appears to be much superior to that obtained in ordinary incandescent electric lamps, and under suitable conditions may even exceed that of the arc.—Mr. J. Wimshurst has invented an

Improved Apparatus for Holding, and for the Excitement of Röntgen Ray tubes.

The apparatus consists of a suitably designed tube-holder, by the use of which little, if any, leakage of electricity occurs. The excitement is produced by means of an influence machine. The direction of the flow of the electrical charges was illustrated by small fans.

Mr Killingworth Hedges, M.Inst.C.E., produced specimens of

Copper Rapidly Deposited at High Current Densities.

The deposit usually discolours and precipitates when the current density exceeds 300 amperes to the square metre. Mr. J. C. Graham obviates this by a novel method of mechanically circulating the electrolyte, and a good deposit has been obtained with current densities exceeding 2000 amperes per square metre. Copper has also been thrown down without any difficulty in the form of wires and sheets from an impure solution containing only about one per cent of copper. This method has another advantage in that the process only takes one hour, wheras by other methods the deposition of copper to the same extent takes five hours.

Photographs of Electrical Discharges

by Mr. K. J. Tarrant were remarkable for their beauty, and Mr. W. Ellis, F.R.S., illustrated the

Smoothed Curves of Sun Spot Frequency (Wolf),

compared with corresponding curves showing the variation in diurnal range of the magnetic elements of declination and horizontal force from observations made at the Royal Observatory, Greenwich. A graphical representation of the periodical variation in frequency of sun spots, and of the amplitude of the diurnal magnetic movement. The average length of the period is about eleven years, subject, however, to a variation of one or two years or more, which the sun spot and magnetic curves alike exhibit. There is also a corresponding variation in intensity at the different epochs of maximum effect.

Mr. R. B. Roxby exhibited

Specimens of "Naturographs"

(produced by Dr. Selle's process of photography in natural colours). Three specially prepared negatives are taken through red, blue, and green glass screens respectively. From the negatives three collodion positives are produced, which, after development in complementary colour baths, are superimposed, the result giving the complete picture. This method is used for producing restricted quantities. For a large number of prints a mechanical process such as collotype is employed. Time of exposure from 3 to 30 seconds. One picture especially, representing a dish of fruits (pineapples, grapes, bananas, etc.), was remarkably natural, the various tints being extremely well produced, excepting perhaps the yellows.

Mr. A. E. Tutton had on view

An Interference Dilatometer of Increased Sensitiveness

This is an instrument for measuring the thermal expansion of solids by Fizeau's method of observing the displacement, with rise of temperature, of dark interference bands. The latter are produced by the interference of monochromatic light reflected from the upper plane surface of the object and the under surface of a glass disc supported at a minute angle immediately above it. In addition to a novel arrangement of the apparatus and constructional improvements a new principle is introduced, that of compensating for the expansion of the screws of the tripod which supports the glass disc over the object. This is effected by taking advantage of the fact that aluminium expands two and a-half times as much as platinum-iridium, the tripod being constructed of the latter alloy, and the compensator of aluminium. This device raises the method from a merely relative to a directly absolute one, and so considerably enhances the sensitiveness that it is unnecessary to employ a block of the substance investigated of greater thickness than five millimetres. Hence the method is particularly applicable to the investigation of the thermal expansion of crystals.

Professor W. C. Roberts-Austen, C.B., F.R.S., exhibited an apparatus to illustrate

Berthelot's Interference Method of Measuring High Temperatures.

One of the beams of light in an interference apparatus traverses a heated porcelain tube, and the other beam traverses a tube of equal length containing rarefied air. When interference takes place it indicates that the air in the two tubes is equally rarefied, and therefore the temperature of the heated tube can be calculated from the pressure of the air in the other tube. This method is an improvement on the air thermometer method for registering high temperatures. The interference apparatus employed was that exhibited by Messrs. Edser and Stansfield at the Conversazione last year.

A Method of Demonstrating the Existence of an Allotropic Change in Iron.

was demonstrated by Mr. A. S. Stansfield, B.Sc. An electric current may be generated by heating unequally a circuit composed of a single metal, if very steep temperature gradients are maintained in the wire of which it is composed. The Thomson E.M.F. must therefore be abnormal under these conditions. Experiments are arranged to demonstrate this in the case of platinum and other metals, and to show readily the allotropic change which takes place in iron at about 800° C.—A complete installation of

Apparatus for the Micro-Photography of Metals

was exhibited by Prof. Roberts-Austen, from whose designs it was constructed by Messrs. Beck for Sir Andrew Noble's use at Elswick works.—Dr. Alexander Muirhead and Prof. Oliver Lodge, F.R.S., had prepared a large display of apparatus, illustrating

Improvements in Hertz-wave Space-Telegraphy

A couple of signalling-stations, on the Lodge sytonic system, each with a tuned radiator and resonator, and with a pair of adjustable single-point coherers, one of them tapped back either by a revolving cam or by a relay. The sender of the message at either end is an automatic transmitter (with specially punched tape), which is thrown in and out of action by a special switch. The receiving apparatus at one end is a siphon-recorder in direct circuit with tapped-back coherer, and displaying on its tape all the fluctuations of the current. At the other end the receiver, in circuit with the simple coherer, is a telephone, wherein the fluctuations of current (*i.e.*, the signals) are easily audible. One station was at the end of the Library, the other in the Secretary's room. Each station received and transmitted alternately.

A group of exhibits by the Hon. C. A. Parsons, attracted a large amount of attention. One of the earlier

Parsons Steam Turbines

of three horse power driving a dynamo; speed of working, 12,000 revolutions per minute. Also photographs of the Turbinia and a screw propeller in motion cavitating the water, the atmospheric pressure being removed from the surface by an air pump. A small screw propeller is driven by an electric motor at a speed of 1000 revolutions per minute within a tank in the form of a hollow oval ring, around which the water flows under the action of the propeller, the conditions of flow resembling closely those in the case of an ordinary screw propeller driving a ship. The illumination is effected by a beam from an electric lamp reflected from a mirror attached to and rotating with the screw shaft, and again reflected on to the propeller by a concave fixed reflector. The propeller thus illuminated appears stationary, and the cavities in the water formed by and around the blades can be clearly seen or photographed. To facilitate the formation of cavities, and to reproduce the conditions of very fast ships at convenient speeds for observation, the whole of the atmospheric pressure is removed from the upper surface of the water by an air pump. The pressure then remaining to hold the water together, is that due to the head of the water above the screws, plus capillarity. The relation holding between the model and screws on fast ships, with the same slip ratio, when cavities are formed appears to be. Lineal speed of blade varies as the square root of the total pressure holding the water together. It will be remembered that the Turbinia attracted much attention by its performance at the Naval Review last year. Its highest speed is 34 knots an hour.

In one recess, Professor W. A. Herdman, F.R.S., and Professor R. Boyce, M.B, had arranged a series of microscopic slides and drawings, showing the

Micro-chemical Reactions of the Pigment in Green Oysters.

It was shown that whereas some healthy oysters are green, from the presence of a natural pigment, others are green from the presence of copper in the tissues. A series of different kinds of oysters was shown, that the different varieties of greenness might be compared. When copper is present, the oysters are unfit for human consumption. The metal is probably absorbed from the sea-water. The usual tests for copper were all shown. Logwood gives a marked reaction in the presence of copper. Oysters have been examined bacteriologically by the exhibitors, but so far no traces of harmful bacteria have been found; some were cultivated resembling typhoid bacteria in form only.—A large exhibit was on view, illustrating the results of the

Observations on the Recent Eclipse of the Sun.

A description of most of the apparatus used, as well as of the photographs taken by the various parties, will be found in our report of Mr. Christie's lecture at the Royal Institution. Sir Norman Lockyer, K.C.B., F.R.S., mentioned one curious point, viz., that during totality fewer stars vere visible than before or after totality; this may be explained by the fact that during totality the corona shines out with extra brilliance. Captain Hills, R.E., was surrounded by his apparatus, and the photographs taken by himself. The greatest novelty, perhaps, of the collection was the silver on glass cœlostat, recently invented by Lippmann, and used in the observations of the eclipse.

Sir Richard T. Thorne, F.R.S., and Dr. Copeman exhibited a collection of cultures, demonstrating the

Bacteriology of Calf Vaccine Lymph.

Glycerin was found to be the best preservative, as shown by the fact that no bacteria were present in cultures of glycerinated calf-lymph which had been kept for more than a week, whereas the unglycerinated lymph becomes more and more infected with bacteria on keeping. The glycerinated calf vaccined lymph is sold in tubes sufficient for one person.

Professor Oliver Lodge, F.R.S., showed some improvements in

Magnetic Space-Telegraphy,

which may be regarded as, in some respects, a modification of the induction method of telegraphy inaugurated by Mr. Willoughby Smith, and practised by Mr. Preece. The magnetic vibrations in the sending current can be maintained in various ways, but the way shown is a device due to Dr. Pupin, with a vibrating string and battery contact. A signalling key enables the ordinary Morse alphabet to be sent without any connecting wire and independently of obstacles.—During the evening Dr. Sorby exhibited on the screen a series of lantern slides of marine animals, mounted in Canada balsam, and Sir Norman Lockyer gave a lantern demonstration of photographs illustrating the recent solar eclipse and the expedition to Viziadrug.

MEETINGS OF SCIENTIFIC SOCIETIES

ROYAL INSTITUTION.

On Friday, April 22, a lecture was delivered by W. H. M. CHRISTIE, C.B., M.A., F.R.S., Astronomer Royal, on

The Recent Eclipse of the Sun.

This total eclipse, which took place on January 22, 1898, has been especially instructive, and a rich harvest of information has already been reaped. Various parties of astronomers, stationed at different points, have made observations, and the reports of some of the parties are not yet made public. In the course of the lecture, however, Mr. Christie was able to project on the screen many interesting slides, accompanying them by a description at once vivid and instructive. The tract of country available for these observations was restricted to India. Somaliland at first presented itself as a favourable situation, but this idea had to be abandoned on account of the difficulties of landing there, and from the fact that quite an army of natives would have been neccssary in order to effect a clearing, that country being densely wooded. India was therefore chosen, and it was fortunate that the eclipse happened at a time when the weather conditions were of a most favourable kind; in fact, meteorologists, prior to the eclipse, even went so far as to say that the chances were twenty-five to one in favour of the observers. Another condition which rendered India eminently suitable for this purpose was the duration of totality of the eclipse; this diminished gradually as the shadow passed from the west towards the east, the times, generally speaking, ranging from 2 to 1½ minutes. Seconds were therefore of the utmost importance, and elaborate mechanical arrangements were made by the different parties for making the most of the opportunity. The stations were fixed by the Joint Eclipse Committee of the Royal and Astronomical Societies, and lay alongside a railway which ran across the country in the direction which the shadow was expected to take. Sardol was one of the best spots, and thither Professor Turner went, but was driven by an outbreak of plague further east to a place of shorter totality, viz., 1 minute 45½ seconds. The remaining parties were under the command of Sir Norman Lockyer, Dr. Copeland, the lecturer, and others, among whom may be mentioned the Viceroy of India, stationed at Benares, a point easy of access from either Calcutta or Allahabad. Many independent observers posted themselves at Jahore, in spite of the plague, among them being Professor Campbell and other Americans, some Japanese astronomers and a party from the Poonah College of Science. The Government of India made elaborate preparations for the reception and accommodation of the observers, the railway companies afforded them every possible facility, and the Admiralty placed H.M.S. "Melpomene" at the disposal of Sir Norman Lockyer's party. So far Mr. Christie dealt with the preparations for the eclipse. Slides were then shown of the eclipse in different stages of its existence, both before and after totality, in many of which the corona was beautifully represented. A view was shown of the camp at Sardol and its fifty tents pitched on a clearing half a square mile in extent, which was made by command of the Government of India. The results of the eclipse were arranged by Mr. Christie under six heads:—1, Photographs of the corona; 2, spectroscopic results; 3, observations made by means of polariscopes; 4, photographs of partial phase for the position of the moon; 5, miscellaneous. 1, Photographs: these were taken on the scale of 4 inches to the sun's diameter. Some of the telescopes were 40 feet long, and propped up by means of scaffolding, a tree, or a mound of earth. In the last case the observer, Mr. Smith, experienced great difficulty in maintaining the correct position, owing to the frequent subsidence of the mound. Mr. Christie's telescope was more wieldy in proportions, being only 11 feet long, with a 9-inch aperture, a focus of 8 feet 6 inches, and a field of view 10 inches in diameter. During the eclipse the seconds were counted for Mr. Christie by some high caste Brahmins, who

caused him much apprehension, lest at the critical time they should obey their religious promptings and leave their counting in order to pray. Happily they were able to combine their religon with duty, and devoted one whole minute to counting and barely 45 minutes to their prayers. Mr. Christie made use of a new instrument known as a celostat, invented in 1895 by Lippmann. A mirror, 16 inches in diameter, is mounted on an axis, which points to the earth's pole. The mirror revolves by means of clock-work once in 48 hours; the earth making one revolution in 24 hours, it follows that a fixed direction for one day is obtained, because the mirror is revolving at one-half the earth's rotation, and incident rays move at twice the rate of the mirror. By this contrivance an advantage is gained in that no rotation of the image is produced. The exposures varied from 5 to 20 seconds. Captain Hills gave 4 seconds' exposure with a Dalmeyer lens. Mr. Thwaites obtained an excellent photograph showing an enormous extension of the corona, and Mrs. Maunder, with a small photographic camera, obtained a valuable picture depicting a streamer reaching two-thirds the distance to the planet Venus, *i.e.*, 4°, or about six million miles. Undoubtedly Mrs. Maunder was to be congratulated on establishing a photographic record. 2, Spectroscopic views: the continuous spectrum of the corona was shown. Capt. Hills endeavoured to photograph appearances before and after totality, so as to get a "flash" spectrum; though his efforts did not meet with the success which they deserved, yet Mr. Newall was fortunate in obtaining a "flash" spectrum at the end of totality. 3, Professor Turner obtained some valuable information with regard to the polarisation of the corona. There is no doubt that the corona suffers polarisation, and this carries with it the fact that the light from the corona is reflected light, and therefore the corona is not entirely, if at all, self-luminous. One observer confirmed these views by means of naked-eye observations, and reported that there was undoubtedly strong polarisation of the atmosphere at all points within 30° of the sun. 5. Miscellaneous items of interest were next brought forward. A kinematograph was successfully brought to bear upon the eclipse, but the operation ended lamentably in the loss of the film. The fall of temperature, due to the sun being obscured, was a noticeable feature of the eclipse, and was experienced by all. The air was dry at the time and decidedly chilly. At Mr. Christie's station totality was reached at 1.40, and at 2 o'clock the greatest fall of temperature took place. This fall affected even the driving clock. Some amusement was caused by the announcement that the only man of the party who saw nothing of the eclipse was told off to take the thermometric and barometric readings. These are of importance, because the time and longitude of the place being known it is possible to calculate Greenwich time, and from that arrive at many points of extreme moment. It was noticed at Greenwich that for some days before the eclipse the lines traced on the daily charts, showing magnetic declination, were disturbed, and that it only assumed a regular course again on January 22. It requires to be determined whether this fact has any connection with the unusual appearance of the sun spots about the same time.

ROYAL INSTITUTION.

A lecture was given on Friday, May 6, at 8 p.m., by Edward A. Minchin, M.A., Fellow of Merton College, Oxford, on

Living Crystals.

By "living" crystals the author meant to imply those crystals which are produced as bye-products in the metabolism which is associated with the life of every living organism. Comparing living crystals with a naturally occurring mineral crystal like the rhombohedral variety of calcite, they do not agree, as we shall see, in crystalline form. Again, these living crystals have planes of cleavage—as shown on striking them with a hammer, or etching them with acids—just as is the case with ordinary crystals. Finally, they stand the optical test when placed between two Nicol's prisms just as ordinary crystals do. As an example of crystals occurring in a living organism, the lecturer proceeded to mention the spicules of sponges. All sponges, as is well known, are skeletons of living organisms and may be calcareous (crystalline), siliceous (non-crystalline) or horny. The calcareous forms are furnished with crystalline projections known as spicules and chemically identical with naturally occurring calcite. These spicules assume various patterns, which may all be traced to a combination of rod-shaped units. In the commoner forms three or four rods radiate from a point. We see, therefore, that these so-called living crystals, though in substance identical with a crystal of naturally-occurring calcite, possess a fantastic geometrical form of their own, and differ in form from calcite only to the same degree that a well-cut diamond differs from one in the natural state. It must not be thought, however, that the simile is exact, since we know that the crystalline spicule is not cut out of an ordinary crystal of calcite. The question arises, What influences have been at work to interfere with the geometrical form ordinarily assumed by calcite? In order to obtain an answer, we must note carefully the conditions under which these sponges are grown. The simplest forms resemble a hollow vase, fixed at one end, and open at the other. The walls are thin and composed of countless cells, each provided with a pore to connect it with the outside air. Some kind of support is necessary, and we find that these rods are so arranged that a maximum of strength is imparted to the structure at the expense of a minimum of material. Indeed, no more exquisite piece of engineering can be conceived than is shown in the completed structure of a sponge. The rod-like spicules are produced as bye-products during the progress of those constructive and destructive metabolic processes which constitute the life of the organism, and in form they are undoubtedly closely adapted to the function they are called upon to perform. The adaptation of form to function is gradual, having gone on probably through long periods of time. These crystals, therefore, being subject to a new influence, must obey laws other than those governing crystals which are not formed in a living matrix. The study of living crystals therefore brings us face to face with the mysterious difference between living and non-living matter, inasmuch as we have seen how the form of a crystal of calcite is influenced by the matrix in which it is produced.

CHEMICAL SOCIETY.

A meeting was held on Thursday, May 5, at 8 p.m., Professor Dewar, F.R.S., in the chair. The minutes of the last meeting having been read and confirmed, Mr. C. F. Cross was called upon to read a paper by C. F. Cross, E. J. Bevan, and Claud Smith, on

The Reactions of the Carbohydrates with Hydrogen Peroxide.

The remarks made were of a preliminary nature, as much more work was required to be done in order to complete the investigation. Solutions of hydrogen peroxide had been taken, yielding different known quantities of oxygen. The two hexoses, dextrose, and lævulose, had been treated with a solution yielding one atom of oxygen for each molecule of carbohydrate. Iron being present it was noticed that a rise in temperature of from 15 to 20 degrees took place, and the hydrogen peroxide disappeared. No action took place in the absence of iron. The action of iron, as a catalytic agent, calls to mind the necessity for the presence of iron in the metabolism of plants. The presence of hydrogen peroxide in solutions of these hexoses was found to have a marked influence on alcoholic fermentation. Four experiments were made, the first blank, and the remainder containing respectively 1/40, 3/40, and 1/10 atom of oxygen, as hydrogen peroxide, to each molecule of carbohydrate. On fermenting these four solutions by the addition of yeast, it was found that whilst the carbohydrate in the solutions containing active oxygen was not entirely fermented, that in the blank experiment left no carbohydrate residue on fermentation. The solutions containing oxygen left respectively 9·2, 14·0 and 20·0 per cent. of unaltered carbohydrate. Solutions were then taken containing larger proportions of hydrogen peroxide, *e.g.*, yielding two oxygen atoms to each molecule of carbohydrate. The usual constants were determined, viz., the total solids, acidity, copper reduction and yield of furfural. The results obtained in this case differed but little from those when less oxygen was present. This pointed to the presence of some substance resistent to oxygen. On taking lævulose instead of dextrose very similar results were observed, except that no furfural was formed. In the discussion that followed it was generally agreed that the subject was at present but little understood, but that future investigations in the same direction might possibly throw more light on our knowledge of the process of lignification in the plant body.—The next paper, by Mr. H. J. H. Fenton, M.A., dealt with

The Oxidation of Tartaric Acid in the Presence of Ferrous Iron.

The action of iron is no doubt catalytic. Ferric iron is inopera-

tive, so too are the chromous salts. The iron may possibly first displace two hydrogen atoms in the tartaric acid, thus—

This action probably takes place only where two CHOH groups are side by side, and not where one CHOH group only is present, as is the case with tartronic acid, $CHOH(COOH)_2$. Citric and malic acids also give no reaction, but saccharic and mucic acids do give a fugitive violet coloration.—Dr. Armstrong objected to the foregoing suggested explanation of the action of ferrous iron in the oxidation of tartaric acid, on the ground that tartaric acid on oxidation should yield a fumaride acid, and not a maleic acid, by the removal of two hydrogen atoms; whereas dihydroxy-maleic acid is the product actually obtained.—In his reply Mr. Fenton admitted the force of Dr. Armstrong's objection, but thought that possibly the malenoid form might be produced from the fumaroid form during the preparation of the acid. He put his view forward merely as a hypothesis.—Mr. S. Skinner, M.A., next read a paper on the

Affinity Constants of Certain Hydroxy-acids,

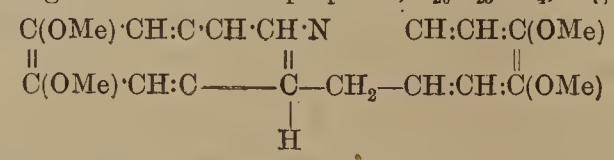
and was followed by Mr. Fenton with a further paper on

The Properties and Relationships of Dihydroxy-tartaric Acid (Part II).

The author had prepared salts of potassium, lithium, rubidium, and cæsium, a useful general method being to neutralise the carbonates with the free acid. The lithium salt he prepared from the chloride of lithium. The formation of the salts of potassium and sodium with this acid might prove a useful method for separating these metals when taken in conjunction with the platinum method of separation. The solubilities of these salts increase with the atomic weights of the metals in the following proportions, lithium alone forming an exception:—Li, 2; Na, 1; K, 66; Rb, 166; Cs, 576. The ammonium salt was prepared at 0° C. by neutralisation of the carbonate in the usual way. It crystallised with two molecules of water, and turned yellow on exposure to air. A curious fact was mentioned, in that it took 101 days' exposure in a vacuum desiccator before the ammonium salt attained a constant weight, and the residue, on examination, proved to be the tartronate. This proves that the salt cannot exist in the anhydrous condition. Dihydroxytartrate of potassium gives a transparent jelly on treatment with calcium chloride, and the barium and strontium salts give a white precipitate with the same reagent; the silver and mercury salts may be easily reduced. The stannous, as well as the ferrous salts, convert dihydroxytartaric acid into the dihydroxymaleic acid.—This paper gave rise to but little discussion.—Mr. T. Tickle asked whether Mr. Fenton had prepared the ethyl salt of the acid in question, as a possible use for it had occurred to him.—Mr. Fenton stated, in reply, that he had confined his attention to the metallic salts of this acid.—Professor Dewar finally called on Mr. W. J. Pope to read a paper on

The Resolution of Tetrahydropapaverine into its Optically Active Components.

Papaverine not having yet been synthesised, it is difficult, if not impossible, to state its graphic formula with absolute confidence. The following formula has been proposed, $C_{20}H_{23}NO_4$, or graphically



The bromcamphor sulphonic acid derivative of tetrahydropapaverine was prepared, and from it were separated the dextro- and lævo-rotatory varieties of tetrahydro-papaverine. The author crystallised out separately compounds of the lævo-base with the dextro acid, and of the dextro-base with the lævo acid. A paper by J. Murray Crofts, B.A., B.Sc., on "The Determination of the Molecular Weights in Solution of Perchlorates and Periodates," was taken as read.

DENTAL NOTES.

Matrix for Contouring Amalgams.

Dr. Bonwill's favourite matrix for contouring amalgams is impression material. His method is as follows:—Place a clamp on the tooth, and having softened the composition pack it round the tooth and clamp, trimming it up to the required shape. It then not only acts as a matrix, but also as a dam to exclude moisture. Pack the amalgam with bibulous paper, using considerable force, and when filling is nearly complete burnish some of the alloy filings into the surface to absorb mercury. This ensures a hard filling, strong at the periphery, full contour and articulation, and whiter in colour than could otherwise be obtained. Quick work is necessary for best results. He deprecates the use of gold or tin to absorb mercury, as a different element is introduced, and the same hardness cannot be obtained. If two adjoining cavities are to be filled place one matrix round them both, and divide with a file afterwards. The matrix can be removed with a hot instrument. His routine plan is to temporarily fill all interstitial cavities with pink gutta percha. This is left in for some months and exercises a separating action on the teeth, which admits of a full contour when permanent filling is introduced. In finishing off cervical edges he has a fine-cut, narrow, right angle, tapering finishing bur, which he runs between the teeth. This bur he also uses to cut out incipient interstitial caries in the lingual surfaces of incisors, taking care to let the tips of the teeth remain in contact. He guarantees that no fresh caries will result in the tissues so treated. He has found that if a carious tooth is thoroughly dried and the caries saturated with paraffin by means of heat, that no fresh trouble commences, as acid has no effect on paraffin. Also after putting in any filling, he runs melted paraffin round the margin, and so fills up any possible leak hermetically. He also uses it in oxyphosphate filling, saturating the filling after insertion, and he claims that such a filling will last five times as long as one not so treated. It will wear away on a grinding surface, but will not wash away as is usually the case in interstitial cavities.—*Brit. Journ. Dent. Science.*

Collection of Saliva.

Sticker recommends the chewing of a dry piece of fine sponge, and states that this is inducive to a large secretion of saliva. By avoiding to squeeze the sponge when breathing, it is soon filled with saliva. Drain the latter into a glass and repeat the process as long as practicable. By washing the sponge after use, boiling it, and preserving it, a highly diluted hydrochloric solution (2 to 3 per cent.), it can be used over again if washed and dried before use. The saliva thus gained is more aqueous than the saliva drawn from a empty mouth, but its composition is more regular.—*Zahnarzt. Rundsch.*, vi., 3703.

The Action of Morphine Hydrochloride on Tetanus.

Babinski has conducted experiments on guinea-pigs, showing that inoculation with tetanine, followed by treatment with morphia, produces not only a retarding action on the tetanus but has also a curative effect.—*Zahnarzt. Rundsch.*, vi., 3890.

Local Anæsthetic (Frohmann's).

Cocaine hydrochloride, 20 centigrammes; morphine hydrochloride, 25 centigrammes; sodium chloride, sterilised, 20 centigrammes; antipyrine, 1 to 2 grammes; guaiacol, 2 drops; distilled water, 100 grammes. To be injected in various portions of the gums near the tooth to be extracted. The extraction usually takes place without any pain.—*Zahnarzt. Rundsch.*, vi., 3932.

Dentifrice Tablets.

Powdered soap, 20 grammes; precipitated chalk, 8 grammes; carmine, 20 centigrammes; oil of peppermint, 50 centigrammes; alcohol, *q.s.* to make a hard mass. Mould into tablets.—*Odontologie* [2], v., 406.

Paste Dentifrice.

Precipitated chalk, 20 grammes; soap, 5 grammes; carmine, 20 centigrammes; alcohol, *q.s.*; glycerin, *q.s.* to form a paste.

Liquid Soap Dentifrice.

Spirit of soap, 8 grammes; glycerin, 6 grammes; oil of peppermint, 20 centigrammes.

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OF VOTERS AND VOTING.

Before many days have elapsed, the members of the Pharmaceutical Society and associates in business, or such of them as take the trouble to vote, will have decided which of the candidates whose names are at present before them are to represent them upon the Council during the next twelve months. And, according as they re-elect the whole of the outgoing members or not, it will be fair to judge of the extent to which they approve or disapprove of the policy and actions of the Council during the year that is drawing to a close. That inference will apply to the whole body of electors and not merely to those who exercise their voting power, for inaction in such matters implies agreement with the views of those who return the new Council, usually less than half of the electorate. For of the 3767 voting papers issued last year, only 2035 were returned, and the number of votes recorded in favour of the candidate whose name came first on the list was 1790. In 1896 the figures were: Voting papers issued, 3762; voting papers returned, 2173; highest number of votes polled, 1725. It cannot be said, therefore, that there is any excess of enthusiasm in the matter, since two-fifths or more of the voters fail to recognise the obligation that lies upon them to secure due representation upon the executive body of their craft.

Such apathy is much to be regretted, for although the recording of a largely increased number of votes might make no great difference in the result of the election, the successful candidates would be better able to realise that they had behind them the suffrages of the supporters of the Society as a body. That is a point that voters are apt to overlook; maybe they are satisfied with the manner in which their affairs have been conducted since the last election, and see no reason for any change in the constitution of the Council, but it never seems to occur to them what moral force is lacking when they neglect to vote. If an individual is approved as a fit and proper person to become a representative it is well to show that one thinks so by voting for him, and by persuading others to do likewise; there is just as good reason for so doing as for helping in an agitation to secure the rejection of some one who is assumed to be unsuitable as a representative. Complaint is not uncommon that members of Council are at times lukewarm in advancing the interests of the craft, but how can it be expected that they should constantly exhibit enthusiasm with regard to the affairs of men who will not take the trouble to indicate that they approve of the measures taken on their behalf? The wonder is that a sufficient number of representatives should be found to devote themselves year after year to their self-imposed task, pursuing the even tenor of their way without seeking praise or avoiding blame, and the fact that so many are found to undertake the onerous duties devolving on a member of Council only serves to indicate what might be the result if more enthusiasm were infused into the all too automatic operation of selecting representatives for another year.

The plain duty of electors is to vote whenever there is an election, first taking care to nominate a sufficient number of candidates to make the election something more than a mere formality. Moreover, they ought to exercise their voting power to the utmost; if fourteen members of the Council are required it should be considered obligatory to leave fourteen names not crossed out on the voting paper. The only results of ignoring this rule are to give a vastly unnecessary number of votes, proportionally, to certain favoured candidates, to risk the rejection of one or more efficient representatives in whom the voter may not be personally interested, and to cause a considerable amount of extra trouble to the scrutineers. It may appear very satisfactory to have one's pet candidate at the head of the poll, with five hundred more votes than were necessary to secure his return, but on the whole it would be more encouraging to know that the fourteen candidates one had voted for had been returned in a body, without any great variation in the number of votes each had received. By some accident of position or ability to make eloquent speeches a few representatives loom much more largely in the public eye than others, but that is no criterion of the amount of useful work carried on quietly and steadily at unreported committee meetings by those and other members of the Council. Credit should be given where credit is due, and that is usually to the Council as a body rather than to one or two more prominent members.

THE PHARMACY ACTS AMENDMENT BILL.

This Bill again came up for consideration in Committee of the House of Commons after midnight on Monday, but Dr. Tanner moved to report progress, on the ground that, in his opinion, nothing practical could be done in connection with the Bill at that hour. It is difficult to see what could be done of a more practical nature than to allow the Bill to pass through the Committee stage, but though Dr. Tanner professed to take a sincere interest in the measure, that evidently was not his view, and progress was reported accordingly That, of course, implies further postponement of the Committee stage. There are now about a dozen proposed amendments to the Pharmacy Bill, standing in the names of Mr. Alexander Cross (Camlachie, Glasgow), Mr. Weir (Ross and Cromarty), and Mr. Yoxall (Nottingham, W.); chemists and druggists residing in the constituencies represented by those gentlemen might do worse than remonstrate with them—repeatedly, if necessary—as no public interests are affected in the least degree by the provisions of the Bill.

ANNOTATIONS.

The Metric Equivalents of Imperial Weights and Measures which have been published in the pages of the *Pharmaceutical Journal* during the past few months, have been reprinted in deference to the expressed wishes of several of our readers, and copies of the book may now be obtained through the booksellers or from the Publishers of the Journal, 5, Serle Street, Lincoln's Inn, London, W.C., at 1*s.* 6*d.* each, post free. It was originally intended to produce the book at 1*s*, but, after careful revision, it was found that certain additions to the tables were desirable in order to make them more complete, and the matter as now presented is practically new in its arrangement. In addition to the equivalents of measures of length, mass, and volume, simple conversion tables and rules are given, together with thermometric equivalents—in degrees Centigrade (Celsius), Fahrenheit, and Réaumur—from —40° F. to 600° F. The tables are on stout paper, printed on one side only, so that the pages can readily be removed and pasted on cards to be suspended in the laboratory or dispensary. The whole is enclosed in a tastefully printed wrapper, and the book is of a convenient size to be advantageously kept on the desk for reference. Means having thus been provided—in the Journal and in the separate reprint—for facilitating the employment of metric quantities by pharmacists, we must ask correspondents henceforth to adopt those quantities as far as possible in all communications sent to the Journal. The advantage of this will be all the greater inasmuch as in the British Pharmacopœia, 1898, which is now on sale, all formulæ are stated in terms of the metric system.

The *P. J.* Synopsis of the 1898 B.P. Formulæ and Processes still continues to be in active demand, and it has been found necessary to publish a fourth edition, in which further additional matter appears. Even after the new Pharmacopœia is actually in the hands of chemists they will find this synopsis especially useful as a working laboratory guide, whilst students and medical practitioners can more readily gather from its pages what changes have been effected in the official preparations than from the Pharmacopœia itself. For distribution to medical men nothing more concise has yet been offered, and the attention of individual pharmacists and of pharmaceutical associations who have not yet done anything in that way, may with advantage be directed to this inexpensive pocket guide. A specimen copy will be sent by the Publishers of the Journal, 5, Serle Street, Lincoln's Inn, London, W.C., to any address, on receipt of fourpence in stamps, and prices for quantities will be found in our advertisement pages; requests for free copies cannot be entertained, and should hardly be proffered since the price fixed for the book is a merely nominal one.

Another Synopsis of the principal changes in the British Pharmacopœia has been prepared by Mr. William Martindale for inclusion in the ninth edition of the 'Extra Pharmacopœia,' now in the press. In the space of twelve pages, each containing less than twelve square inches of type, the changes effected by the revision of 1898, as compared with that of 1885, are put as concisely and yet intelligibly as could be desired. Particulars regarding weights and measures, strengths of alcohol, tinctures, infusions, decoctions, extracts, etc., are followed by brief references to changes in appearance of certain preparations, changes of nomenclature, and changes of dosage. Next, we have an admirably arranged list of the more important alterations affecting practical dispensing, together with lists of additions, omissions, and alternative preparations sanctioned for use in India and the Colonies. Finally, there are the alcohol tables recently published in the Journal (*ante*, p. 417).

The British Pharmacopœia, 1898, is now on sale, and the problem regarding its authoritativeness may therefore be expected to assume a more acute form. But whatever position may be taken up by chemists in regard to the supply of the new preparations generally, they are warned to be particularly careful with regard to the supply of those preparations which are now definitely identified with older ones by the simple expedient of introducing the old names as synonyms of the newer preparations. Thus, linimentum camphoræ should now invariably be supplied when comphorated oil is asked for; spiritus ætheris nitrosi should be given to customers who ask for sweet spirit of nitre, and sulphur præcipitatum for milk of sulphur. The strength of linimentum camphoræ has not been altered, but the specific gravity of spiritus ætheris nitrosi is now 0·838 to 0·842, and the preparation must contain not less than 2 per cent., by weight, of ethyl nitrite. Vinegar is no longer official, and inspectors under the Sale of Foods and Drugs Acts are not likely to worry chemists so much in future, as they have been accustomed to do in the past, in connection with the sale of that comparatively innocent fluid.

The Annual Dinner and Annual Meeting of the Pharmaceutical Society will be held in London next week, the former at the Hotel Cecil, on Tuesday next, May 17, at 6.45 p.m. The President, Mr. Walter Hills, will take the chair, and a large gathering of pharmacists and their friends is anticipated. Those who have not yet applied for tickets (21*s.* each, inclusive) should communicate with the Hon. Secretary, Mr. R. Bremridge, 17, Bloomsbury Square, London, W.C., without delay, and any special arrangement of seats that may be desired must be notified at once. Several distinguished guests are expected to be present, including the Hon. W. F. D. Smith, M.P., who has shown himself such a friend to the Society by his persistent support of its claims to consideration by Parliament, in connection with the Pharmacy Acts Amendment Bill. Other Members of Parliament have also accepted invitations, and an attractive musical programme has been prepared. The fifty-seventh Annual Meeting of the Society will be held in the Society's House, 17, Bloomsbury Square, London, on the following day, at 12 o'clock. The report of the Council will then be received and the election will subsequently take place of the Council and Auditors for the ensuing year.

A Curious Case is reported from Southport, where a boy, who appears to have been too susceptible to the influence of penny dreadfuls, recently committed suicide by taking carbolic acid. Probably more ignorance was revealed at the inquest concerning that poison and the law relating to its sale than on any other single occasion. In the first place, a medical man who gave evidence is credited with having stated that the carbolic acid taken by the boy was "what was called 'absolute'; it was obtained in crystals, and would only be legitimately dispensed by a chemist in a physician's prescription" (*sic*). Then the chemist alleged to have sold the carbolic acid—an aged man, registered by virtue of being in business before August 1, 1868—denied that he had done so, and remarked that "people who purchased it had to sign a book, as it came under the first schedule of the Poisons Act" (*sic*). This individual is also reported to have produced a bottle containing potassium permanganate which he said was the only form of "carbolic acid in crystals" he kept. Finally, the Coroner appears to have got

mixed up generally over the evidence, though it is satisfactory to find he stoutly contended that potassium permanganate was not carbolic acid, and ultimately the jury returned a verdict of *felo de se*. The boy was fifteen years old.

Another Coroner has distinguished himself by discovering that Battle's vermin killer is not a poison within the meaning of the Pharmacy Act, 1868. An unrequited love affair caused a young girl, living at Bexhill, to terminate her woes by the aid of the vermin killer, and the Coroner for the Rape of Hastings had to investigate the matter. The manner in which he set to work may be imagined from the following extract from his address to the jury :—"You know Battle's vermin killer is a very common thing. I suppose it is sold by nearly every shopkeeper who sells provisions. It is an easy matter to go into a shop and obtain a packet. It is sold by no end of people. I think I am correct in saying that it is not one of the poisons which come under the Poisons Act, and that the purchaser of a packet is not required to give name and address. I think it is obtainable with very little difficulty." Prior to this statement by the Coroner a medical practitioner had explained that the vermin killer contained a large proportion of strychnine, and that poisoning by strychnine was the cause of death. This makes the Coroner's remarks all the less excusable. It appears that the sale of the poison could not be traced, and that is not to be wondered at if the ignorance displayed by the Coroner is a fair specimen of the state of knowledge with regard to the sale of poisons that prevails in his district.

The Spectacle Makers' Company resolved at the last meeting of the Court of that body that the National Retail Jewellers' Association and the Pharmaceutical Society should each be invited to nominate a member of the Committee, appointed to make arrangements for the examination of opticians, in accordance with the scheme referred to in our issue of April 9, last (see p. 357). So reports the *Optician*, which also states that it was resolved, at the same Court, that donations of two guineas each should be given to the following ophthalmic hospitals, viz., the Western, Gray's Inn, Moorfields, Westminster, and South London.

The Royal Society Nominees selected by the Council of the Society for election this year as Fellows are Mr. H. F. Baker, Professor E. W. Brown, Dr. A. Buchan, Mr. S. F. Harmer, Mr. A. Lister, Lieut.-Gen. C. A. McMahon, Dr. W. Osler, the Hon. C. A. Parsons, Professor T. Preston, Professor E. W. Reid, Mr. A. Scott, Mr. A. C. Seward (Examiner in Botany to the Pharmaceutical Society), Mr. W. A. Shenstone (Pharmaceutical Chemist), Mr. H. M. Taylor, and M. J. Wimshurst.

Ships' Cargoes are many and various, but it is doubtful if such a mixture as was recently carried by the s s. "Legislator" has ever been surpassed as a possible cause of fire. Potassium chlorate in casks was packed side by side with sulphuric acid in leaden tanks, phosphorus in canisters, ether and turpentine in glass and stoneware bottles. Or rather, to be strictly accurate, the packages containing the sulphuric acid and phosphorus were stowed on tops of the casks of potassium chlorate. As might naturally be expected, the vessel caught fire at sea, and had to be abandoned. A Board of Trade inquiry was held, and in the judgment delivered by the court it was very pointedly stated that, though the goods were "properly stowed and secured as regards shifting," they were "improperly stowed as chemicals, from the fact of their being placed together." Beyond this, the chemicals were carefully examined and watched from time to time by the chief officer, who, however, possessed no knowledge of the special dangers connected with such goods, his attention being directed more especially to the shifting of the cargo. There was no evidence to show that anything was wrong with the goods until the outbreak of the fire, which appears to have arisen from the spontaneous combustion of phosphorus, forming part of the deck cargo, and was probably caused by some defect in the tins in which it was packed, attributable to the weakness of the material used in their construction, or possibly to the action of the sulphuric acid leaking on the tins and causing corrosion, thereby permitting the air to come into contact with the phosphorus. Owing to the dense and suffocating fumes of the phosphorus, it was impossible to take any measures to extinguish or to even approach the fire until the chemicals were burnt out and consumed. The ship, of course, was destroyed.

An Automatic Telephone Exchange has been fitted up at 30, Winchester House, London, E.C. The advantages of the system adopted are that it does away with the large staff of skilled attendants at present required at the central and subsidiary exchanges, and gives increased speed and facility in communication. Instead of ringing up the central station, requesting the attendant to put him in communication with the person to whom he wishes to speak, the subscriber to an exchange worked on the automatic plan is himself able to connect his telephone with that of any other subscriber without the intervention of any other person. Each subscriber has upon the front of his instrument a circular disc pivoted at the centre and having one-half of its circumference inscribed with figures from 0 to 9. If he wishes, for example, to call up subscriber 826, he puts his finger in a hole provided in the disc opposite the number 8 and pulls the disc round as far as it will go. He repeats the operation for the figures 2 and 6, and then finds himself connected with number 826. When he has finished his conversation he simply hangs his receiver on its hook, and communication is at once cut off. A third subscriber cannot get possession of the line until the first two have done with it; hence there is no possibility of interruption during a conversation, and secrecy is assured.

Hydrogen was Liquefied by Professor Dewar last Tuesday at the Royal Institution and exhibited to Lord Rayleigh, who was fortunate enough to be on the premises at the time. According to the *Times*, Professor Dewar has actually produced the liquefied gas to the amount of half a wine-glassful in five minutes, by a process which would equally have produced a pailful had the requisite supply of pure hydrogen been forthcoming. The boiling point of the liquid may be placed at from 30° to 35° of absolute temperature, or, in other words, at about 240° below zero on the Centigrad scale. Some conception of the degree of cold attained may be gathered from the fact that a tube closed at the lower end, when immersed in the liquid, was almost instantaneously filled with solid air. The density of the liquid far exceeds that arrived at by calculation, and there is reason to believe that it will be found to be about 0·6, water being unity. That result would agree very closely with the density of hydrogen when occluded by palladium, as established by Professor Dewar twenty-five years ago. Helium was also liquefied on this occasion by the use of the liquid hydrogen. The boiling point of liquid helium appears to lie not very far from that of hydrogen itself.

REVIEWS AND NOTICES OF BOOKS.

Non-Secret Formulas: A collection of over four thousand formulas and one thousand prize prescriptions for the use of physicians and druggists, to which have been added a selection of articles from standard authorities on Photography, Tablet Triturates, Compressed Tablets, Elixirs, Proprietaries, and original formulas for toilet articles, perfumery, and articles of household use, making a valuable book of reference on subjects appertaining to the business of an up-to-date pharmacist. First edition: T. M. Griffiths, St. Louis, U.S.A. Price 5 dollars.

The comprehensive descriptive title-page, which is here quoted in full, will indicate the wide scope of the work under notice. However, this description somewhat over-states the case, as the work, instead of containing over 5000 distinct recipes, only includes some 4115, which will probably be considered by the average purchaser to be sufficient for his money. The business of the pharmacist, pure and simple, requires him to keep available vast numbers of formulæ for ready reference, and he is so frequently consulted on technical points, which do not directly enter into the province of pharmacy, but yet which cannot be regarded as without the scope of his calling, that the possession of a good technical library of reference is to him of prime business importance. Our American cousins rightly pride themselves on being "live men," and we find that they have at their disposal a far greater number of comprehensive works of the nature of the book under notice than is possessed by their English *confrères*. Within the past few years several such works, containing each some four or five thousand recipes, have appeared in the United States, and each one will be found, at times, of the greatest service for reference. These works in general, as well as the particular volume we are now discussing, seem, however, to err in one direction; the aim, apparently, is to produce a vast array of matter, a great battalion of formulæ, for which it is absolutely impossible that the author can vouch from practical experience. There is yet room for a work less pretentious in the number of recipes, but containing only those for which actual personal and individual experience can be given. When each recipe in a book is one which the author has wrought with his own hand in order to prove its practical value, this ideal work, when it appears here or in America, will command success in both countries. Possibly the author of 'Non-Secret Formulas' may be induced to undertake such a publication.

The work contains much valuable matter, which is, on the whole, well arranged. Recipes for proprietary medicines, typical prescriptions, foreign liqueurs, hospital formulæ — including many from the London Children's Hospital — dental recipes, and the inevitable elixirs, which, to their detriment, English pharmacists are so slow to introduce to the notice of the medical profession, photographic notes, perfumery—including recipes using many of the newer synthetic perfumes—and veterinary formulæ, besides many other useful sections, are to be found among the contents. Among much valuable matter we find several points to which attention may be directed with a view to improvement. Many of the formulæ are given for much greater quantities than are usually handled by retail druggists. Thus, the first recipe in the volume calls for "106 gallons of sugar-house syrup, 5 gallons of spirit, 188 per cent., 60 lbs. of potassium iodide, 34 gallons distilled water," etc., etc. Obviously it is easy to divide these wholesale quantities into smaller batches, but in our opinion each recipe should be given in the quantities most often serviceable to the retail reader, to whom the book is chiefly addressed. Another point, which appears to reflect either on the scholarship of the author or of his readers, is the slipshod mingling of Latin and English in the same prescription. Thus, "Three coch. parv. tertia, q. hora"; "one dram 3tis horis"; "one ounce t. d. in each fl. ounce"; "one ounce 3tus (*sic*) hor." On page 82, under the heading "Copaiba mixture," the ingredients are given in Latin, while the next recipe, "Liquor copaiba solubilis," is followed by ingredients in English. It would be preferable to adhere to the vernacular throughout the book, and to delete the jargon which is in many cases neither English nor Latin. Much needless space, too, is occupied by descriptive paragraphs, and even reprints of papers from the pages of pharmaceutical journals. These are mostly on subjects which are useful to the business man, but they might all be materially condensed. In many instances, also, the directions for preparations might be materially cut down. The treatment of inebriety, and similar medical articles, are certainly out of place in a book of this nature; they are not within the legitimate sphere of pharmacy, and the medical practitioner would consult standard works on the treatment of the subject. Similarly the "Table of Terms" used in Latin prescriptions, extending from page 392 to 404, is out of place in 'Non-Secret Formulæ.' The book is not an educational work, and by relieving it of matter such as this and minor defects such as those already alluded to, the author will add to its usefulness to the business man, and to his own reputation.

Anatomischer Atlas der Pharmacognosie und Nahrungsmittel-Kunde. Von Dr. A. Tschirch und Dr. O. Oesterle. Parts XII. and XIII. Price, 1*s.* 6*d.* each. Leipzig: Chr. Herm. Tauchnitz.

These two parts, the last that have been issued, of Professor Tschirch's anatomical atlas contain, as usual, the details of an abundance of interesting matter. Part XII., with five plates, deals with the anatomy of nutmeg and mace, of linseed, valerian root, coca leaves, and maté. No less than fourteen columns of text and two plates are required for the structure and development of nutmeg and mace, and as the investigations of the author have shown that the description of the structure of the nutmeg usually found in modern text-books is incorrect, a very brief *résumé* of his work will doubtless be welcome.

Professor Tschirch shows that the young ovule of the nutmeg tree possesses two integuments, of which one, the inner integument, extends from the micropyle about halfway down the ovule. Now that part of the ovule in which this integument is situated lengthens in its growth very much more slowly than the remaining, chalazal, portion. The inner integument increases but little in size, and may be found in the ripe seed as a tiny disc near the micropyle. The seed is therefore covered by the outer integument alone, and this ultimately forms the hard shell within the mace. But the place of the inner integument is practically supplied by the nucellus, which develops into a perisperm. That part of the young ovule near the chalaza becomes conical in shape, and the ovule develops transverse grooves, due to a swelling of the surrounding tissue; the nucellus thus slightly projects into the embryo sac. In the nucellus merismatic layers are then formed, which produce new tissue, especially on the inside opposite to the projections into the embryo sac, by which these projections are increased in length. Although much of the tissue so produced is absorbed by the growing embryo sac, the outer layers become permanent and the projections into the embryo sac elongate; at the same time delicate fibro-vascular bundles are formed in the secondary perisperm produced as just described by the activity of

the merismatic layer in the nucellus. These projections of secondary perisperm become irregular, and form ultimately the dark ramifications of the ruminate endosperm. In the young fruit they are colourless, but contain oil-cells and tannin. As the seed ripens the latter changes to phlobaphene, and becomes infiltrated into the cell-wall. The primary perisperm gradually obliterates.

The interior of the embryo sac is for a long time filled with a milky fluid. The development of endosperm begins late; it soon absorbs most of the tissue up to the merismatic layer of the secondary perisperm, and fills the interspaces between the projections. This tissue remains hyaline until the fruit dehisces, then aleurone and starch are formed, and it becomes opaque. Even at this period there is but little fat; that makes its appearance when the fruit has dehisced, the cells of the endosperm then containing starch and aleurone grains embedded in abundant fat. Remarkable is the fact that the fully-developed endosperm has a nutty, not aromatic taste; it acquires the latter by infiltration of oil from the perisperm.

The nutmeg of commerce therefore consists, according to these researches, of nothing but the kernel of the seed. The outer brown layer and the brown ruminations consist of secondary perisperm; the white opaque part of the seed is endosperm. The inner integument is all but lost; the outer develops to form the seed-shell, whilst the mace, according to the author, is intermediate between an arillus and arillode, since it is formed first in the funiculus, and afterwards in the outer integument.

This extremely interesting and important monograph concludes with a description of the anatomy of mace.

Under linseed the development of the ripe seed from the young ovule is carefully followed, particular attention being paid to the formation of the mucilage which is deposited on the outer and radial walls of the epidermal cells in proportion as the starch originally contained in them is absorbed. For the student such investigations as these form invaluable object lessons, for it is by such means alone that an intelligent comprehension can be gained of the structure of many, if not most, drugs.

In valerian the chief interest centres in the production of volatile oil in suberized cells of the hypoderma of the root. The anatomy of the coca leaf and maté with which Part XII. concludes, do not present much that calls for special notice. The powder of the latter may, the author thinks, be distinguished by the remarkable cells of the epidermis of the midrib and stronger veins. In most leaves these cells show strong axial elongation, but here they are arranged in several parallel rows and are not much elongated, thus forming a special character of the leaf.

Part XIII. commences with the anatomy of the bark of *Gonolobus condurango*, Triana, a South American climbing plant. The anatomy of this bark possesses less practical interest for the English pharmacognosist, but the study of it is exceedingly instructive. The early formation of cork and phelloderm, the bundles of bast fibres, groups of sclerenchymatous cells, laticiferous cells, and remarkably large and easily demonstrable sieve tubes render it a useful exercise for the student. Very remarkable is the observation of Professor Tschirch, that the bundles of bast fibres which are so conspicuous in the young bark, are separated, by the growth of the bark into smaller groups, so that the older barks contain an abundance of bast fibres, but the groups are small and few in number. Particularly remarkable is the presence of pericycle in the bark. There are surely few barks that will show this tissue as condurango bark does.

Arnica flowers involve a great amount of work, including as they do phyllaries, calyx, corolla, stamens, ovary, and receptacle, the anatomical details of each being minutely described. Very interesting is the production of a brown secretion in the form of dendritically branching masses in the intercellular spaces under the hypoderma of the pericarp. On the epidermis of the pericarp remarkable hairs, consisting of two elongated cells placed side by side and terminating in two separate points, are to be found; in fact, this drug exhibits no less than six different forms of hairs.

The anatomy of juniper berries and golden seal rhizome are fully dealt with, but there is little to which special attention might be directed. In stramonium leaves, it may be observed, the calcium oxalate usually assumes the form of cluster-crystals. This form is constant in the interneural mesophyll, but in the cortex of the midrib both prisms and sandy crystals occur. In this respect stramonium agrees with other solanaceous plants in which a similar variation in the form of the calcium oxalate has been observed.

Stramonium seed is anatomically one of the most interesting seeds. The seed possesses but a single seed-coat, the outer epidermis of which develops into the hard dark layer of cells to which the seed owes its colour. From the upper part of the epidermal cells a number of projections, nearly parallel to the surface of the seed, are produced, and these closely dove-tail with corresponding projections from neighbouring cells. At the same time the cell-wall thickens strongly but irregularly, leaving in the projection small channels. To these conditions are due the extremely unusual appearance of transverse sections of the seed coat, and they cannot be satisfactorily understood until the development of the seed has been followed.

Whilst the contents of the text of these two parts of the Atlas have thus been shown to contain an unusual amount of work, it is scarcely necessary to say that the plates are in every respect equal to those that have gone before. The only improvement that could be suggested is one to which reference has already been made in these columns, viz., the pale colour of the ink that is used. Surely this might be easily remedied.

SELECTED FORMULÆ.

Denzel's Hæmostatic Tincture.

Powdered ergot, 10 grammes; alcohol, 94 per cent., 20 grammes; sulphuric acid, 2 grammes; mix and add hot water, 500 grammes. Boil until evaporated to 200 grammes, then add calcium carbonate, 2 grammes. Strain and press, evaporate to 70 grammes, and add alcohol, 94 per cent., 30 grammes; essence of ginger, 3 drops. —*Pharm. Zeit.*, xlii., 167.

Pastilli Glycyrrhizini.

Vechtmann gives the following recipes for cough pastilles in the *Pharm. Weekblad.* (1) Glycyrrhizini ammon., 1 gramme; amyli, 20 grammes; sacchari, 80 grammes; olei laurocerasi, gutt., 1. For 100 pastilles. (2) Glycyrrhizini ammon., 1 gramme; amyli, 20 grammes; sacchari, 80 grammes; codeinæ hydrochlor., 50 centigrammes; olei laurocerasi, gutt., 1. For 100 pastilles. (3) Glycyrrhizini ammon., 1; amyli, 20; sacchari, 80; codeinæ hydrchlor., 2 grammes; for 100 pastilles. The last two preparations are only given up on a doctor's prescription. To avoid error, No. 3 pastilles are coloured red with carmine.—*Pharm. Centr.*, xxxviii., 721.

Pastilles Glycyrrhizin.

(I.) Glycyrrhizin ammon., 1; pulv. amyli, 20; sacch. albi, 80 grammes; ol. laurocerasi, gtt. 1. M f. Trochisci No. 100. (II.) Glycyrrhizin ammon., 10; pulv. amyli, 20; sacch. albi, 80 grammes; codeini hydrochlor., 80 centigrammes; ol. laurocerasi, gtt. 1. (III.) Pulv. amyl., 20; glycyrrhizin ammon., 1; sacch. albi, 80 grammes; hydrochlor. codeini, 2 grammes. M.f. Trochisci No. 100.—*Zeit. Allg. Oest. Apoth. Ver.*, li., 481.

PHARMACEUTICAL TRANSACTIONS.

PHARMACEUTICAL SOCIETY.

DONATIONS TO THE LIBRARY AND MUSEUM.

At a meeting of the Library, Museum, School and House Committee, on Wednesday, May 11, the Librarian and Curator presented the following reports of donations :—

To the Library (London).

Dr. K. Dieterich, Helfenberg.—'Helfenberger Annalen,' 1897.

Chemists' Assistants' Association, London.—'Proceedings,' 1896 97. Two copies.

Dr. E. F. A. Obach, Old Charlton.—'Cantor Lectures on Gutta Percha,' 1897.

Dr. Squibb, Brooklyn.—'Ephemeris,' Vol. 5, No. 1.

To the Library (Edinburgh).

American Pharmaceutical Association.—'Proceedings,' 1897.

Dr. Squibb, Brooklyn.—'Ephemeris," Vol. 5, No. 1.

To the Museum (London).

Messrs. Hodgkinson, Clarke, and Ward, London :—Specimen of Italian Ergot.

Mr. W. Mair, Calcutta :—Specimens of Indian drugs.

Dr. T. G. Nicholson, London :- Specimen of the fruits of *Brehmia spinosa* and of an undetermined species of Cassia used as a fish poison in Central Africa.

To the Herbarium (London).

Mr. R. I. Lynch, F.L.S., Cambridge :—Specimen of *Salvia chia.*

Mr. W. Mair :—Twelve specimens of East Indian Medicinal Plants.

CHEMISTS' ASSISTANTS' ASSOCIATION.

On Thursday, May 5, Mr. T. MORLEY TAYLOR, President, took the chair at the annual general meeting of this Association, held at 73, Newman Street, W.—The first business was to appoint two Scrutineers to ascertain the result of the election of members for the new Council, Messrs. Makepeace and Latreille being chosen.—Mr. F. W. GAMBLE, the Hon. Secretary, then read the

Twenty-first Annual Report

of the Council, which stated that the membership of the Association now reaches 122, the number of members elected during the year being 43. The patrons of the Association number 49, or one less than the limit imposed by the rules. Ten papers had been read during the session, and three demonstrations had been given on subjects of practical importance to pharmacists. A discussion on the Pharmacy Acts Amendment Bill led to the passing of a resolution supporting the Pharmaceutical Society in its efforts to advance the interests of pharmacy. A pleasing feature of the session had been the fact that no less than nine of the papers and demonstrations had been contributed by present members of the Association. The smoking concert, conversazione, and Cinderella dances had again been great social successes, and the annual dinner was attended by 277 members and their friends, establishing a record attendance. Unfortunately there had been no competition for the medal of the Association, and the research prize offered by Messrs. Burroughs, Wellcome and Co., while the Council regretted that the essay received had not been adjudged by the Prize Committee of sufficient merit for the award of the Essay Prize. The new rooms had been found to afford increased comfort and convenience to members. The financial condition of the Association was extremely satisfactory, the balance in hand, notwithstanding an expensive year, exceeding that of last year by about £7.—The PRESIDENT expressed the pleasure it gave him to move the adoption of the report, the only unfortunate part of which was that the Council had not been able to award either of the prizes. It was extremely important that the standard of the papers should be kept up, and therefore he hoped that the member who had submitted a paper would not be disappointed in not having received a prize.—Mr. C. J. STROTHER, Hon. Treasurer, seconded the motion, which was carried, and then presented the financial statement for the year, which showed that the balance in hand at the commencement of the session was £101 12*s.* 10*d.* The total receipts amounted to £101 2*s.* 1*d.*, making a total of £202 14*s.* 11*d.* The total expenses had been £94 2*s.* 8*d.*, leaving a balance in hand of £108 12*s.* 3*d.* In commenting on the report Mr. STROTHER said he saw no reason why the figures representing the number of members' subscriptions, *i.e.*, 122, should not, next year, be reversed and read 221. This could be easily done if every member would resolve to introduce a new member at the commencement of the session.—The PRESIDENT moved the adoption of the report, which he thought reflected great credit on the ability of the Financial Secretary, Mr. Geo. Pearson.—Mr. C. MORLEY called attention to the fact that no mention was made in the report of any contribution to the Benevolent Fund of the Pharmaceutical Society.—Mr. PEARSON explained that the money contributed to the Benevolent Fund was derived from the sale of programmes at the social evenings, and that the total cost of preparing the programmes was put down in the expenses, but the balance obtained from the sales—16*s.* 8*d.*—was sent to the Secretary of the Pharmaceutical Society without being entered in the books.—Mr. E. W. HILL seconded the motion, which was carried, as were also votes of thanks to the Secretary and Treasurer.—Mr. C. E. PICKERING, having previously given notice of the motion, then moved :—

> That members of the Association who leave London may retain all th privileges of members (except the right of attending the Réunion free) on payment of a modified subscription of 2*s.* 6*d.* per annum.

After a lengthy discussion the motion, which was seconded by Mr. STROTHER, was carried.—Mr. HILL said it would perhaps be as well to state that the new rule which had just been adopted was not intended, by retaining them as members of the C.A.A., to prevent men who left London from joining any of the provincial associations. They would be quite free to join other associations.—Mr. PICKERING assented to that view, and said that his idea was to keep old members in touch with the C.A.A., but not to prevent them joining other associations.—The Scrutineers then announced that forty-three papers had been received—one informal, forty-two correct—and the result of the Council election was as follows :—Mr. C. Morley, 40 ; Mr. T. Morley Taylor, 39 ; Mr. Geo. E. Pearson, 39 ; Mr. C. E. Robinson, 39 ; Mr. F. W. Gamble, 37 ; Mr. E. W. Hill, 37 ; Mr. C. J. Strother, 37 ; Mr. F. Cooper, 35 ; Mr. C. E. Pickering, 32 ; Mr. H. Hymans, 31 ; Mr. H. H. Robins, 28 ; Mr. G. Roe, 28 ; Mr. H. E. Matthews, 23 ; Mr. J. Hamerton, 23. These constitute the Council ; the unsuccessful candidates were :—Mr. J. Fothergill, 21 ; Mr. F. A. Hocking, 20 ; Mr. James, 20.—A vote of thanks having been accorded to the Scrutineers, the PRESIDENT proceeded to deliver his

Valedictory Address.

Mr. TAYLOR said he would not weary the meeting with an egotistical epitome of his own shortcomings, of which he could assure those present he was fully aware, but would rather express his indebtedness to his colleagues, and more particularly to their Hon. Secretaries for the way in which they had strengthened his hand in guiding the business of the Association through another session. As they knew, a wave of correspondence had passed over the pharmaceutical press on the subject of a "Union of Chemists' Assistants." He was still of opinion that the only rational object of such a union would be the prevention of unjust trading, for which object, of course, such a universal *esprit de corps* would be necessary as, in his opinion, is impossible in these days of mutual suspicion and narrow pessimism. It was a deplorable fact that at the present time it should be possible for unqualified cheap-jacks and irresponsible general dealers to publicly boast of their ability to obtain qualified chemists to run their drug departments. But it only emphasised the necessity for supporting associations like the C.A.A., which tend to promote both mutual and self respect. He was happy to say that on the whole the past session would compare very favourably with previous ones. The aggregate scientific value of the communications read before the Association might not have equalled that of certain previous individual years, still considerable moral value must be attached to the fact that papers were mainly contributed by existing members. The social events of the session had been highly successful, and had met with exceptional appreciation, and the several secretaries for the various functions were to be highly congratulated. The Council regretted its inability to award either of the valuable prizes, and in that connection he might mention that it had been suggested to make any paper read during a season, being of sufficient merit, eligible for the Essay Prize at the end of that session. The blot on the Association's escutcheon had been the short paper evenings. Why would not more members contribute short papers? asked Mr. Taylor. Was it disinclination? Work was always compatible with play, and the member who had a sufficiently good head to carry a complete history of the football or cricket season, or brain enough to play a good hand at whist, might apply himself with advantage to a little literary or scientific effort. Was it modesty? Shakespeare said to the modest man, "Our doubts are traitors and make us lose the good we oft might win by fearing to attempt." The C.A.A. not only

gave a man an opportunity of bringing his name forward in an honourable connection, but received every maiden effort with encouragement and every communication with thorough appreciation and fraternal criticism. It was the scientific halo surrounding their business, and the little problems that suggest themselves during their daily work, set off against their more commercial side, that render pharmacy more tolerable as a means of livelihood. The devotion of a few spare hours whilst on duty and the rational application of scientific principles, a knowledge of which had already been acquired, might result in something, not perhaps worthy of an F.R.S., but possibly highly creditable to the member himself, to the C.A.A., and to pharmacy.—This address was enthusiastically applauded, and Mr. C. MORLEY, in moving a very hearty vote of thanks to the President on his vacating the chair, spoke in high terms of his sterling ability as President.—Mr. G. ROE seconded the vote of thanks, which was carried with acclamation, and Mr. TAYLOR having replied, the session closed.

MIDLAND CHEMISTS' ASSISTANTS' ASSOCIATION.

The annual meeting of this Association was held on Wednesday, the 4th inst., at the Exchange Restaurant, Birmingham. The chair was taken by the PRESIDENT, Mr. H. Jessop. The financial statement submitted showed a balance of £2 3*s.* 6*d.* upon the year's working. The Committee was elected by ballot, and the following were chosen:—Messrs. Cox, Cullwick, Davis, Foster, Gateley, Jessop, Lander, Lawton, Mann, Marshall, Osborne, Selby, Thomas, and Walton. Thanks were accorded to the Dinner Secretaries (Messrs. Lawton and Walton), the Ball Secretaries (Messrs. Casson and Mann), and the Scrutineers (Messrs. Brown and Trow).—The PRESIDENT, in a short valedictory address, referred to the year's programme as a most successful one, whether reviewed from the scientific or the social point of view. He urged regular attendance and hearty support on the part of members as the only way of accomplishing the main object of the Association. In conclusion, he expressed thanks for the extreme courtesy shown to him on all hands during his term of office.—Thanks having been given to the President and other officials, a musical programme was proceeded with.

MIDLAND PHARMACEUTICAL ASSOCIATION.

The annual meeting of this Association was held on Thursday, the 5th inst., at the Great Western Hotel, Birmingham. The PRESIDENT, Mr. F. J. Gibson, took the chair.—The adoption of

The Annual Report

(the substance of which was published in last week's Journal was moved by the PRESIDENT, who referred to the work of the year as very satisfactory, though the meetings had not been quite so numerous. It was to be regretted that they had lost £7 on the ball account, but on the whole the financial statement was satisfactory, and all the money had been spent so as to benefit the Association to the fullest extent possible.—Mr. W. JONES seconded the motion, and the Secretary having reported that during the year the *Pharmaceutical Journal*, the 'Year-Book of Pharmacy,' and the 'Calendar,' had been added to the library, it was agreed to.—In accordance with a recommendation by the Council, Mr. C. THOMPSON moved an alteration of Rule 6, so that it should read as follows:—

> That the Council shall be composed of sixteen members, elected by the members of the Birmingham and Aston districts, together with one representative, elected by every town within a radius of thirty miles, the voting to be by proxy, and that, in the event of no representative being appointed, the Council shall have power to elect such representative as they may deem fit.

Up to the present, Mr. Thompson pointed out, the Council had been made up of so many representatives from each of the Parliamentary divisions of the district, elected by the members resident in that district, but the system had not worked altogether satisfactorily. The alteration now proposed would put things on much the same footing as the Pharmaceutical Society.—The motion was seconded by Mr. W. SOUTHALL.—Mr. R. D. GIBBS urged caution in dealing with the matter. Though admitting that a considerable amount of difficulty had been experienced in the past—owing mainly to the apathy of the chemists themselves, who had in many cases failed to fill up the voting papers—he did not think the existing state of things would be remedied by doing away with the Parliamentary districts. He could conceive of no better way of dividing the district, and he therefore moved as an amendment that no alteration should be made in the existing rule.—This was seconded by Mr. E. J. P. FERRIDAY.—Mr. T. BARCLAY said that from the very beginning he had felt that the system of election on the basis of Parliamentary representation would not work satisfactorily, and he could not support it. He could not see how a representative upon the Council could take upon himself special duties for any particular locality. The desirable thing was to get the very best men regardless of local areas, and the change the Council recommended was in every way practical, and, in his opinion, workable.—A vote was taken, with the result that the new rule was approved by a large majority.—On the motion of Mr. SPILSBURY, seconded by Alderman W. G. CROSS, a hearty vote of thanks was passed to the President, officers, and members of the Council.—This concluded the business.

The Annual Dinner.

At the annual dinner, which was held the same evening at the Great Western Hotel, Mr. GIBSON again took the chair, and there were also present, amongst others, Messrs. Walter Hills (President of the Pharmaceutical Society), A. Southall, T. Barclay, W. Jones, C. Thompson, R. D. Gibbs, J. Humphrey (*Pharmaceutical Journal*), P. MacEwan (*Chemist and Druggist*), T. H. Alcock, W. G. Cross, G. E. Perry, A. W. Gerrard, and H. S. Shorthouse (Hon. Secretary).—The toast of "The Queen" was loyally honoured.—Mr. T. BARCLAY, in proposing

The Pharmaceutical Society,

first extended a hearty welcome to the President, and, referring to the origin of the Society, remarked that amongst its founders the name of Jacob Bell stood out prominently. Bell was one of a noble band who found pharmacy in a very primitive state, and who undertook the task of educating the craft and of founding the Pharmaceutical Society. Mr. Barclay spoke of the early history of the Birmingham branch, established in 1847, stating that in the first year there were two courses of lectures, one by Professor Shaw, of Queen's College, on "Chemistry," and the other by Professor Knowles on "Botany." Remarking that in the next session the attendance fell off, Mr. Barclay expressed the opinion that in the provinces little would be done in the way of securing regular attendance and regular studies until they had an enforced curriculum. They could look back with pride and satisfaction upon the way the Society had developed, but there were, nevertheless, many who wished that it had a little more backbone and a little more of the fighting element. The interests of the profession and of the public were identical, and it was to the interest of both that there should be a strong body in the country having such encouragement from the State as would enable them to so found and fulfil the higher destiny which they felt ought to be the portion of chemists. They were weighted with very heavy legal restrictions without having any fair *quid pro quo*. At the same time they were glad to acknowledge that the Society was doing a great deal. That they had succeeded in obtaining a footing upon the General Medical Council for the preparation of the new Pharmacopœia was in itself a step of considerable importance. Greater protection was required, however, in the matter of company promoting. Of course the Society could only go as fast as its members would allow it, and unless it was well supported and was thoroughly representative of the country it was impossible for it to do all that was expected of it. He was glad the Society was pressing forward the new Pharmacy Bill which would allow Associates to become Members, a change that would greatly strengthen the Society, and would enable it to support the Council all the more strongly in any move that was made. Speaking on the relative duties of the medical man and the pharmacist, Mr. Barclay said he was of opinion that as pharmacy advanced, dispensing by the medical man would gradually cease. It was to the interest of the public that the two professions should be kept separate and distinct, because the medical man could not dispense so well as the chemist, any more than the chemist could do medical work as well as the doctor.—The toast was coupled with the name of the President (Mr. WALTER HILLS), who in reply, expressed his gratitude for the hearty welcome extended to him. Referring to Mr. Barclay's remarks upon the origin of the Society, he said that Jacob Bell, Mr. Sandford, and Mr. Carteighe had done more for it, politically speaking, than probably any other three persons. It could not be claimed that the Society always did the thing that was wise and right, but he did assert that the Council did all it possibly could to promote the welfare of all those who followed a common calling. As to the desire for a little more backbone, his reply was that this must be supplied by members of the profession

throughout the country. If all chemists associated themselves with the movement, and then took care to select the right men to represent them on the Council, very much more might be done. He had found during the last few months that the influence the Society exercised throughout the country was very great, and he was glad to acknowledge how grateful the Council was for the loyal assistance given by local secretaries everywhere to its endeavours to get the Pharmacy Acts Amendment Bill through Parliament. Interviewing members of the House of Commons, he always felt able to bring a little more pressure to bear when he felt he had the local people behind him. Mr. Hills went on to read the following communication he had received from the North-East Lancashire Chemists' Association :—

> I am directed to forward you a copy of the following resolution, which has been unanimously passed by the above Association :—"That this Association as a body thinks the retiring members of the Pharmaceutical Council should define their position and show that in the future they intend to pursue a more progressive policy."

As one of the retiring members, he thought the present a good opportunity of asking them what he had never asked before, and that was to vote for him at the coming election. He maintained that the policy of the Council had, on the whole, been progressive. The Society was founded to protect common interests, to promote education, and to further benevolence. Taking the last-mentioned first, he pointed out that in 1897 alone they had spent more than £3000 for the relief of their brethren in difficulties. He was glad to say that this branch of their work was growing, because at the last festival the collection reached the record amount of £2000. The policy of the Society with reference to education had also been progressive. During the last twelve months the Privy Council had confirmed the amended Bye-laws, which rendered it necessary that those who entered the calling after July, 1900, should give evidence of a better and more thorough education than their predecessors had found necessary. This alteration was bound to have a good effect upon the future of pharmacy, and was one of the best things the Pharmaceutical Society had been able to accomplish for many a long day. Much was being done, too, for the advancement of education in their own School. As to the protection of their common interests, he admitted there was room for some difference of opinion. This was a wide subject, and was largely ruled by the considerations he had already urged. They could do much if united, but very little otherwise. He agreed with Mr. Barclay that they were only of use so long as they served the public; they could only progress so long as they showed that in their progress they served better the public requirements. The one factor necessary to obtain the better position at which they all aimed was a strong and united opinion within their own body. At present the Council represented only a comparatively small number of registered men, whereas there was no reason why the whole body of registered men should not belong to the Society. Those outside were constantly asking, "What is the Society doing for us?" His answer was that the Society would do what they gave it power to do, always bearing in mind that it must not go contrary to the interests of the public. If they were only loyal to one another, companies would not be able to carry on business for another day. Why at the present time Mr. Jesse Boot was able to flood the House of Commons with a pamphlet, in which he stated that he had 150 qualified assistants. Here were 150 of their own people helping to do the very class of business which was so inimical to the interests of registered and qualified chemists. Touching upon the Pharmacy Bill now before Parliament, Mr. Hills described it as a progressive measure in every respect. It would enable those who had the statutory qualification to take part in the active management of the Society. It had received the support of chemists in all parts of the country, and it would help to make the Society stronger and capable of more good work. So far as he knew, the Bill had no opponents among their own body, but there was opposition of a difficult kind to which he would not further allude. He was hopeful, however, that even yet this opposition might be overcome and that the Bill would become law during the present session. Referring to Mr. Barclay's remarks upon the question of medical men dispensing, Mr. Hills announced himself as one of those who thought that the calling of the pharmacist would never be entirely satisfactory until those who were qualified had in their hands nine-tenths at least of the dispensing of prescriptions. The more medical men were trained in the subjects which pertained to their special department, and the better pharmacists were trained the less likely were the two bodies to trench upon each other's preserves. Having wished the Pharmaceutical Society continued success, the President expressed in conclusion, the pleasure he felt at finding in the city such a thriving assistants' association.—Mr. G. E. Perry proposed "The Medical and Dental Professions," to which Mr. Dencer Whittles, Lecturer on Materia Medica at Mason University College, replied.—Mr. J. Wakefield followed with "Kindred Associations."—Mr. H. Jessop, President of the Midland Chemists' Assistants' Association, in the course of his response, gave the President an assurance that the increased power it was proposed to give assistants under the new Pharmacy Bill would be used in a legitimate manner and for the benefit of the profession. It was a matter for regret that so many assistants had thrown in their lot with the joint-stock companies.—Mr. R. D. Gibbs, Secretary to the Federation of Local Associations, also replied to the toast, remarking that the resolution passed by the North-East Lancashire Association had come too late. Even if the local associations up and down the country supported the view that the Council had not been sufficiently progressive, no harm would have been done, so far as the position of any of the retiring members was concerned. He suggested, however, that the Council might then either retire *en bloc*, or take the hint that they had not quite come up to expectations, and he thought the latter was, perhaps, the wisest course.—Mr. W. Jones, in proposing "The Pharmaceutical Press," referred to the great assistance associations received from the trade journals, and added that the thanks of the craft were especially due to the *Pharmaceutical Journal* for its brilliant article of the previous week upon the Nottingham gentleman who had lately made himself so obnoxious in regard to the new Pharmacy Bill. He did not know what chemists would now do without the *Pharmaceutical Journal*, so well had it adapted itself to the requirements of the trade.—Mr. Humphrey, of the *Pharmaceutical Journal*, and Mr. MacEwan, of the *Chemist and Druggist*, acknowledged the toast.—The health of the President and Secretary was afterwards proposed and heartily received. A capital musical programme added much to the enjoyment of the evening.

EXETER ASSOCIATION OF CHEMISTS AND DRUGGISTS.

At a meeting held on Friday, May 6, the chair was taken by the President, Mr. D. Reid.

The P.A.T.A. and Local Associations.

The minutes of the annual meeting having been read and confirmed, the Hon. Secretary, Mr. P. F. Rowsell, read the following letter, which he had received from Mr. Glyn-Jones, Secretary of the Proprietary Articles Trade Association :—

2 and 3, Stonecutter Street, London, E.C.
April 30, 1898.

Dear Sir,—It has been felt that our Association is not making the best use of the fact that, almost without exception, every local chemists' association in the country is in sympathy with our work. First of all we are anxious upon all our stationery to give a list of all the local chemists' associations which are working in conjunction with us, and I would be glad if your Committee will give your permission to include the name of your Association in such a list.

As you will know, several of the Associations have at different times passed resolutions to be sent to various proprietors, and these have always had a beneficial effect. I think that the usefulness of these resolutions would be very much enhanced if simultaneous representations were made from all the various local chemists' associations throughout the country, and to this end we respectfully suggest that the Committee of your Association should meet once in each month to consider a circular, which will be issued by us to all the local associations working with us. Such a circular would really be an epitome of the work carried on during the previous month at headquarters, and negotiations which would then be pending between particular firms and this Association. It would then be possible for your Committee to pass resolutions and to make representations on behalf of your Association to the particular proprietors, and also to send any suggestions for the consideration of our Council.

This work of course, can be done either by your Executive Committee, or if thought preferable, by a small committee appointed to deal specially with P.A.T.A. matters. It would be of great advantage if the committees in the various towns were to meet during the same week in each month, say for instance, the first week. Proprietors and other firms would then receive from all the important towns in the land simultaneous communications on behalf of the local chemists' association in their district. No doubt if this can be arranged, further good work will grow out of this close connection and active co-operation as between yourselves and our council. I would esteem it a special favour if you will kindly take the earliest opportunity of getting your committee's decision as to the proposals contained in this letter.

I am, yours respectfully,
W. S. Glyn-Jones (Secretary).

Mr. Rowsell said that he believed a meeting of their Association once a month was out of the question. It was bad enough to hold a meeting once in three months, and he suggested that a small committee should be appointed to deal with the matter.—Mr. T. C. Milton thought the question was a very important one, because the work of the P.A.T.A. would be useless unless the Association

was well supported. The Association was undoubtedly worthy of support, but he did not think it was possible for it to make headway unless it was supported by such committees as were suggested. It was very evident that individual chemists would not make any efforts, but if they, as an Association, took action, or if a committee of the Association were formed, as in other towns, they would have greater power in dealing with P.A.T.A. matters. He would propose that a small committee be appointed, and that it should meet monthly at any convenient time, and have power from the Association to act in the way suggested.—Mr. VINDEN said he believed that the chemists of the city were pretty well agreed to put up prices when necessary.—Mr. ROWSELL: I believe they are.—Mr. MILTON: But they are not agreed to meet and discuss the matter. I would suggest that when a committee is appointed to deal with the subject, it be asked to find out from time to time whether the P.A.T.A. prices are being adhered to.—Mr. ROWSELL explained the position of the P.A.T.A., remarking that, having been on the Executive of the P.A.T.A., he perhaps took a greater interest in its doings than the majority of those present. He had been continually watching the progress of its operations, and he had on two or three occasions reported to headquarters cases in which the P.A.T.A. list had not been adhered to. Letters were written to the firms mentioned, and he had found that within a month the prices were altered according to the P.A.T.A. list. In neither case had it been a chemist.—Mr. MILTON: I suppose if it had it would have been through ignorance?—Mr. ROWSELL: If it had been a chemist I would have gone and pointed it out to him.—Mr. LEMMON observed that the stores, who were the first to start the cutting movement, now hated it as much as anybody.—The CHAIRMAN said that even those who were the most careful in the matter of prices sometimes forgot, so that a slip was excusable. He sent up to Mr. Glyn-Jones some time ago a suggestion which he said he would think over, but which he had not done. The suggestion was that instead of printing in the *Anti-Cutting Record* a list of the prices in the ordinary type, he should publish an official list on a cardboard or something of that kind, so that traders could place it up in their establishment and see what articles were protected.—Mr. ROWSELL: At the next Committee meeting in London I will bring your suggestion forward.—Mr. LAKE concurred with Mr. Reid's suggestion. He also thought the list might be printed in larger type, so that the particular prices might be made more prominent. In the course of further discussion the opinion was expressed that to issue the list on cardboard would be very expensive.—Mr. E. LEMMON thought discussions such as this, as to the best means for getting the P.A.T.A. list adhered to, must be of great advantage to chemists.—Mr. LAKE said he understood that the idea was to have a local committee appointed to support the principal Committee and the Hon. Secretary.—Mr. ROWSELL pointed out that in addition to being the Hon. Secretary of the local association he was also acting as the Hon. Secretary in Exeter of the P.A.T.A., but he had no right to act as Secretary to this Association on P.A.T.A. lines. It was, therefore, desirable that a sub-committee should be appointed to meet once a month to discuss P.A.T.A. questions.—Mr. LAKE moved that the President, Mr. Vinden, and Mr. Milton form the Committee.—Mr. MILTON: I propose the whole Association, we shall not be too many.—Mr. REID asked the Hon. Secretary if he could tell the meeting if the P.A.T.A. was very much alive. It seemed to him that lately it had not been doing so much as it had done.—Mr. ROWSELL: I can assure you it is working as hard. It is very difficult to get firms to join the Association individually, and we want to show that local associations, meeting as they do all over the country, do more to help the P.A.T.A. than anything else. Mr. Rowsell then proceeded to refer to a case of a Devonport firm which had joined the Association, and in the course of subsequent discussion, reference was made to a chemist in a town in South Devon who had a list of prices in his establishment, in which, according to Mr. Milton, three-fourths of the articles quoted were from 5 to 10 per cent. under cost price.—After further discussion it was resolved, on the motion of Mr. MILTON, seconded by Mr. VINDEN, that the whole of the members be appointed on the Committee suggested in Mr. Glyn-Jones's letter.

The British Pharmacopœia, 1898.

The subject of the new British Pharmacopœia was next discussed. At the outset the CHAIRMAN explained that on the previous Monday, after he had talked the matter over with Mr. Milton, he had written to Messrs. Wright, Layman, and Umney and told them that the Association was holding a meeting to discuss the advisability of sending out a circular to the medical men of the city with regard to the Pharmacopœia. At his request the firm sent him a number of copies of their synopsis of the new Pharmacopœia, for distribution amongst medical men. Mr. H. Wippell Gadd, of the firm of Messrs. Evans, Gadd, and Co., of Exeter, was also publishing a synopsis of the new Pharmacopœia, the proof of which he now produced to the meeting. Mr. Gadd had kindly promised to supply a number of the copies of his work in a week or so, and he (the President) therefore suggested that copies of the synopsis should be forwarded to the medical men of the city.—Mr. MILTON then proposed that the following circular be sent to the medical men of the city, together with a copy of the synopsis:—

> Dear Sir,—We, the undersigned members of the Exeter Chemists' Association, desire to call your attention to the fact that on the first day of June the new British Pharmacopœia will be in the hands of the booksellers, and, in order to prevent confusion, we have decided to dispense all new prescriptions on and after that date according to the new Pharmacopœia. If you desire to prescribe by the old British Pharmacopœia, will you kindly put 1885 on the right hand side of the article ordered. We take the liberty of enclosing two very useful books showing the alterations made. In thanking you for your past kindness,
>
> We remain, dear sir,
>
> [Then follow the names of the members of the Association.]

—Mr. J. HINTON LAKE, Vice-President, seconded the resolution, and remarked that it was only fair that he should state that he had already received several copies of Mr. Umney's synopsis, and circulated them amongst a number of medical men in Exeter, with a little note similar in effect to that proposed by Mr. Milton. Mr. Gadd's work appeared to him to be an exceptionally useful book for medical men, but, on the other hand, the book published by Mr. Umney was of greater value to pharmacists in assisting them to prepare the medicines of the new Pharmacopœia. [The *P. J.* synopsis is still more useful in the latter respect, as it gives practical working details.—ED. *P. J.*] He begged to add to Mr. Milton's resolution that the gentlemen named be thanked for their kindness in sending copies of their books, and that they accept them as being very useful indeed.—Mr. ROWSELL supported what Mr. Lake had said. He had had a chance of going through Mr. Gadd's proof of his synopsis, and he certainly thought it would be a very useful publication for medical men, more so than for chemists. It was very concise, and dealt with the various preparations under the several headings of drugs and chemicals. They should certainly accept the books with thanks.—The resolution was unanimously agreed to, and the draft copy of the circular approved, after which an interesting discussion took place as to the effect of certain new preparations and changes in the 1898 Pharmacopœia..

HIGHLAND AND AGRICULTURAL SOCIETY OF SCOTLAND AND THE PHARMACY BILL.

A meeting of Directors of the Highland and Agricultural Society of Scotland was held in the Society's Chambers in Edinburgh on May 4, Sir JOHN GILMOUR, of Montrave, in the chair, at which Mr. JAMES MACDONALD, the Secretary, read a letter from Mr. Alex. Cross, M.P., asking the Society's support to his opposition to the Pharmacy Act Amendment Bill. The letter is as follows:—

> 19, Hope Street, Glasgow.
> April 13, 1893.
>
> JAMES MACDONALD, ESQ.,
> 3, George IV. Bridge, Edinburgh.
>
> My dear Sir,—I am extremely anxious to have the assistance of your Society in reference to the questions raised by the Pharmacy Act Amendment Bill presently before Parliament. Mr. Isaac Connell tells me he mentioned the matter to you, and he has petitioned the Board of Agriculture on behalf of the Scottish Chamber. I write to beg that you will submit the matter to your Directors, with the view of their likewise assisting in the matter. The situation is as follows:—Under the Act of 1868 the Pharmaceutical Society were constituted, two orders of members were instituted, namely, members and associates, with a separate examination for each. Certain poisons were scheduled under the Act, and these poisons and any articles containing them, in however small proportion, were only allowed to be sold by members of the Pharmaceutical Society. At this time sheep dips, insecticides, articles for the destruction of vermin on plants, weed killers, etc., were all but unknown, or in very restricted use. But things are different now, and the Pharmaceutical Society is alive to the value of this monopoly. They are entrusted with the prosecutions directed against persons who may sell such preparations without being members of the Pharmaceutical Society, and they have been prosecuting freely to vindicate their monopoly. The effects of this monopoly will be obvious to your Directors. Presently sheep dips are sold at an enormous profit, and new sheep dips can hardly go into the market to compete at lower prices, because of the licensed pharmaceutical chemists who are all engaged with the older brands, and do not want any more competition. It appears to me that all such monopolies and restrictions to trade when applied to articles of large consumption necessary for agriculture cannot be defended

and ought to be abolished. Nobody proposes that poisons shall be "dispensed" freely by incompetent persons—in the dispensing of poisons we are agreed and anxious that duly skilled persons shall be employed. What I maintain, however, is that it requires no skill to hand an article across the counter which is made up, sealed, labelled, and prepared, upon the credit of the manufacturer, or to sell a drum of sheep dip similarly packed, or a packet of any of the other insect destroyers, all which articles are necessary for horticulture, and which in my belief will speedily become of great consequence to farmers also. It may be said that accidents may arise with these articles. I do not think that this is likely, but if it be the case it is surely obvious that the mere fact of having been sold by a pharmaceutical chemist does not render the accident less likely to occur with a farmer or a gardener than if the article had been sold by a seedsman or ironmonger. No doubt all poisons should be made up in bottles of a special kind, but the Pharmaceutical Society have never taken any steps to compel this. I think the Privy Council are now going to do so, and I am strongly in favour of Government assuming the responsibility of prosecutions which may be required for infringement of their regulations. I have for some time desired to deal with these matters by special private Bill, but this year a better opportunity occurs. The Pharmaceutical Society themselves have brought in a Bill to amend the Act in some particulars to suit themselves, and there is an opportunity of amending the Act in further particulars, as above mentioned, at the same time. This is what I am trying to do, but as the Government are themselves bringing in a Poisons Act, which is to be before Parliament shortly, and which will deal with carbolic acid, etc., it may be important that all these amendments should be considered together. The chemists and druggists are an influential body. They will desire to fight for their monopoly, probably to increase it if they can, by getting the sale of carbolic acid and all sanitary applications into their hands, which will be a grave mistake in the public interest. Every effort will therefore require to be made now to let these articles become articles of free trade—of course under such restrictions, labels, and in such packages as Government may appoint. To illustrate the importance of this in the future to agriculture, may I mention some surprising results which have been obtained through the application of solutions of nicotine as preventives of disease in potatoes and many field crops, but the development of such will be checked if the salesmen and agents of the farmers engaged in agricultural trade are to be prevented from vending it, and the prices of it will be enormously increased if the chemists and druggists get it into their hands exclusively. It is too late to attempt to stop the sale of poisonous articles when those are really required and useful. You cannot prevent suicide by stopping the sale. On the same principle you would need to prevent the sale of knives and pistols, and to enact that all buildings shall be only one storey high, lest persons should leap over windows, and to abolish rivers, so that people might not drown themselves. To the man who wishes to commit suicide there are too many ways open to him to think of doing it with sheep dips or insecticides. And as for accidents, if these do happen they happen on the farm or in the garden quite irrespective of the kind of shop from which the article came. I submit that the state of affairs now is completely different from what it was when the Act of 1868 was passed and that it is against the public interest to maintain a monopoly of the selling of what have become commercial articles necessary for a large industry. Excuse my having written at such length. I am desirous to carry your Society with me, and that you should urge in a pretty lengthy statement the department of agriculture in London to take action to remedy the state of affairs. The technical position is that a few agricultural members and myself have blocked the druggists' Bill, which has for its object the apparently small desire to ease the examination for members of the Pharmaceutical Society. The gentlemen who are acting with me have no other aversion to the Pharmaceutical Society making itself stronger, but before it is allowed to do so, we think it should be divested of its monopoly.

Yours very truly,
ALEX. CROSS.

In the discussion which followed the reading of the letter, the CHAIRMAN observed that this was a matter that affected agriculturists, and that Mr. Cross proposed that the monopoly created by the Pharmacy Act of 1868 should be abolished.—Sir ROBERT MENZIES asked if there was a monopoly? He did not think there was. It might be contrary to the Act, but they all sold it.—Mr. A. MARTIN, of Auchendennan, pointed out that two years ago some seedsmen were prosecuted for selling insecticide, and it was stopped. He sympathised with Mr. Cross's view, especially if there was any probability of the monopoly being extended to carbolic acid and other things.—Rev. Dr. GILLESPIE, Mouswald, said there was no doubt the persons to whom Sir Robert Menzies referred were technically selling these goods, but they might be doing so through the pharmaceutical chemists, who would try to reconcile this state of matters. Mr. Cross stated in his letter that it was a monopoly. He was a very well-informed man, and what he said was worthy of attention.—Sir JAMES GIBSON CRAIG, of Riccarton, moved that the letter be referred to the Law Committee to ascertain as to the exact position of affairs. What Mr. Cross said was quite contrary to the experience of everyone in the room. They would do better to have the matter looked into from a legal point of view.—Mr. WILSON, Chapelhill, seconded the motion. His experience was that he had no difficulty in buying sheep dip from any person, grocers or ironmongers. He apprehended from the communication of Mr. Cross that there was some clause in this Act which compelled the Pharmaceutical Society to take prosecutions against persons who sold poisons, although under the name of sheep dip. It was undesirable if it was confined solely to chemists. He thought it should be remitted to the Law Committee, who should report to the next meeting.—Several members expressed the opinion that it would be too late then to do anything.—Mr. A. HUTCHESON, Beechwood, Perth, moved that they support Mr. Cross right away. It was investigated in another society of which he was a member (the Scottish Chamber of Agriculture), and he knew quite well the tendency would be for the Pharmaceutical Society to get their own way, and it would make all these things dearer and restrict their sale to the druggist's shop. That was the tendency, and that was what Mr. Cross wanted to prevent. There was no need to refer a matter like that to the Law Committee.—Mr. WILSON, Carnbeth, seconded.—Mr. DUTHIE, Collynie, suggested that, instead of the amendment, the Committee might be instructed to support Mr. Cross's amendment or deal with the matter as they thought fit.—Dr. GILLESPIE said he would support the amendment for this reason, that the Law Committee would not meet for a month, and there was a very vital case to support Mr. Cross. All that Mr. Cross wanted was that the sale of insecticides and sheep dips should not fall exclusively into the hands of chemists, but should be permitted to be sold in packets by other tradesmen.—Sir JAMES GIBSON CRAIG, having been appealed to, said he would stand by his motion to find out their real position. He hoped they would allow the Law Committee to investigate and report to the next meeting.—Mr. HUTCHESON said it would be too late then.—Sir JAMES GIBSON CRAIG said they might petition just now if they liked, but let the Law Committee investigate what the real position was.—The SECRETARY pointed out that there was no amendment before the House to support. Mr. Cross was to propose an amendment when the Bill came up, but they could not support it until it was before the House.—Mr. MARTIN said they could support him in his view, and he could state in Parliament that he was supported by the Highland Society when it came up for discussion.—After some further discussion it was agreed to support Mr. Cross in his action, and it was also remitted to the Chairman and the Secretary, if they thought it necessary to do so, by petition to the House of Commons. At the same time it was remitted to the Law Committee to investigate their position in the matter.

IRISH PHARMACISTS' ASSISTANTS' ASSOCIATION.

At Dublin, on Wednesday, last week, the members of this Association entertained in the Gresham Hotel, the President, Mr. W. J. HARDY, L.P.S.I., to a

Complimentary Dinner,

on the occasion of his departure from the city to take over the proprietorship of Messrs. Prott's Pharmacy, Belfast. There was a large number of visitors, amongst those present being the following:—Messrs. G. G. Fetherston (in the chair), and at his right hand Mr. W. J. Hardy (the guest of the evening), H. Hunt (Vice-President), J. H. Hardy, J. E. Dickson, Dr. McWalter, Charles Kingston, J. Tyrie Turner, W. Cochrane, J. Stokes (J. and D. McNair, Glasgow), C. Doran, Phillips, W. V. Johnston, J. S. Ashe, J. J. Walsh, Bowles, J. B. Bolger, F. J. Parker, D. O'Sullivan, etc. Apologies for non-attendance were received from Councillors Kelly, Dr. Walsh, and several other friends.—At the conclusion of the dinner the toast of "The Queen" having been honoured to the refrain of the National Anthem, the CHAIRMAN proposed the health of Mr. W. J. Hardy, President of the Association. To that gentleman was due the inception of the Assistants' Association. When Mr. Hardy took up the duty of hon. secretary, a number of assistants in Dublin fought shy of the Association, and it was to get under that feeling Mr. Hardy set himself to work, and well he had succeeded, as the Association to-day was equal to the best kindred body in the United Kingdom. He felt regret at parting with Mr. Hardy, but was glad in the knowledge that he was going to better himself. They said a prophet had no honour in his own country, but the converse was proved on the present occasion, as Mr. Hardy, in going North, was returning to his native air to open business on his own account. It was the desire of every well-regulated assistant to become a proprietor. The assistants, he regretted to say, did not command the position to which their attainments and avocation entitled them. He thought pharmacy should be raised to a profession. Referring to the new British Pharmacopœia, he said it was a most elaborate work, but from what he saw in the trade papers he sympathised with the medical men who would have to use it. If Mr. Hardy found the Belfast air not agreeing with him they would be delighted to have him again amongst them.—Mr. W. VINCENT JOHNSTON endorsed the Chairman's remarks, especially as regarded Mr. Hardy's labours on behalf of the Association.—Mr. DAVID O'SULLIVAN followed in a neat speech, in which he traced the Association step by step from its inception to

the present. All along Mr. Hardy's hand was seen in it. The Association, he said, had been formed for the mutual advantage and benefit of the pharmaceutical assistants in Dublin. It supplied a long-felt want, and that it now occupied its present splendid position in the chemical world was due solely to Mr. Hardy's exertions. The Association was the first of its kind in Ireland that had come to stay. The difficulties in starting an association were known only to its promoters.—Mr. J. Fetherston, Mr. Ashe, and Mr. Hunt testified in turn to the sterling qualities of Mr. Hardy.—Dr. McWalter thought it a great honour for Dublin that one of her assistants was going northward as the proprietor of one of the most extensive pharmacies in Belfast.—Mr. Hardy suitably replied.—The toast of "The Chairman" followed.—Mr. Fetherston replied. His connection with the Association was that of an honorary member, but, although an employer, his heart was with the assistants, and he was always ready to do his utmost for them. Speaking on the advantages of the Association, he considered that the papers, debates, and lectures provided for its members were of benefit to the employers as well as the assistants. If education advanced a young man's intellectual powers he would prove of additional value to his employer, who was at the mercy of his assistant every time he left his pharmacy. He held that contact with the Association led a youth to take a more lively and personal interest in his daily work than he otherwise would. He had hoped at some future date to see over his shop the names of Hardy and Fetherston, Ltd., especially the "limited," which was such a good "spec" nowadays, but fate ordained otherwise.—The toast of "The Irish Pharmacists' Assistants' Association," coupled with the name of the President-elect, was proposed by Mr. Hardy, and responded to by Mr. Hunt, after which the visitors and vocalists were similarly honoured.—The Chairman proposed the toast of "The Trade Press." He said they all knew what an important item the trade press was, not only to the Association, but to the pharmaceutical world. They were justly proud of the journalistic enterprise displayed by the several newspapers conducted in the interest of the chemical and drug trade. The news, especially that from Ireland, was invariably racy and crisp. Without the trade press they were like an army going to war without ammunition or provisions. If they escaped annihilation, they would be starved to death; and that was their case with regard to their unequalled business newspapers. If they had no trade press, they would simply be blotted out.—The toast was drunk with musical honours, and was suitably acknowledged by the representative of each paper.—A cordial vote of thanks to Mr. Curtis, the energetic manager of the Gresham Hotel, was then passed for the very excellent manner in which he had looked after the comfort of the visitors.—Mr. Curtis made a capital speech in reply.—During the evening songs and recitations were given by Messrs. Cochrane, C. Doran, G. G. and J. Fetherston, Ashe, Turner, Phillips, and others. Mr. Bowles presided at the piano with his customary ability. The company separated at midnight to the refrain of "Auld Lang Syne," all wishing Mr. Hardy good fortune and long life in his new sphere of work.

PHARMACEUTICAL SOCIETY OF IRELAND.

On Wednesday, the 4th inst., the monthly meeting of the Council was held at 67, Lower Mount Street, Dublin. The President, Mr. R. J. Downes, was in the chair, and the other members of the Council present were the Vice-President, Mr. Beggs, Mr. Grindley, Hon. Treasurer, and Messrs. Wells, Kelly, Conyngham, Hayes, Dr. Walsh, and Professor Tichborne.—Mr. Hayes asked why the report of the last meeting of the Council omitted a matter which was of great interest to the licentiates.—The President said the Council were in committee at the time. The matter arose on a report from the Certificates Committee.—Mr. Hayes denied that the Council were in Committee at the time. The matter arose on the exclusion of Mr. William Conyngham from the examinations.—The President said the reporter had notes of the discussion, and if the Council wished, these could be published.—Mr. Conyngham denied the accuracy of a statement of the President that discussions on reports of committees were committee matter, and in the course of some observations said he saw Mr. Wells nodding to the reporter.—Mr. Wells denied this, and the reporter disclaimed having seen or noticed any signal from Mr. Wells.—Mr. Wells said he was sorry the discussion had not been reported, because a threat was uttered to the Council on the occasion.—The matter dropped.—A letter from Mr. R. W. McKnight tendered his resignation as a member of the Council, and stated that when co-opted he had no connection with any limited company, but that he had since joined the Ulster Chemists' Company.—Mr. Grindley moved that the resignation be accepted.—Mr. Wells said he felt bound to second the motion, although Mr. McKnight was a friend of his, and he should like to see him on the Council.—Mr. Conyngham said that at the last election a cold-blooded lie went forth on a friend of Mr. Wells, and yet Mr. Wells did not lift his voice, but used the lie to defame his friend.—Mr. Wells: If this is to go on I will not sit here.—Mr. Conyngham: It is true, sir, perfectly true.—Mr. Wells: This is a perfectly low, corner-boy sort of thing—to attack me in reference to a matter that I had nothing to do with. Am I to read or answer everything that appears in the journal? I am attacked because I would not stoop to do what other people do. I acted straight in the matter.—Mr. Conyngham repeated his charge, saying that circulars went out which Mr. Wells used.—The Vice-President said there should be some other place besides the Council Chamber for settling these personal matters.—Mr. Wells said Mr. Conyngham had stated what was false, and that he ought to be ashamed of himself.—The resignation of Mr. McKnight was accepted.—Letters were read from the Pharmaceutical Society of Great Britain, the Irish Medical Association, and the Apothecaries' Hall of Ireland, expressing sympathy with the Council of the Irish Pharmaceutical Society in their efforts to obtain an amendment of the Companies Acts.

SCHOOL OF PHARMACY STUDENTS' ASSOCIATION.

Mr. H. S. Durbin took the chair at a meeting held on Friday, the 6th inst., when a paper was read by Mr. H. Payne on

Insectivorous Plants.

The author, in an able and exhaustive manner, described the more typical of such plants, calling special attention to the various devices and mechanisms by which they attract, capture, retain, and frequently digest insects and other small animals. Mr. Payne illustrated his remarks by means of living plants, some of which were kindly lent by the Royal Botanical Society.—An animated discussion followed, in which the Chairman, Secretaries, and Messrs. Smith, Turner, Matthews, Evans, and Battle took part. The meeting then adjourned.

LEGAL INTELLIGENCE.

PROCEEDINGS UNDER THE PHARMACY ACTS.

In the case of the Pharmaceutical Society of Great Britain *v.* Clare, which came before Judge French at the Bow County Court on Monday last, the plaintiffs sued the defendant, Mrs. Clare, carrying on business at 28, High Street, North Woolwich, to recover two penalties of £5 each for having sold on February 21 and March 26 some laudanum and Dr. Collis Browne's chlorodyne, the defendant not being qualified under the Act to sell poisons.—The defendant paid the money into Court.—On the application of Mr. T. R Grey, who appeared as counsel for the Pharmaceutical Society, His Honour made an order for the costs and certified for the costs of counsel.

NEW REMEDIES.

Convallamarin in Chloroform Narcosis.—From experiments on dogs Lewenberg considers that convallamarin will be found of value in preventing the arrest of the circulation during chloroform narcosis.—*Therap. Gaz.* [3], xiii., 674.

Senecio Aureus as a Hæmostatic.—Having used the fluid extract of *Senecio aureus* in all forms of parenchymatous hæmorrhage since 1871, Gundrum finds it the most valuable of all remedies. It is given in doses of 1 to 2 drachms. Since it is not an astringent, it would appear to act through the vasomotor system. It may be prescribed with confidence in all forms of internal bleeding.—*Therap. Gaz.* [3], xiii., 655.

Ammonol Salicylate in Headache.—Ammonol salicylate in doses of half a gramme, accompanied by a gentle mercurial aperient and a hot mustard foot bath, gives a certain and prompt relief in the case of habitual nervous headache in anæmic women.—*Les Nouv. Rem.*, xiii., after *Pharm. Zeit. für Russ.*, 722.

LETTERS TO THE EDITOR.

The New Pharmacopœia Test for Quinine Sulphate.

Sir,—It is satisfactory to find from Mr. David Howard's letter in the Journal of the 7th inst., that he substantially agrees with my adverse criticism of the quinine sulphate test of the new British Pharmacopœia. An alternative test might, in my opinion, have been supplied from information which is accessible to all readers of chemical literature. My contention is that failing the insertion of a satisfactory test, it would have been better merely to have prescribed a limit of impurity, leaving its determination, when necessary, in the hands of those competent to undertake it.

13, Fenchurch Avenue, E.C. A. J. Cownley.
May 9, 1898.

The Council Election.

Sir,—As I have no intention of discussing with the candidate from Manchester the truthfulness or otherwise of the facts referred to in my former letter, especially as I am in no way responsible for them, I must decline to do more than refer him to the report of Mr. McKellar's statements—*vide Pharmaceutical Journal*, page 383—and to that gentleman's letter in the *Chemist and Druggist* of March 26. If the assertions therein contained are untrue, it is a pity that Mr. Gibbons did not deny them earlier.

May 11, 1898. Associate in Business.

Sir,—I desire to draw the attention of my brother chemists and druggists to the fact that Mr. Walter Gibbons, pharmaceutical chemist, is seeking their suffrages at the forthcoming Council Election. I also wish it to be noted that this gentleman was the moving spirit of the Manchester opposition to the Pharmacy Acts Amendment Bill, now before Parliament, which seeks to confer the right of membership of the Pharmaceutical Society upon "Minor" men. This, I think, is sufficient reason why his defeat should be secured. He is evidently not the man to voice our aspirations in the Council.

Cockermouth, May 10, 1898. W. Stanley Scott.

Sir,—I hope the Council of the Pharmaceutical Society will take active steps to remedy the flaw in the Pharmacy Act which enables unqualified companies to use titles which are illegal for individuals to use. As for monopoly in the sale of drugs that is out of the question, but I do think titles ought to be protected, and unqualified companies prevented from trading on other men's qualifications. If it is allowed in the case of chemists, why not have limited companies as cash doctors or cash dentists, on the same lines? Grocers even describe themselves as manufacturing chemists, advertise drugs, etc., at cost prices, and deceive the public, to the detriment of the real chemist.

May 11, 1898. Country Chemist (132/42).

A Dispensing Problem.

Sir,—One of the items on "the prescription" handed to me during the last Minor examination was :—

℞ Glycerin. Borac. ..... 5iv.
Liq Plumbi ..... 5iv.
Ung. Zinc. Benz. ..... ad 5vj.
M. ft. ung. Sig. m. d. u.

I had to make the zinc ointment, and "turned out" what the examiner termed a "dicky" mass. Since then a few of us (students) have made various attempts to produce an "elegant" preparation, but the best results give evidences of granulation when cold. Can any reader of the Journal help in the solution of this problem?

London, May 6, 1898. Aratus Sum (10/6).

Chemists and Jury Service.

Sir,—It was with regret that I read many of the remarks on the above subject which were made at last meeting of Council, and particularly Mr. Carteighe's "non possumus" arguments. Mr. Carteighe is mistaken in thinking that the Edinburgh District Chemists' Trade Association had not considered the discussions which have taken place since the Dentists Act was passed. Although not reported, these were referred to at our meeting, more particularly by Mr. J. Rutherford Hill, and to show that they were not solely of a "non possumus" nature, allow me to quote two extracts from Journal editorials :—"The Council of the Pharmaceutical Society has recognised the principle that chemists and druggists, like pharmaceutical chemists, should be exempt from serving on juries. . . . The Council has also obtained recognition of this principle by the Legislature, and in all probability it might have become law if the Juries Bill of 1872 or 1874 had been passed" (*P. J.*, 1880 [3], xi., p. 355), and, again, "at the present time we have reason for expressing the opinion that no objection would be raised by the Council to the introduction of a clause to effect the desired object (exemption of chemists from jury service) whenever the Pharmacy Bill reaches the committee stage, and, indeed, it would be willing to assist in obtaining its insertion when that opportunity arrives" (*P. J.*, 1890 [3], xx., p. 681). Mr. Carteighe was President at the latter date, and both quotations prove that a clause exempting chemists from jury service would not be out of place even in a Pharmacy Bill, and would not neccssarily be rejected by the Government. It ought to be remembered that we in Scotland have a special grievance, as neither pharmaceutical chemists nor chemists and druggists are exempted, but we do not base our claim for exemption on this, but on "imperative public necessity," in regard to which a strong claim can be made out by chemists both in England and Scotland. No really serious effort has ever been made to obtain exemption, and when this has been done, and when it has failed, then will be the time to say "non possumus." The Privy Council was mentioned during the discussion in the Council, but surely it is no part of their duty to say what shall be or what shall not be the law of the land. They are but the servants of the Legislature, and to the latter only we must look to have this matter remedied, both on grounds of "imperative public necessity" and justice. We have but little to thank the Privy Council for in the past, and we need expect little help from them at any time. Whether the present Pharmacy Bill passes or not, the Council are pledged to bring in others to remedy this and other grievances. One of the main arguments used in the case of the present Bill was that the Society should be consolidated in order to have more weight to carry out other reforms.

Edinburgh, May 10, 1898. Claude F. Henry.

The Medicine Stamp Duty.

Sir,—A certain soap is recommended by pamphlet as a remedial agent for "rash, pimples, boils, stomach ulcers, cancer, chronic rheumatism," etc. ; and that over and above a reference to its fitness for toilet and nursery use, for the laundry, and for bathing and shaving. I was curious to know how Somerset House authorities would view such an article with reference to its liability or otherwise to Stamp Duty, and forwarded specimens of the printed matter referred to ; annexed is a copy of the reply.

Edinburgh, May 9, 1898. J. A. Forret.

[Enclosure.]

Inland Revenue, Somerset House, London, W.C.
April 23, 1898.

Sir,—With reference to your letter . . . I am directed by the Board of Inland Revenue to acquaint you that the pamphlets . . . contain dutiable recommendations, but that soap used in the ordinary way in washing is not regarded as within the charge. If, however, this soap is to be left on the body for a time, it is considered to be used as an ointment or salve, and would then be held liable to duty.

I am, etc.

[Numerous Answers to Queries are held over.]

OBITUARY.

Moor.—On April 26, George Moor, Chemist and Druggist, Droitwich. Aged 37.

Padwick.—On April 29, Thomas Padwick, Pharmaceutical Chemist, Redhill. Aged 53.

Wharrie.—On May 1, Decimus Wharrie, Pharmaceutical Chemist, Liverpool. Aged 69. Mr. Wharrie had been a member of the Pharmaceutical Society since 1854.

Stoddart.—On May 2, Thomas George Stoddart, Chemist and Druggist.

Watt.—On May 9, James Watt, Pharmaceutical Chemist, Haddington. Aged 41. Mr. Watt had been a member of the Pharmaceutical Society since 1889.

COMMUNICATIONS, LETTERS, etc., have been received from Messrs. Alcock, Bathurst, Bennett, Bessant, Blair, Blyth, Butterworth, Clark, Clarkson, Dixon, Dunlop, Fick, Gadd, Hallaway, Harrison, Hebb, Hogg, Johnson, King, Parry, Poll, Raimes, Rose, Spooner, Strong, Thomson, Tiessen, Ward, Wynne, Young.

Pharmacy and the Allied Sciences.

A REVIEW OF CURRENT WORK.

Maclagan's Test for Cocaine Hydrochloride. In carrying out Maclagan's test for the purity of cocaine hydrochloride it is pointed out in Gehe's Bericht that the normal temperature of 15° is the most favourable for carrying out the operation, and that it is necessary to use absolutely pure distilled water, as the slightest trace of fatty substance in the water, or even introduced by holding the glass rod with greasy fingers, is sufficient to vitiate the test. This is rather a puerile objection even if it were correct, as it is not usual in analytical operations to use greasy liquids or utensils. But Gehe's statement cannot be endorsed as there is no difficulty in obtaining the characteristic crystalline precipitate with a sample of pure cocaine hydrochloride by Maclagan's test, even after greasing the rod with olive oil to such an extent that oily globules separated in the liquid.

Starch Iodide. C. O. Harz (*Apoth. Zeit.*) finds that iodine combines with the three starches enumerated in different proportions in the raw state, and when in the form of mucilage thus, raw rice starch absorbs 6·44 per cent.; the paste, 17·61 per cent.; raw potato starch, 6·73; the paste, 20·68; raw wheat starch, 7·62; the paste, 20·72. The raw starch combination approximates to Payen's formula, $(C_6H_{10}O_5)_{10}I$, while the mucilage accords with the formula, $4[(C_6H_{10}O_5)_4I] + HI$, of Mylius.—*Journ. de Pharm.* [6], vii., 426.

Pure Guaiacol. Pure guaiacol free from homologues and other phenol bodies is obtained by the following patent process:—O-anisidine is diazotised and the diazoanisol obtained is decomposed by being boiled with sulphuric acid of at least 35 per cent. at temperatures above 135° C. The guaiacol liberated is distilled off immediately after formation by a current of steam passing through the solution. The guaiacol thus obtained is re-distilled at about 200° C., and congeals at once to crystals which melt at 30° C.—*Pharm. Centralh.*, xxxix., 89.

Comparative Danger of Acetylene and Coal Gas Inhalation. From experiments on rabbits, Dr. T. Oliver concludes that risk of death from asphyxia after inhaling a mixture of air and acetylene is not so great as from a similar admixture of air and coal gas. The time taken to produce toxic effects is longer in the case of acetylene, and the symptoms are free from the nervous or respiratory excitement seen with other narcotic vapours. Provided asphyxia has not gone too far, recovery is rapid after exposure to fresh air. The subject is receiving further investigation.—*B. M. J.*, 2/98, 1069.

Odours and Tastes in Drinking Waters. Messrs. D. D. Jackson and J. W. Ellms point out that, while some of the Cyanophyceæ (especially *Anabæna*) produce disagreeable odours in surfacc waters by the decay of nitrogenous organic matters, the most common cause of unpleasant odours and tastes occurring in potable water is the secretion by microscopic organisms of compounds of the nature of essential oils as a phenomenon not of decay, but of growth. Among the Cyanophyceæ which produce an offensive odour by the decay of highly nitrogenous organic substances, in which partially decomposed phosphorus and sulphur compounds play a leading part, are *Anabæna*, *Rivularia*, *Clathrocystis*, *Cœlosphærium*, and *Aphanizomenon*. The organisms which emit odours of a fishy or aromatic nature as a phenomenon of growth include Diatomaceæ (*Asterionella*, *Meridion*, *Tabellaria*); Chlorophyceæ (*Volvox*, *Eudorina*, *Pandorina*); and Infusoria (*Uroglena*, *Dinobryon*, *Synura*, *Bursaria*, *Peridinium*, *Cryptomonas*, and *Mallomonas*).—*Technology Quarterly*, vol. x., p. 410.

New Organs of the Plant-Cell. In the superficial layers of the cytoplasm of some Florideæ and Saprolegniaceæ, Mr. W. T. Swingle records the presence in large numbers of bodies, to which he gives the name vibrioids. They are slender, sharply defined bodies, exhibiting rather slow bending or undulatory motions, in addition to movements which are probably due to the cytoplasm. When stained, they are sharply differentiated from the surrounding cytoplasm. They occur constantly in all stages of development of the plant. Another new organ or organoid was detected in the nucleus of the oosphere of *Albuga candidus*. It is a nearly spherical body, but often somewhat flattened on the side adjoining the nucleus. It appears to be more or less granular in structure, and is found before the delimitation of the oosphere within the oogone, and disappears after the fusion of the male and female nuclei.—*Botanical Gazette*, 1898, p. 110.

Cellulose Enzymes. In addition to the examples already well known, Dr. F. C. Newcombe records the extraction of a cellulose-digesting enzyme from seedlings of the date and of *Lupinus albus*, and from the mycele of *Aspergillus orzyæ*. The author does not support the view that the cellulose enzyme is identical with diastase. In all the above cases the enzyme also dissolves starch; but the specific intensity of action is not the same for starch as for cellulose. Thc *Aspergillus* ferment acts most strongly on the cell-wall, the date ferment the least rapidly.—*Bot. Centralblatt*, vol. lxxiii., 1898, p. 105.

Formation of Albumin in Plants. Herr W. Zaleski discusses the controverted question whether albuminoid substances can be formed in the plant in the dark. From a series of experiments on sunflower leaves he has come to the conclusion that the nitrates taken up into the leaves are there decomposed and transformed into other nitrogenous compounds. This transformation is connected with the access of sugar, which renders possible the passage of nitrates into other compounds, probably of the nature of amides. These processes can take place in the dark.—*Ber. Deutsch. Bot. Gesell.*, vol. xv., p. 536.

Biology and Morphology of Pollen. Professor A. Hansgirg proposes the following classification of pollen grains, dependent on their power of resisting moisture, and on their protection against unfavourable atmospheric influences: (*A*) Plants whose pollen is resistent to moisture and germinates in pure water; (*a*) Species in which the sexual organs are more or less protected against rain, etc.; (*b*) Species in which the sexual organs are only slightly or not at all protected against atmospheric precipitation; (*B*) Plants whose pollen is not resistant to moisture, and does not germinate, or only very imperfectly, in pure water; (*a*) Species in which the sexual organs are completely or partially protected against rain; (*b*) Species in which the sexual organs are only slightly or not all protected against rain, usually completely exposed. The class to which any particular pollen grain belongs does not depend so much on the affinity of the species as on its special habit.—*Sitzber. kön. Böhmisch. Ges. Wiss.*, 1897.

PHOTO-MICROGRAPHY.

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

(*Continued from page* 434.)

With respect to culture tubes requiring reflected light, the apparatus is best arranged as shown in Fig. 6, the tube being placed in a water-bath to do away with the internal reflection of the light in the tube itself. It is not well, I have found, to use a fluid in the water-bath of too high a refractive index—say oil of cedar for instance—as the outline of the tube is too utterly lost. Water seems to do very well, but there are times when even this fluid may do away with the outline of the tube

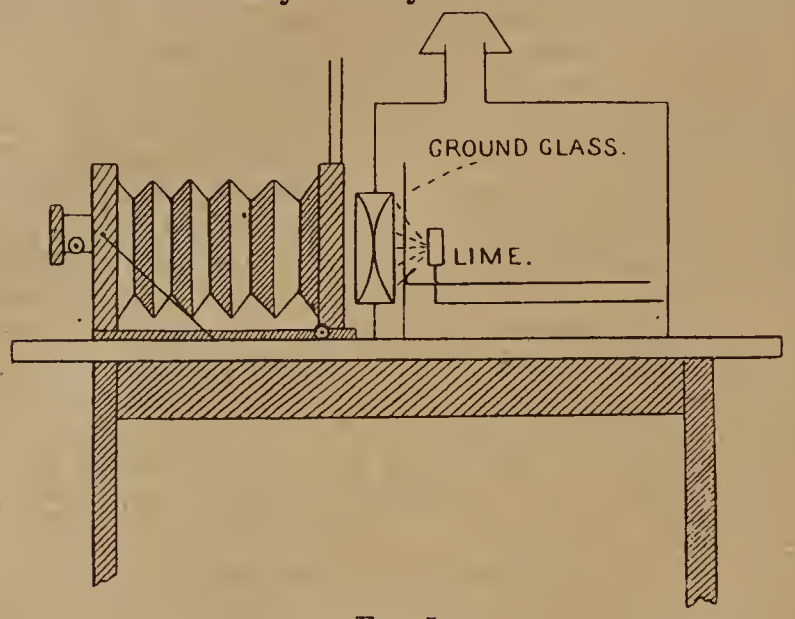

FIG. 5.

rather more than is desirable. Glycerin forms a capital fluid for a bath; its boiling point is so high that it does not easily form bubbles. With respect to the lens to be used for this purpose, a 5 inch rectilinear stopped down to F/22 or F/32 usually fulfils most requirements, but a Goertz 5 inch is superior to any lens we know of, unless it be one of the Zeiss anastigmats. The camera arrangement as previously described (Fig. 3), should now be placed on the additional slide with rails (that which we have just suggested should be made), as it enables the photographer to

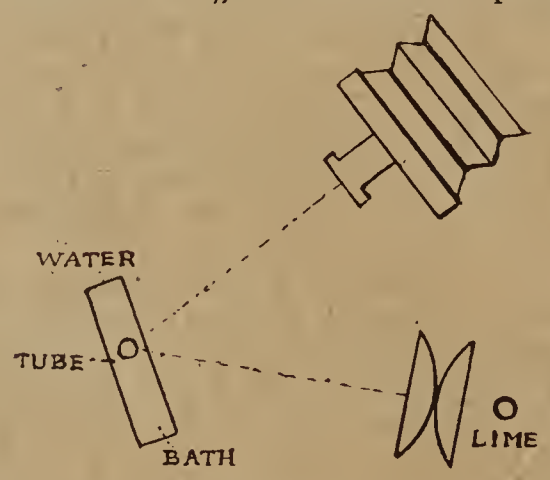

FIG. 6.

obtain his picture with comfort, because the camera slides to and fro with ease and axial precision. The use of the levelling screws I mentioned is now apparent, for by them the photographer can adjust small irregularities in the verticality of the tube without the necessity of touching it in its bath. The position of the lime and condenser are shown in the diagram, Fig. 6. The exposure, when employing an isochromatic medium plate by Edwards, well and evenly backed, is about 30 seconds at F/32.

When transmitted light is required the illuminant should be arranged as shown in Fig. 7, where elevation and plan are both shown. That is, it should shine obliquely on the tube from above downwards. It is best so to arrange the light that parallel rays issue from the condenser upon the water-bath, which is done by pushing up the lime quite close to the condenser, in

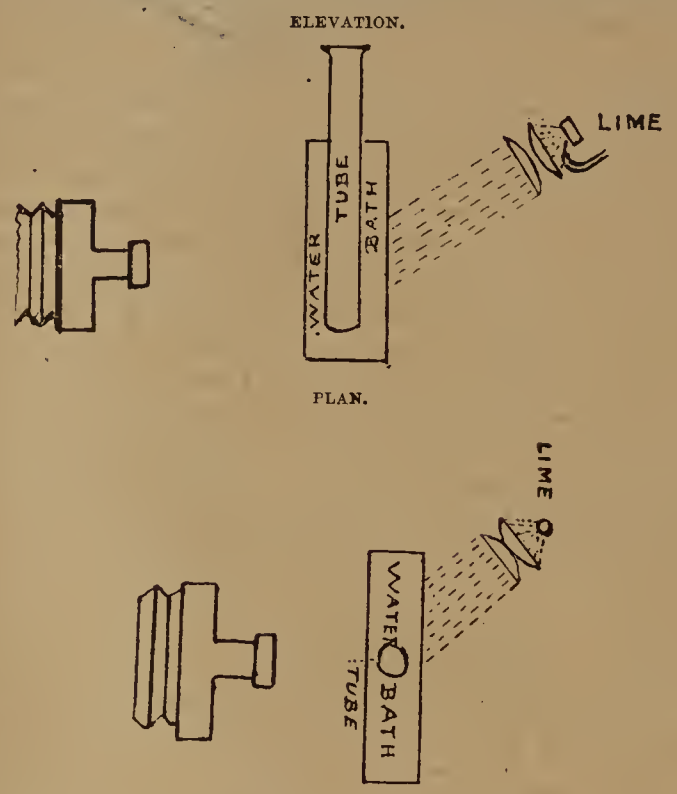

FIG. 7.

point of fact, to place it in its focus. Approximately parallel rays will then issue from the lenses. The water-bath must not be too small; about 4 inches long, 2 inches wide, and 5 inches deep, are convenient dimensions. As a water-bath of this size is not a commercial article, but can be readily made, the following instructions for its manufacture may be useful:—Procure two glasses of the

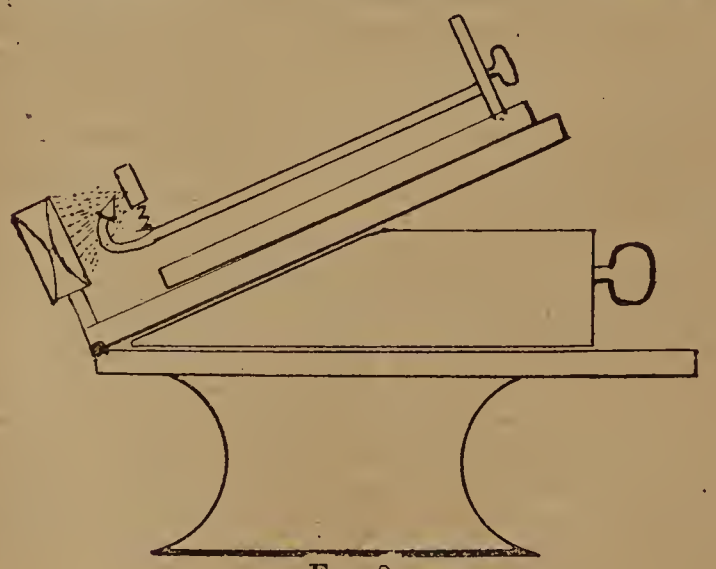

FIG. 8.

correct size, some solid vulcanite (2 inches thick), cut in lengths to form the bottom and sides. Cover each surface of the vulcanite that comes in contact with the glass, as well as the surface of the glasses that come in contact with the vulcanite, with Miller's cement—procurable at any optician's—and firmly press the glasses on to them. Leave to dry for twenty-four hours. Now cut strips of good strong paper, and apply them over the points of union of the glass and the vulcanite inside, and having coated them as well as the glass and vulcanite with cement, again leave for twenty-four hours. After becoming dry, apply one or two more coats

over the joints with the same cement, and all will be complete. To make it more handy and to prevent being easily upset, it is well to arrange a wooden support to take the bath as a whole.

With streaked cultures, the tubes must be inclined at such an angle that the level of the inclined medium is approximately at right angles to the optical axis of the lens, by which means it will be found the upper and lower ends of the gelatin inside the tube can be photographed at one plane of focus. It will now be seen why it was necessary to make the water-bath so wide; it was to allow of this tilting.

Another variety of tube, which the bacteriologist may require to have photographed, has not yet been referred to, namely, the bubble-tube of *Bacillus coli communis*, and that of malignant œdema. Such tubes contain bubbles of gas, which, arising in the substance of the medium, pass through it towards the top. It is no easy matter to take a good photograph of this type of tube, unless the light is placed almost in a line with the lens on the other side of the bath, a piece of ground glass being placed between the condenser and the water. The photographer is reminded to be careful not to focus the ground glass—let him keep it near the condenser.

As my desire is to make these articles essentially practical, a few hints must be given regarding the method of supporting the lime and the condenser. As the light is to be raised vertically up or down to get the required obliquity, so the lime must also be tilted with the condenser to allow the issuing rays to fall upon the tube fixed beneath in its bath. I have found that a convenient arrangement for this tilting is afforded by fixing the tray of the jet upon a piece of wood which is hinged at its ends to another piece, as shown in Fig. 8. A simple wedge is now all that is required to raise or lower the end of the upper board, so as to make the rays tilt enough to impinge on the tube. To make my meaning clear, I may say there are really two movements required; one to raise the light above the object, the other to tilt the condenser sufficiently down to bring the rays obliquely on to it.

In taking these photographs it must be distinctly understood there is no hard and fast rule, each position that we have explained must be tried by direct experiment until the results required are obtained. Occasionally troubles may arise from bubbles forming in the water-bath while the apparatus is being got in order. These must be carefully looked for at the last moment before taking the photograph, as it is annoying to find afterwards that their presence has spoilt the final effect. A pencil or stirring-rod is useful for this purpose, and should always be handy.

If water be used, and not glycerin, it rapidly becomes hot if much time is spent arranging the details for taking the photograph; this, too, should be carefully guarded against, as with some tubes the slightest heat will melt the gelatin and spoil the tube. It is necessary, therefore, to have quite close at hand some cold water to instantly add to the bath, for the slightest delay has, in our hands, on one or two occasions produced the very disaster we wished to avoid.

Another hint to remember is to cleanly wipe out the water-bath each time after using, for if water be left in it when not in use it will slowly evaporate and leave ridges of stain on the inside faces of the glass, which have in our own experience given rise to considerable trouble to remove. (We have found that spirits of wine or very dilute hydrofluoric acid the best for this purpose.) A difficulty arises sometimes when photographing the obliquely filled streaked culture tubes from steaming within the tube itself. This constitutes a most formidable trouble, and one which on some occasions we have been unable to avoid. If leave be granted to move the paraffin wax and woollen plug—to do which gently insert a slightly warmed penknife around the wax at its contact with the glass—the best plan for getting rid of this annoying trouble is to take a stiff roll of blotting paper of the thin filter-paper type, and very gently insert it down the tube. One touch of the culture may spoil it hopelessly, so the treatment requires the greatest of care, and, as before stated, should never be done without the leave of the bacteriologist. It should be recollected, too, that, should the growth be touched, the paper should be at once immediately burned and the wool and wax returned to their place, recollecting to put the wool in first, and then the melted wax seals up the tube.

About Lenses.

It has been mentioned that the distance of the lens from the object and the camera length are factors for producing the required magnification. So they are, but the critic must not think the focal length of the lens itself has been lost sight of. What I have said applies in a fashion to the use of the same lens. Seeing, however, it may be of service to the photographer to rightly understand where the focal length of any lens he may use comes in, I will conclude this section of our subject by giving a few formulæ, which, although they may not be rigidly correct, are quite correct enough for all practical purposes. We shall ignore the distance of the object from the lens and ask ourselves three different questions:

1. Suppose first we want to magnify an object, say a house-fly, four diameters on our ground glass so as to make a lantern slide from our negative, and we do not want to use a camera length of more than, say, 10 inches; what lens is required?—

Let F = focal length of lens required; let M = magnification; let L = camera length.

The formula here is— $F = \frac{L}{(M+1)}$

This becomes $F = \frac{10}{(4+1)} = \frac{10}{5} = 2$ inches.

Therefore we require a 2-inch lens.

If we desire to work in millimetres, then:—

$$F = \frac{L}{(M+1)} = \frac{250}{5} = 50 \text{ Mm.}$$

This means that we must have a lens of 50 Mm. focus to give us a magnification of 4 diameters, with a camera extension of 10 inches (250 Mm.).

2. Suppose now we want to know whether our camera will require the additional front to obtain a picture of 10 diameters on the screen, using the 50 Mm. lens; as we know the limit of our lantern slide is three inches, so the object it is evident must be small or it will not all go on the plate. Presuming we are satisfied with a portion only showing, then the formula becomes

$L = (M+1)F = (10+1)50 = 550$ Mm. or 22 in.;

our camera will need the front it is evident.

Lastly, we want to know what magnitude in diameters would our object be reproduced on the plate with a given lens and a given camera length. Say, for example, what magnification can we obtain with our 13-inch (325 Mm.) camera, and no additional front, using still a 2-inch (50 Mm.) lens. The formula here is—

$$(M + 1) = \frac{L}{F} = \frac{325}{50} = 6{\cdot}5$$

as $M + 1 = 6{\cdot}5$. $\therefore M = 6{\cdot}5 - 1 = 5{\cdot}5$ diameters.

Or in inches—

$$(M + 1) = \frac{13}{2} = 6{\cdot}5 - 1 = 5{\cdot}5 \text{ diameters.}$$

If one wanted to use any other lens it is obvious that the same formula would suit.

The Annual Dinner of the Pharmaceutical Society.

The Annual Dinner of the members and friends of the Pharmaceutical Society of Great Britain took place on Tuesday evening, May 17, at the Victoria Hall, Hotel Cecil, which was well filled. The Chair was occupied by Mr. Walter Hills.

In addition to the cross-table, presided over by the President, Mr. Walter Hills, there were seven spur tables, presided over by Mr. C. B. Allen, Mr. Isaiah Bourdas, Mr. R. Hampson (Treasurer of the Pharmaceutical Society), Mr. G. T. W. Newsholme (Vice-President of the Pharmaceutical Society), Mr. R. Bremridge (Secretary of the Pharmaceutical Society), Mr. R. A. Robinson, and Mr. G. S. Taylor. The following is a complete list of those who were present :—

Allen, C. B.
Allen, —
Anderson, G.
Arkinstall, W.
Arnold, H.
Arrow, J. J.
Arrowsmith, A. R.
Atkins, S. R.
Attfield, Dr. J., F.R.S.
Baiss, A.
,, Two Friends
Barron, —
Bascombe, F.
Bateman, T. H.
Bateson, A. C.
Bateson, T.
Bell, John
Birch, H. C.
Bolton, H. N.
Bolton, H. N., jun.
Bottle, A.
Bourdas, I.
Bourdas, I., jun.
Boutall, G. S.
Bowen, J. W.
Boyes, —
Bremridge, R. (Secretary)
Bremridge, R. Harding
Bridge, A.
B. & C. D. Reporter
Brookfield, A. M., M.P.
Browne, Sir J. Crichton, F.R.S.
Bryant, T., F.R.C.S. (President Royal Medical and Chirurgical Society)
Butler, H. T.
Carteighe, M.
Carter, R. W.
Castle, J. W.
Chaney, H. J. (Supt. of Standards)
Chater, A. J.
C. & D. Reporter
Chittenden, Dr. T. H.
Clowes, Dr. F. (President Soc. of Chem. Industry)
Clayton, —
Collie, Prof. J. Norman, F.R.S.
Collier, H.
Cooper, A.
Cooper, A. J. B.
Cooper, J.
Cottle, Dr. Wyndham
Cracknell, H.
Cross, W. Gowen
Daily News Reporter
Davidson, P.
Davies. T.
Davis, W. A.
Dewar, Pro. J., F.R.S. (President Chem. Soc.)
Dixon, R. D.
Downes, R. J. (President Pharm. Soc. of Ireland)
Dyer, Dr. Bernard (President Society of Public Analysts)
Eastes, E. J.
Elden, T. L.
Evans, J. J.
Everett, J. Garwood
Ewing, J. Laidlaw (Chairman of Executive, N.B. Branch).
Farr, E. H.
Farquharson, Dr. R., M.P.
Flux, C. W. Langley
Foster, J.
Foster, Sir Walter, M.D., M.P.
Francis, G. B.
Frankish, Dr.
Gerrard, A. W.
Gibson, —
Goldfineh, G.
Gossling, W. R.
Greenish, Prof.
Greenish, T.
Gregory, A. C.
Grey, T. R.
Griffith, Dr. S. C. (Master of the Society of Apothecaries)
Grimwade, E. H.
Grose, N. M.
Gulliver, W. F.
Hampson, R. (Treasurer)
Harrison, J.
Harvey, W.
Heap, J. H.
Heighington, T. Gordon
Hicks, F.
Hills, E.
Hills, Walter (President)
Hipwell, P.
Hoare, E. Brodie, M.P.
Hobbs, A. E.
Hodgkinson, C.
Hodgson, C. R., B.A. (Secretary College of Preceptors)
Holmes, E. M.
Howe, F. G.
Hugill, E. A.
Hugill, J. H.
Humphrey, J.
Hutton, W.
Ince, J.
Ingram, —
Jones, Adpar
Jones, G. E.
Jones, Dr. H. Maenaughton (President Gynæcological Society)
Jones, Dr. Thoresby
Kelson, Dr. W. H.
Kilpatrick, R.
Lancet Reporter
Langton, J., F.R.C.S. (President Clinical Society)
Lansdown, G. A.
Leng, —
Lescher, F. Harwood
Lewis, D. L.
,, Friend
Linstead, E. F.
Lloyd, J.
Lucas, E. W.
Martin, C.
Martin, N. H.
Martin, T. C. W.
Martindale, W.
Massey, S. J.
Mathews, J. H.
Miles, C. J.
,, Friend
Millard, E. J.
Moon, H.
Morris, —
Morson, A.
Morson, T. P.
Naylor, W. A. H.
Newsholme, G. T. W. (Vice-President)
Ord, S. W.
Padman, J., M.R.C.S.
Pain, R.
Park, C. J.
Parsons, —
Paul, A.
Penberthy, Prof. (President of Royal College of Veterinary Surgeons)
P. J. Reporter
Phillips, A. J.
Preston, Major A. C.
Ransom, F.
Raper, J. R.
Reid, —
Ridley, R.
Roach, H. W.
Roberts, W.
Robbins, J.
Robbins, P. J.
Robinson, R. A., L.C.C.
Robinson, W. P.
Roe, —
Rogers, F. A.
Rogerson, W. J.
Royle, H. W.
Sanger, E.
Sanger, H.
Savory, A. L.
Shacklock. J. H.
Shannon, R. J.
Sherwood, N.
Shilleock, A.
Smalley, Dr. H. (Medieal Inspector to the Prisons Commission)
Smith, Hon. W. F. D., M.P.
Smith, P. J.
Smith, S.
Solomon, A. H.
Southall, A.
Stanley, Herbert
Stevenson, Dr. T. (President Institute of Chem.)
Street, Arthur
Street, Edmund
Strutt, Arthur
Symes, C.
Tanner, A. E.
Taubman, R.
Taylor, G. S.
Taylor, T. Morley (President Chemists' Assistants' Association)
Thorpe, Prof. T. E., F.R.S. (Principal of the Government Laboratory)
Thurston, J.
Tickle, T.
Times Reporter
Tomes, C. S., F.R.S.
Travers, Dr. W.
Umney, C.
Umney, J. C.
Walker, H.
Walker, H. J. D.
Walker, W. Beavan
Want, W. P.
Ward, J. S.
Waring, A. W.
Warren, F. W.
Warren, W.
Watson, H. S.
Wavell, G. H.
Westcott, Dr. W. Wynne
Weston, S. J.
White, Dr. Percival
White, Edmund
Whitehead, W.
Whitrod, H. F.
Wigginton, A.
Wilbe, Dr. Haydoek
Will, W. Watson
Williams, Dr. Dawson (Editor *British Medical Journal*)
Williams, Hy.
Williams, T. R.
Williams, W. Lloyd
Wilson, J.
Woolley, S. W.
Wootton, A. C.
Wretts, J. R.
Wright, Alfred
Wright, H. C.
Young, J. Rymer

"The Health of the Queen" having been duly honoured, the President proposed "The Houses of Parliament." He said all would agree that the House of Lords had often acted in the interests of the nation, though the difference between the two chambers was, as he heard remarked by an Honourable Member the other day, that the House of Lords had little to do and did it, whilst the House of Commons had too much to do and didn't do it. Just at present it could not even pass the Pharmacy Acts Amendment Bill, but nevertheless they would not find fault with it, and he must say he had been much struck lately by the courtesy with which members of the House attended to the calls made upon them by their constituents, and others, and the diligence they displayed in carrying out their public duties. Their thanks as pharmacists were specially due to those members of the House of Commons who had given their aid to the Pharmacy Acts Amendment Bill, several of whom he was glad to see present. Their thanks were specially due to the Hon. W. F. D. Smith, the introducer of the Bill and member for the constituency in which they were dining. When he asked him to undertake the duty of introducing the Pharmacy Bill, he, after a few days' consideration, said he would do what he could, and they were not only grateful to him for what he had already done, but for what he would yet do in that connection.

Mr. W. F. D. Smith, M.P., in response, said he once heard it said that no one ever responded for the House of Lords without making excuses for it, but he really thought that was unnecessary. With regard to the House of Commons, he thought of late years the inventive genius of members had largely increased, and it was quite certain that private members had but little chance of passing any measures in which they took an interest. The Pharmaceutical Society had only suffered in this respect in common with others. Still, their Bill had gone further than 90 per cent. of private Bills, having passed the second reading and reached the Committee stage; but, unfortunately, even there it was equally open to obstruction. Still, there was a chance that those who opposed, on mistaken grounds as he thought, might be absent some evening when it was put down—and it would be put down as often as possible; but even if it were not passed this session, arrangements might be made to get as many members as possible to ballot for a place next session, so that it might have a good chance of being pushed through then. Apart from that particular Bill, the House of Commons he felt sure deserved and would always receive the esteem and respect of the country.

The Vice-President (Mr. Newsholme) next proposed "The Medical Profession." He said the benefits they rendered to the public were enormous, their energies being always exerted on behalf of suffering humanity, and no one knew that better or appreciated it more than pharmacists. They were all glad to see the way in which the General Medical Council had of late been upholding the dignity of the profession by putting a veto on unqualified practice, and he wished the Council of the Pharmaceutical Society had the same power, for it would be of immense service to the public. If the Council had more influence with the Government and the public departments, such as the Local Government Board, they would not have seen the office of dispenser under the Poor Law degraded as it had been by being thrown open to anyone who had served a certain time in the Army and who passed a very insufficient examination. He begged to couple with the toast the names of Sir Walter Foster, M.P., and Mr. Thos. Bryant, President of the Royal Medical and Chirurgical Society.

Sir Walter Foster, M.P., in responding, said the profession to which he had the honour to belong and that of pharmacy were closely allied, in fact they were two branches of one great craft

whose object was to serve humanity and the public. In the efforts of physicians to ameliorate suffering, pharmacists were their advisers, and prepared their remedial agents, which were effective or non-effective according to the skill displayed in their preparation. They went on watching the great war which the medical profession waged against disease; they were continually grateful for the opportunities which pharmacists gave them of making the potions they prescribed more palatable and more efficient. As time went on he hoped the General Medical Council would rely more and more on the Pharmaceutical Society for guidance and assistance in the preparation of the Pharmacopœia. During recent years they had had the assistance of Professor Attfield and also of a Committee of that Society, which he trusted would in future be more closely allied to the General Medical Council in that matter. He agreed that the position of Poor Law dispensers ought to be made more satisfactory, and that their qualification should be one sanctioned by that Society. With regard to the Bill, he should be glad to assist his honourable colleague in passing it, and had no sympathy with the persons who, for reason other than the general good, wished to interfere, on commercial grounds, with the rights the Society possessed. He thought the interests of the public required to be safeguarded in all legislation of this kind. The Vice-President had uttered rather a plaintive note with regard to unqualified practice which found an echo in the heart of every medical man, for they had every reason to wish, in spite of recent developments, that such practice might flourish less vigorously. Whenever he took up a daily paper he saw columns of advertisements with reference to certain remedies by some person hailing from America or elsewhere, who by divine inspiration probably were qualified to cure any kind of disease, and he felt that as much in the interest of the chemist as of the general public that kind of thing ought to be stopped. He hoped, however, as education became more general and more scientific, people would be less led astray by the blatant advertisements of persons who had no right at all to act as curers of disease. Both professions had succeeded to a noble heritage, which he was quite sure they would honour and maintain as years rolled on, and both would co-operate to promote the health, wealth, and prosperity of the country in which they had the privilege to live.

Mr. Thomas Bryant, F.R.C.S., said he was always pleased to return thanks for the medical profession, recognising the benefit it was to the public in the way of prevention, relief, and cure of disease, and also the happiness which every man who practised it in a scientific way derived. As a profession it was a noble one, though as a business it was a poor affair; but if they conducted it as the majority did, on the right lines, it gave a considerable amount of pleasure. He was very pleased to hear this toast given by such a body, who knew so well what were the requirements of the physician, and he liked to express his feeling of the good work that the Society had done in helping the General Medical Council in bringing out the Pharmacopœia. They could not but feel that there was so much energy and push in the Pharmaceutical Society that many of the younger members of his profession must be a little scared as to what was right to do. The Pharmacopœia was full of recipes and prescriptions, whilst every post brought them some circulars or letters suggesting preparations which were not in the Pharmacopœia, and many forms of prescription which were unknown; in fact, life would hardly be long enough to attempt to try one-hundredth part of these beautiful preparations they were asked to experiment with. He thought it would be much better for medical men to learn to use fully the materials provided in the Pharmacopœia before going outside it, as they were tempted to do by those seductive influences. He was pleased to hear the remarks made by the Vice-President with regard to the General Medical Council and its work. That Council was much hampered by the Medical Acts, but still he believed they could do more than some supposed in preventing the spread of unqualified practice. He was glad to see that what had been done in this way had been appreciated, and he would point out that there was no real ground for grievance on the part of unqualified men, as they would still be entitled to do useful work so long as they acted under the responsibility of a fully qualified practitioner.

The President then proposed the toast of "Science" which had been defined as the mirror of truth. It was now very popular, and was taught universally, even in elementary schools, more or less satisfactorily, but it was well to remember that in all times it was the individual who would advance science, and not the age. Nowadays it was more difficult than ever to make great discoveries, because science had advanced in such a remarkable way that it required an immense amount of knowledge in any particular department before one could surpass what had been done before. Science was always popular in such an assembly as that, because pharmacy, if not a pure science, was an art which depended on science, and might be called an applied science, and pharmacists in the past had contributed in no small degree to its advancement. With such names as Scheele, Pelletier, Dumas, and others who had worked in pharmacy and had also made great discoveries in chemistry, they would all agree that pharmacists had done something for science. In their day they had had many of whom they had been proud who had also advanced science in one direction or another, such as Henry Brady and Daniel Hanbury. The branch of science to which they were most closely allied was chemistry, and he was glad to see many of the representatives of that science present. But he would couple with the toast the name of Professor Dewar, whom they would all congratulate on having in the last few days produced an appreciable quantity of liquefied hydrogen. He had grave doubts whether that substance would ever be prescribed by recognised practitioners, but if it should be, it was well to know where they could apply for it.

Professor Dewar, in responding, said if they eliminated from science the services of Scheele and Liebig it would be very poverty-stricken, not to mention the work of many other men. Chemistry, and indirectly physics, had been not only immensely benefited, but had derived some of its greatest impulses from members of the pharmaceutical profession. As science developed the complexity of pharmacy increased enormously, and one had only to look at the *Pharmaceutical Journal*, so admirably conducted, and so excellent as a condensation of the progress in organic chemistry, to see the enormous strides which were being made from day to day. The chemist would always confess that he was as much indebted to pharmacists as to any other body of men, and looking back to his early days in Edinburgh, he could not but think, not only of the useful information he received from a Smith and a Macfarlane, but of the kind way in which those firms and others were accustomed to supply both material and information to youthful students, who would otherwise have found great difficulty in carrying on their work. He sometimes thought it a pity that this country had to a large extent ceased to cultivate that branch of organic chemistry which was connected with the physiological action of medicines. This was largely due to indirect causes and prejudices. He remembered studying the physiological action of the quinoline bases, in conjunction with McKenrick, but before going far they found it would be necessary to have a supply of dogs. They accordingly advertised for some useful cats and dogs, but unfortunately the advertisement appeared as "wanted some useless cats and dogs," and it led to such an outcry and panic that their researches had to be abandoned. This work had now therefore largely passed into the hands of German physiologists and chemists. The President had very kindly mentioned some matters connected with his own work, but the importance of that must not be exaggerated. There was a great difference between the credit of a discovery and the credit of the discoverer, who was simply pursuing investigations upon well-known lines. The experiments of the kind referred to involved an enormous expenditure of money, and he should hardly like to say what they had cost the Royal Institution; in fact, such experiments would be impossible in any other country, except by Government aid. That work had been entirely the result of contributions of the personal friends of science, and he had only been the instrument in carrying it out.

The President then proposed "The Pharmaceutical Society of Ireland," which he described as the sister Society, and took occasion to remind the members of the approach of the Conference in Belfast, when he was sure all those who could be present would receive a most hearty welcome. He coupled with the toast the name of Mr. R. J. Downs, the President of the Society.

Mr. Downs responded, but, unfortunately, his remarks were largely inaudible. He was understood to refer to the question of trading by limited companies, and to suggest that something might be done to put a stop to it, if it were pointed out that companies could only be formed for lawful purposes, and that it was not lawful for unqualified persons to deal in poisons in England, or to make up prescriptions in Ireland.

Sir J. Crichton Browne, F.R.S., said he rose with some trepidation to propose the toast of the evening, because when he took part in their proceedings some few years ago he had subsequently had sent to him a copy of the *Pharmaceutical Journal*, in which a hint occurred that the speeches at the dinner were commonplace and

contained nothing particularly new or brilliant. He was under the apprehension that the same stern critic might be lurking somewhere in the room that he had come not merely as a critic of dietetic delicacies or vinous stimulants, but of scientific and rhetorical novelties, and that he might again have to send them empty away, and incur his further censure. After cudgelling or triturating his brains, he could not think of anything sensational to announce, or any startling paradox which would be appropriate to the occasion. It was true that he was privy about eight days ago to a great new original scientific achievement, of which they had heard something that evening, the liquefication of hydrogen and helium by Professor Dewar, one of the greatest scientific advances of the age, but although that was performed by a chemist and carried out in a laboratory, it was scarcely of practical import to pharmacists, for as hydrogen and helium became liquid at about −240° C., and at that temperature the tissues of the body would be shrivelled up, he was not in a position to indicate their therapeutic uses, though he should not be at all surprised if he saw them advertised very shortly in the tabloid or soothing syrup form. In his sense of vacuity, however, he was consoled by the reflection that the stern critic was altogether wrong, and that when they met on such occasions they did not seek intellectual effort so much as emotional complacency; they came not for the feast of reason, but for the flow of soul, and he was quite certain he should not be wanting in a flow of soul in proposing prosperity to the Pharmaceutical Society, a Society which had rendered signal services to its members and to the public at large, and was the right hand of the profession to which he belonged. The art of the pharmacist was very old. The medicinal instinct was of enormous range, extending from the harmless necessary cat that partook of grass up to the author of the *Novum Organon*, who used to regale himself daily with a dose of nitre. It stretched back as far as history could penetrate, for there could be no doubt that the Chinese were largely addicted to drugs a thousand years before the Christian era. It was probable there was a Pharmaceutical Society in Thebes, the records of whose proceedings were to be found in the Papyri. It was certain that the Temples of Æsculapius in Greece were simply druggists' shops, and the priests and priestesses who guarded them compounded remedies and gave directions for their application. Aristophanes mentioned with what avidity, dexterity, and promptitude they swept into their pouches the offerings on the altars, which must be regarded as equivalent to the counters of modern times. But the art, although of great antiquity, had not made much progress until comparatively recent times. Amongst the Romans it was stagnant, in mediæval ages it was mixed up with alchemy, black magic, and superstition; in modern times it had been somewhat retarded by the ignorance and incompetence of those who had pretended to practise it. It was only since the light of chemical and physiological science had been let in upon it—only since the Pharmaceutical Society had taken it in hand, that it had grown apace and assumed comely proportions. It is only since the year 1841, when a group of practical far-seeing men founded that Society, that pharmacology had become a fine art, and that it had obtained the recognition to which it was entitled. It would be difficult to exaggerate the value and importance of the work done by that Society in improving the education of those who practised pharmacy and in protecting the interests of chemists and druggists, and thereby of the public at large. It had greatly advanced their social position. It had provided a means of education, and improvement in libraries, museums, and laboratories; it had organised a system of education that added something of the breadth of a university to the precision of the shop; it had endowed scholarships to encourage research, and it had subsidised a Journal which, notwithstanding its rough handling of after-dinner speeches, he must admit to be able and instructive, and it had established a fund for the relief of distressed members of the craft. In all departments it had been vigilant and vigorous, and there was no abatement of its activity to-day, for he believed it was still grappling with the problem of education, and was promoting a Bill before Parliament to correct some anomalies of the Pharmacy Act. With reference to the promotion of that Bill, he recalled a remark once made to him by an honourable member of their profession, the late Sir Richard Quain, whose recent death they all deplored. He said the chemists and druggists of this country were a very powerful body of men, much more powerful than anybody suspected—even themselves; that in every town and village in this country they exerted an influence much more wide spread than the aromatic fragrance which their shops diffused upon the street. The chemist as a rule was a man above the average intelligence; he had always, at any rate, a smattering of science, and he was an intelligent man and was regarded by the people as having some mysterious powers. The best men in the place were glad to drop in and have a word with him, and long political questions were discussed and thrashed out and settled in a druggist's shop or the back parlour adjoining. There was a great deal of truth in that remark, and he felt sure that if the chemists and druggists would only exert the influence they possessed, the Pharmacy Bill would pass in spite of the block which might be put upon it. It would be superfluous to say that the Society had the goodwill of the medical profession. They were both striving for the relief of human suffering, for the preservation of health, for the overthrow of disease, and the postponement of death, and there ought to be no jealousy or misunderstanding between them, but only co-operation, mutual support, and sympathy. There ought to be no difficulty in dividing their respective spheres of influence. He believed there was still a hinterland about which the dispensing doctor and prescribing chemist disputed, but with a little forbearance and mutual goodwill there ought to be no difficulty even about that. As an instance of co-operation he might also refer to what had been already mentioned, the great new Pharmacopœia. They were meeting under a new dispensation. They had a revised version of their testament and their sacred cabalistic writings, the Pharmacopœia, and in that protracted work the members of the pharmaceutical profession had co-operated with medical men. He would venture to congratulate their President, Mr. Carteighe, Mr. Newsholme, Mr. Cross, Mr. Martindale, and their colleagues on the excellent assistance they had given. Perhaps an uninstructed layman glancing at the new Pharmacopœia and comparing it with its predecessors might not be altogether satisfied; he might regret the disappearance of some fine old crusted tinctures, the essence of peppermint and the syrup of poppy dear to his youth; he might even boggle at some of the new introductions, such as india-rubber, liquid paraffin, and solution of coal-tar, imagining that he was expected to swallow them. But those who looked at the new Pharmacopœia with discerning eyes would recognise in it an enormous advance in scientific method and in confirmity of treatment. It would serve its time, but it would not be the last pharmacopœia. Disease did not stand still. Who could say what new virulence pathogenic microbes might put on? Who could say that, when the existing pathogenic microbes were crushed and banished, as some certainly would be before long, that others more virulent might not take their place? And who could say what new powerful agents, toxins, ferments, and animal extracts modern science might not place in the hands of the physician. The resources of pharmacy were not exhausted, and, notwithstanding the quest of ages, there still lay in the lap of Nature good gifts ready for their acceptance if they would only gather them. In the words of Friar Lawrence:

> Oh, mickle, is the powerful grace that lies,
> In herbs, plants, stones, and their true qualities.
> For naught so vile that on the earth doth live,
> But to the earth some special good doth give.

The Pharmaceutical Society had a worthy history, and it had had a series of worthy presidents, but he did not think it had ever had a more worthy President than the gentleman who now occupied the chair. Mr. Hills had hereditary claims. He was the nephew of Mr. Thomas Hyde Hills, one of their benefactors, to whom he looked back with feelings of gratitude for much personal kindness when he first came to London, a raw Scotch youth, some third of a century ago. He was also the lineal successor of Jacob Bell, the Founder of the Society, and beyond all that he had great personal claims. He was exceedingly zealous in looking after the affairs of the Society, as he knew to his cost, for not long ago he pursued him all over London in a hansom cab to extract from him a promise to deliver an address next autumn, He therefore asked them to drink with great cordiality "Prosperity to the Pharmaceutical Society, and the Health of the President."

The PRESIDENT briefly responded, saying he would not speak at any length then, as he should have occasion on the following day to deal with the work of the Society.

The TREASURER, Mr. R. Hampson, then proposed "The Guests," coupling with the toast the names of Dr. Farquharson, M P., and Professor Clowes, President of the Society of Chemical Industry.

Dr. FARQUHARSON, in responding, said he was so much at home there that he almost felt uncertain whether he was guest or host. He had always taken care to avoid as much as possible personal contact with the products of his friends the pharmacists, though he had no hesitation in prescribing them largely for his patients when he was a practising physician, and since he had the honour of lecturing at St. Mary's Hospital on materia medica the action of drugs and the way in which they were prescribed had almost as much interest for him as politics, to which he now devoted himself. Referring to the Bill in Parliament, he said he should do his utmost to assist in getting it through, and hoped that some occasion might arise when its opponents would be absent. He humorously suggested that the Society should give another dinner to which all his opponents should be invited, when perhaps even the redoubtable Dr. Tanner might be won over. He also recommended pharmacists each in their own sphere to bring pressure to bear upon their respective members, who, he might remind them, were very squeezable. He believed the opposition mainly arose from misapprehension, and perhaps to some extent from sheer cussedness.

Professor CLOWES also responded, and said that the present occasion carried him back to a period recently terminated, when he was connected with one of the larger provincial centres of education, where a provincial Pharmaceutical Association started, some fourteen or fifteen years ago, a very capital system of instruction in connection with the local University College in which he had the honour to be the Teacher of Chemistry. It had been his privilege, therefore, to undertake the chemical education of a large number of young men who passed successfully the examination at Bloomsbury Square. He always looked back to that period with great pleasure, and hoped that he might be considered even more or less a representative of that very enterprising Association at Nottingham, which was the pioneer body in connection with the scheme of provincial pharmaceutical education. At the same time he had the honour to represent a Society which in a large sense was kindred to their own, the Society of Chemical Industry, which he was glad to say was in a very flourishing condition, having now over 3000 members.

During the evening an excellent selection of vocal music was charmingly rendered by the Calliope Vocal Trio (ladies), accompanied by Mr. Harold Jenner.

PHARMACEUTICAL SOCIETY.

MEETING OF THE COUNCIL.

WEDNESDAY, MAY 18, 1898.

Present:

MR. WALTER HILLS, PRESIDENT.

MR. G. T. W. NEWSHOLME, Vice-President.

Messrs. Allen, Atkins, Bateson, Bottle, Carteighe, Cross, Grose, Harrison, Martindale, Park, Savory, Southall, Symes, Warren, and Young.

Several members, associates, and students who had paid their subscriptions since April 30 were restored to their respective positions.

The Council having arranged the order of business at the Annual Meeting, adjourned.

ANNUAL MEETING.

The 57th Annual Meeting of the Pharmaceutical Society of Great Britain was held on Wednesday, the 18th May, at Bloomsbury Square, the chair being taken at 12 o'clock by the President, Mr. Walter Hills.

The SECRETARY read the notice convening the meeting, and the Annual Report was agreed to be taken as read.

The PRESIDENT then said: I rise with great pleasure to move the adoption of the Report, and I feel sure that you will not hold that the amount and value of the work accomplished by the Council during that period of twelve months should be judged by the length of the Annual Report or by the number of paragraphs it contains. I mention this because the fifty-seventh annual report now submitted is somewhat shorter than some of its predecessors, and probably on that very ground may be all the more acceptable to many members and associates of the Society. The reporting, not only of the immediate proceedings of the Council, but also of all that is of interest to pharmacists, is now done with such speed, efficiency, and completeness that it is felt to be wise to concentrate the Council report as much as possible. Whilst on the subject of reporting, I am reminded that at times there are wailings on the part of our journalistic friends that our proceedings are dull, because we are in the habit, at the Council, of settling many of our little differences of opinion beforehand in committee, and afterwards exhibiting, in public debate, that practical unanimity so distasteful to journalism. I am one of those who believe that the amount of work accomplished by public bodies is frequently in inverse proportion to the length of their public discussions, although I am quite ready to admit that there are occasions when public debates are highly desirable. It must be remembered that our duties as members of this Council are largely administrative, and those duties often require a considerable amount of deliberation in committees, and it is in those committees we usually come to a general agreement on matters demanding much consideration, but not involving important questions of principle. In speaking of matters which may be said to belong to the domain of pharmaceutical politics, I may remind you on the subject of the alteration of the Bye-laws, as well as on that of the Pharmacy Acts Amendment Bill, to both of which allusion is made in the report, that there has been a remarkable unanimity in our deliberations.

THE SOCIETY'S FINANCIAL POSITION.

The first subject to which I would call your attention for a moment is that of finance, and I am bound to admit that according to the financial statement before you the expenditure appears to be in excess of the receipts. My regret is not that so much has been spent, but that the receipts have been scarcely sufficient for our needs. If you take the trouble to examine in detail the figures in the statement and compare them with those of 1896 you will find that while the subscriptions have remained about the same, the examination fees have been considerably less. This reduction is partly accounted for by the alteration in the Bye-laws which came into force last year, making the fee for all repeated entries for the Minor examination a uniform one of three guineas, whilst the advanced fee for that examination will not be paid until 1900. But on the expenditure side the figures are in most cases lower than in 1896, although there are exceptions, and those are, I believe, justified by special circumstances. There is only one to which I would call attention for a moment as an example of those, and that is the seven years' premium for insurance, which, of course, does not appear every year, and that amounts to £268. With reference to the Journal, the net cost of which has been considerably reduced, I may remind you of the following paragraph in the 1896 report. "It is satisfactory to note that the anticipations of the Council with reference to the reduction of the balance on the Journal account have been well founded, and it is confidently hoped that the improvement will be continued." The balance exclusive of postage, was in 1895 £2761, which was abnormally high for reasons already given very largely in detail by my predecessor, and for 1896 it was £2229. It has now fallen in 1897 to £1978, thus justifying the remarks I made twelve months ago, when I said that in 1897 there would be a further considerable reduction of net cost. Whilst on the subject of finance, I should like to say that the Council has recently decided, on the advice of a chartered accountant, that the method adopted for keeping the books shall be so modified that the accounts shall be submitted to the auditors in a form more in accordance with general custom. It is proposed that next year a revenue account, taking into account the separate assets and liabilities at the end of the financial year, and also a balance sheet shall replace the present financial statement. I do not propose to speak in detail of this fresh departure, as I feel sure that it will meet with general approval, and it will be more intelligible when practically placed before you twelve months hence. It is satisfactory, however, to find that in the revenue account of 1897, prepared according to the new method to which I am alluding, our income exceeds our expenditure by about £160, the explanation of the apparent difference between the financial statement we now present and the one which we have on the premises, being that our assets as now reckoned were considerably in excess of our liabilities at the end of the year. I may mention that that is the case specially in regard to the Journal account, because we pay everything practically for the Journal by cash, whereas at the end of the year there is always a very considerable balance in our favour arising from

advertisements for which payment is not made for some months after date. I may add that the Council has also decided, by means of leasehold redemption policies paid annually, to create a sinking fund of something like £25,000, payable at the expiration of the leases now held by us, of property in Bloomsbury Square and Galen Place.

The Amended Bye-laws.

Having said so much on finance, I feel that there are several paragraphs in the report to which I need not call your further attention, but there are one or two on which I should like to say a few words. In the first place, I should like to refer with satisfaction to the fact that the amended Bye-laws, to which reference was made last year, and which were considered at a special meeting of the Society after the Annual Meeting twelve months ago, have now been approved by the Privy Council, and I think it is a matter of very great satisfaction that these Bye-laws have been approved. I think the alteration that would be effected by them is one which we may express our unqualified satisfaction. I think it is well that every body of men should endeavour to advance their calling in every possible way, and I think that in no way can we do that better than by providing means for testing that the general education of those who shall come into our craft hereafter shall be up to a fairly high standard. I am very glad to think that those amended Bye-laws have not only been approved by the Society, but have been since confirmed by the Privy Council, and will come into force in two years' time. You will recollect that the opposition was not one of a very terrible character, and I believe it had no general backing behind it, but I am glad to think that in this matter at last we shall have practical unanimity in the desire to provide for the future a body of men who should have a good sound education, and such an education as would enable them to pass with greater ease and facility the subsequent qualifying examination.

Legal Matters.

With regard to the legal paragraph, I do not think I need detain you by speaking at length on the subject of prosecutions. They do present to us a very great monotony, they are not very interesting as a rule, but there is one case to which we have thought it right to call special attention, namely the case which was heard before the County Court Judge at Reading, where the sale of weed-killer containing arsenic sufficient to poison 2000 persons was virtually admitted. The point about that case is this, that although it was decided against us in the appeal on the question of fact, to which it is unnecessary to allude, it was doubtful, according to the judgment of the County Court Judge, whether a partnership was not on the same lines as a corporation. We felt that we must appeal against that decision, or we must have some further light thrown on that doubt in the mind of the County Court Judge. We therefore appealed to the Court of Queen's Bench, and although, as I say, we lost the case on a question of fact, we did gain our point, and were told distinctly by both the learned judges that in so far as all points of public interest were concerned we had succeeded, and it was laid down very clearly by them that under the Pharmacy Act a master, whether a member of a partnership or not, is liable for offences committed by his servant if there is reasonable ground for supposing that such servant was acting under the ostensible or implied authority of either of his masters. The other legal cases, as I say, have a certain monotonous character, but I should like to say one word about what is, I am afraid, a too common practice in this country, of having branch shops under the management of unqualified assistants. I do protest most strongly against this. I think it is a scandal, and it is a matter which really is of very great importance. We ought to put our own house in order, and if we do so we should go with more confidence to Parliament or to the Courts for anything we may want in the future. There is a great deal of this, gentlemen, I am afraid, and there are many cases in which we have had to take proceedings during the past twelve months which have been of this character. I do hope that anybody who may take the trouble to read my words will consider very seriously what their position is in engaging unqualified assistants to have full control of branch shops.

Parliamentary Progress.

Now with regard to the Parliamentary paragraph. That is the one in which, perhaps, I take most interest at the present time. You will recollect that I said last year that "As far as I know the opinion of the members of the Council, they are quite prepared to apply for Parliamentary powers to consolidate the Society by the election to membership of all chemists and druggists"; I also added that "In this, as in all other changes which the Council might from time to time consider to be beneficial for all who practise pharmacy, it is well to remember that unless we are ready at all times to sink individual differences for the common good, very little progress can be expected." Soon after we met in October the Council came to the conclusion that it would be advisable to apply to Parliament for power to make associates eligible for membership, and to introduce into Parliament a simple Bill with that for its chief object. The Council was quite unanimous in this matter; the Bill was drafted, and was then left largely in my hands to get introduced into Parliament. I may mention, though perhaps many of you know it, that there is great difficulty in getting private Bills through the House of Commons at the present time, and there are three general methods by which such Bills can be brought forward. The first way is to get the Government to support the Bill, and if that is done it is quite possible that success will be attained; but with a Bill such as the one we are speaking of it was hardly likely we should get the Government to take it up. There is a second method, that of the ballot, but the chances are about twenty-five to one against getting the Bill introduced at all under that system. But, as Mr. Smith told us last night, it will be possible and advisable, supposing we are not successful this year, that we should get members of Parliament throughout the country to allow their names to be associated with this Bill, so that we may have a large number of chances in the ballot for the ensuing session. We want a large number of members to say they will place their names on this Bill, and if we get perhaps 100 or 150 or 200 members to do so, we shall stand a fair chance of getting within the first dozen Bills, and then we shall perhaps have an opportunity of getting the question discussed before the House. In this session we introduced the Bill as an unopposed one, and that means that there can be no discussion whatever upon it, either at any of the readings or in committee. The Bill was introduced in February, and I think the second reading was successfully passed on March 7. Since then we have been hung up. We have been hung up principally by the opposition of one honourable member, although I am bound to say that there are one or two other amendments placed on the agenda of the House of Commons by other members at the present time. Still, I believe the opposition with which we have to contend comes mainly from one source, and that is on the part of Mr. Alexander Cross, member for one of the divisions of Glasgow. Now, I think that Mr. Cross's chief opposition and chief amendment is one dealing with something that is not germane to the Bill at all. It is quite evident that our Pharmacy Act of 1868 is somewhat of a composite Bill, that is to say, it not only regulates our internal arrangements, but it is also a poison Bill regulating the conditions under which a schedule of poisons shall be retailed to the public. In the Bill which we are submitting to Parliament we are only attacking one portion, that is to say, that portion which concerns our own internal regulations. We are not taking up this great question at all as to whether it is desirable that there should be any alteration in the conditions under which poisons shall be supplied to the public. Now, Mr. Cross has recently written a letter to the Highland and Agricultural Society of Scotland, in which he makes many serious misstatements. I do not say for one moment that he makes them wilfully, but he certainly does make misstatements, and I think attention ought to be called to that, because he does not seem to realise that there is a great difference between the qualification required by the Pharmacy Act in order that a man may have the right to retail these poisons, and the membership or associateship of a voluntary society; for instance, he says in this letter that under the Act of 1868 two orders of members of the Pharmaceutical Society were constituted, members and associates, with a separate examination for each. So far as I understand, under the Act of 1868 members and associates with a separate examination for each were not brought into existence by the Act at all; they were already in existence. Then he says, later on, that certain poisons were scheduled in that Act, and those poisons and any articles containing them in however small a proportion are only allowed to be sold by members of the Pharmaceutical Society. That is not the fact at all, a man may sell poisons without being a member of the Pharmaceutical Society or without being an associate. Then he goes on to say that the Society is entrusted with the prosecutions directed against persons who may sell such preparations

without being members of the Pharmaceutical Society. We have nothing to do with the question whether a man is a member of the Society or not. It is merely a question of whether he is on the Register; if he is, he has a right to sell. Then he goes on to say, "Presently sheep dips are sold at an enormous profit, and new sheep dips can hardly come into the market to compete at lower prices because of the licensed pharmaceutical chemists, who are all engaged with the older brands, and do not want any competition." Surely there are enough licensed pharmaceutical chemists or chemists and druggists who would be willing to take up Mr. Cross's or any other maker's articles if they were likely to be in greater demand than those they already had. And surely, gentlemen, there is enough competition in the present day to supply Mr. Cross with plenty of means for introducing any of his new preparations. I cannot see why registered persons should not be found in every district who would be willing—assuming the preparations are good for the purpose for which they are made—to be the means of supplying them to the public. Then he speaks of the accidents which are likely to arise, and says they are as likely to arise after the sale by a qualified person as by an unqualified. He says, "I do not think that this is likely, but if it is the case it is surely obvious that the mere fact of having been sold by a pharmaceutical chemist does not render the accident less likely to occur with a farmer or gardener than if that article had been sold by a seedsman or ironmonger." I agree with that up to a certain point, but I say that the ironmonger or the seedsman is much more likely to sell one of these dangerous preparations without thought or hesitation than the man who knows the terrible nature of what he is selling, and you would therefore lose very largely the security to the public. I suppose we are the only traders who send people away unsupplied with what they came in for. Continually we are doing it; continually we are sending would-be customers away either with nothing at all or with a very small amount, when they were willing to pay for a large amount of something. That is our duty, and that is one of the securities the public possess, in being obliged to come to registered persons for a supply of such terrible things as those to which reference is made in this letter. I think, therefore, that the security is a very important one, and one which should not be disregarded. Then he says at the end of his letter that the technical position is "that a few agricultural members and myself have blocked the Druggists' Bill, which has for its object apparently some desire to ease the examination for members of the Pharmaceutical Society." That is the class of opposition which we have from Mr. Cross. Now Mr. Cross at the present time is waiting for the appearance of a Bill which was promised some six weeks ago by the Home Secretary—in reply to a question put to him in the House of Commons—a new Poisons Bill which the Privy Council were likely to introduce before long. Until that Bill is introduced of course we have no right, and it would be quite out of place to discuss it or any principles which it is likely to contain, but, judging from the past, I think it very improbable that any Poisons Bill which may be introduced by any Government will contain any clauses which will upset the present arrangements in so far as they concern the poisons in the present Schedule. No Government probably would be bold enough to suggest that the poisons which are now in the Schedule—especially those which are largely used for horticultural and agricultural purposes, to which I alluded just now—should be taken out of that Schedule and be allowed to be sold retail by any persons other than those who are specially educated and qualified for that duty. Of course, when this Poisons Bill is introduced—as it will be perhaps this year, perhaps later—it will be considered very carefully by all registered persons and considered by them, not only as persons directly interested as it were, but as members of the great general public, and bearing in mind that, after all, all legislation is ultimately—or is, at any rate, intended to be—for the public good, I hope, therefore, that when this Bill is introduced we shall all consider it very carefully, but I shall be very much surprised if any new principle is introduced, because I think it would be a retrograde step, and one which no responsible person would be likely to support, that such poisons as corrosive sublimate, arsenic, and the poisonous alkaloids should be sold retail by any other persons than those who know the terrible nature of those articles. With regard to our Bill itself, Mr. Cross's amendment still stands, but we hope that we may succeed in getting it through Committee this session. Those who were present at the Dinner last night heard Mr. Smith's opinion of the Bill, and here I should like to say how much we are all indebted to the Hon. W. F. D. Smith for the support he has given to the Bill, and for the personal interest he had taken in it. I believe I am right in saying that Mr. Smith did not know much about us three months ago, but I am afraid he knows rather too much about us for his own personal comfort now. I know he has given a considerable amount of time and attention to the matter. He is very much respected in the House, and I am sure we cannot have a better representative in furthering our interests. As you know we were able to get also the support of several other members, whose names are mentioned in the report, who were good enough to allow their names to be placed on the back of the Bill, but we have met with support from a large number of members of Parliament also. I am glad to say that there has been evidence of that support on the part of a very large proportion of the members. It is not want of support we are suffering from, gentlemen, we have plenty if we could only be heard, if we could only get the question discussed. Under the conditions under which we are working it is necessary that there should be no opposition, and the opposition of one person, if maintained, is sufficient to spoil our chances for the present year, I am afraid. Here I should like to say how much I and the Council feel indebted to the local secretaries for the admirable way in which they have helped us in getting support in the House of Commons for this Bill, and I am glad to see that there is a paragraph in our annual report referring to this good work, saying: "The Council recognises and appreciates this loyalty and devotion to the interests of the Society." I am sure they mean that thoroughly, and I know perhaps more about it than anyone else. I have been much struck by the amount of interest taken in our Bill by the hon. members of the House of Commons. We were told last night that members were very squeezable. One unfortunate thing that we have to contend with is that we have not many registered persons in some of the districts represented by those hon. members. I am sorry we have not more influence that we could bring to bear on the hon. member for Camlachie, but I believe the Glasgow chemists are almost entirely—I think now without any exception—in favour of the Bill. I forgot to mention that in the preliminary stage of this Bill soon after its introduction we did have to face an opposition from Manchester. That opposition was finally disposed of, and I am glad to be able to publicly thank those who did, after consultation, see their way to remove their objections to the Bill. But I am also bound to say that, as far as I can judge of the matter, that opposition in its early stage was very detrimental to the progress of the Bill, and I believe that in those early days if we had been thoroughly united—as I said twelve months ago it was very important we should be in any matter of this kind—we should have made much better progress, and that we might possibly have already got the Bill not only through the House of Commons, but through the House of Lords. However, it is no use to cry over spilt milk, but I am bound to say now at the present time, as far as I know, there is no organised or unorganised opposition from our own people in any part of Great Britain. So far as I know there is none. I am quite ready to admit, of course, that there may be certain individuals who may object to this Bill, but they have been loyal enough at any rate not to stir in the matter; they have bowed to the views of the majority, and have not in any way interfered or done anything to prevent the Bill becoming law. Therefore, I say at the present time we are united in our desire to see this Bill passed, and, gentlemen, I think we shall do it. If we do not do it in this session we will try to do so in the next, for I believe it is a measure of justice. I had no difficulty in explaining to hon. members of the House of Commons that it is really one which should meet with their approval, because it is giving to the men who have the statutory qualification which the Legislature has pronounced to be sufficient for the public protection, the opportunity of becoming members of this Council and of taking part in the Society's deliberations, and of so helping to guide the policy of the Society in the future.

The Work of Local Associations.

I am afraid I have kept you too long, but I should like before I sit down to say a word about local associations. They have been doing good work with reference to this Bill, and not only with reference to it, but in various other ways, and I am glad to recognise the work which the local associations are doing. There has been an evident stirring amongst what perhaps without offence I might call the dry bones, and it is very satisfactory to us who live in London and are members of the Council to feel that there is activity in different directions throughout the country, and as I have said on more than one occasion when I have had the opportunity of meeting those associations, and occasionally dining with

them, and I believe most firmly that whenever men come together in various centres to discuss matters of interest common to their calling that in the long run such association promotes loyalty to the Pharmaceuceutical Society, and therefore, I for one, and I am sure every member of the Council which I have the honour to represent, are very anxious that these associations should flourish, and we are glad to find that there has been such evidence of their prosperity during the past twelve months.

Now, gentlemen, I have already detained you too long. My journalistic friends suggested last year that I should not stick quite so closely to my notes, and I am afraid the result has been that I have been rather rambling in my remarks, but I must ask you to forgive me and thank you for your presence here to-day. I now formally move that the annual report and statement of accounts as published be received and adopted.

The Vice-President: I second the resolution formally. If it appears to be necessary I may make some observations upon it later on.

Mr. Campkin: Mr. President, I have to leave by an early train, but I could not leave without saying just one word with reference to the address you have delivered, and the action that you have taken during the past year as President of this Society. I am sure we are all of us the better for the work you have done during your year of office, if only in the position of a pharmaceutical missionary. I think if that position were followed more closely by yourself in future years I hope, and those who may succeed you, it would be to the advantage of the whole body of pharmacists generally. I am especially gratified by your allusion to the work done by the local associations, and I think if we had an aggregation of local associations throughout the length and breadth of the kingdom, the position, perhaps, of the Pharmacy Bill, to which you have alluded, would have been better understood by the members of Parliament than it is at the present time. For my own part, at an early stage, acting on instructions, I communicated with our borough member; I forwarded him a draft of the Bill and some printed instructions that were obtainable, and also explained the matter of the Bill to him, and received from him a very courteous reply stating that he would give it his best consideration, and what was better than that, he would place himself in communication with other members of Parliament. Now, sir, if that action had been taken by pharmacists generally, perhaps the assistance that is necessary to be given to a Bill in the House of Commons might have been greater than it has been. We who have had to do with Parliamentary Committees know the difficulties in the way of legislation, especially with regard to private Bills, but we did hope that in view of the small amount of contentious business that was likely to occupy the attention of Parliament during the present session, such a modest Bill as ours would have received the sanction of Parliament ere its close. But judging from your remarks, that does not appear to be likely. I have spoken of the fact that we feel it is a modest Bill, because it is one step in the direction which we ought to take, but only one step, for we all feel that in addition to that Bill something further must be done with regard to an amendment of the Companies Act for our own protection. That has been explained through the pharmaceutical press from time to time, and I need not dilate upon it. It is sufficient to say that even Parliament is waking up to the importance of legislation in that direction, but before we can make an impression upon Parliament in such a way as we should wish we must show that we are a united body, and therein lies the value of federation and association. We have within our Society an organisation which would encompass the kingdom very easily. When I point to the great associated friendly societies and the work that they have done during the past half century, the impression that they have made upon Parliament by means of their federated societies, I say that is only an example that we can well copy. Even as far back as 1870 special legislation in their interest was provided, and even now a commission is sitting or has been sitting, and will soon present a report, and previously to that another commission. More than that, members of the House of Commons are interested in measures that emanate from those societies, and they should not be as influential as a society such as ours. I simply mention that by way of proving how essential it is that we should be united. We have felt that by extending an act of justice to those members of our Society who do not possess equal privileges with some of us, those members who constitute the majority of the Society, we should be assisting in the right direction, so as to gather in the whole of the pharmaceutical body as members of the Society, and if we can get that, then I take it we shall be able to make a greater impression on those who govern us—I mean the Legislature. You, sir, have spoken of the practical unanimity of the Council upon the Bye-laws and upon this Pharmacy Act, but if we could secure practical unanimity among our members generaliy, our position would be much improved. But I am afraid that there is a good deal of apathy even yet, and it is because of that I have ventured to make the suggestion that if possible you and your colleagues should visit all parts of the kingdom during your terms of office in some way or other. Of course, you would not go unless by special invitation, but, I take it, what has been done will lead to a shaking up of the dry bones and an increase in the number of these local associations. I must not trespass any farther on your time, but I feel, however imperfectly I may have expressed these views, that they will be shared by all present, and I hope by many in various parts of the country. I hope that when we meet on another occasion we shall find that the Bill which is so much required will have become law. One word before I sit down with reference to a remark you made a week or so ago, because I think it is important. You pointed out the fact that all those who belonged to our body were not loyal to it, and I take it, sir, if those 150 qualified men to whom you alluded had been loyal to us and had been content to have accepted their present position with a view to an ultimate improvement in that position, it would have been very much better for them and very much better for the Society, and would have rendered such competition as that under which we are suffering at the present time impossible. As I pointed out a year or two ago, these qualified men do not consider their future in any sense. They appear to be willing to barter away their future position for some slightly enhanced present privilege. If they are an increasing quantity, what, first of all, is to become of them in their old days, and what eventually is to become of the trade as we now understand it? There is before everyone of us a prospect with fair competition, and with ordinary care and attention and assiduity to business, of at all events procuring a honourable livelihood, with some slight independence, perhaps, in old age, should we ever live to reach it, but if those of whom mention has been made are content to barter away their present position, the future then will loom out very darkly both for them and for those associated with the trade at the present time, for it is quite understood that there is no comparison after all between the personal interests of those who are associated with these great store-trading companies and those who are in the employ of private individuals with the possibility of opening up a business for themselves, as many thousands have done in years past. If we could only emphasise this and bring it home to those who are at present occupying the position of assistants in our body as they become qualified I think it would be not only better for them, but better for the future of pharmacy.

Mr. Leo Atkinson: Mr. President, although we are not able to congratulate you on the passing of the Pharmacy Acts Amendment Bill, I, nevertheless, can endorse those observations which fell from Mr. Campkin in relation to the actual work you have done and the very excellent report you have given us of the year's proceedings. The Pharmacy Bill, not unlike legendary tradition of Mohammed's coffin, appears to be in suspense, and although it might be premature to assert its absolute security, yet I do not think we are exactly in a position to condole, or rather express our sympathy to you, on its being irretrievably lost. There is much that is extremely instructive in relation to what has happened. We know very well that a large majority of chemists and druggists throughout the country have taken little, if any, interest in this measure; there is another very considerable section who appeared to be desirous of a much more forward policy, but now, I think, gentlemen, if there is anything more certain than another, it is this, and it is demonstrated, how absolutely futile it would be to attempt to secure any kind of ambitious legislation until we arrive, if we ever do, at a greater measure of cohesion and unanimity such as that Bill is specially framed to obtain. I am afraid it is beyond question that the opposition, or the initial opposition to this Bill, did really originate within what I may call a pharmaceutical circle. No doubt those gentlemen have been brought to a better frame of mind; but the mischief has been done, and if, as I am afraid is possible, it might be necessary to inquire at a later period who killed Cock Robin, I do not think we should have very much difficulty in identifying the sparrow. Now, sir, with regard to our Parliamentary

opponent, I do not really consider that he is open to quite so much censure. You must remember that the trump card was handed to him by our own men, and such an opportunity as posing as the champion of his own trade interest was rather too much for even that rigid virtue which you expect to find north of the Tweed. You have all read Mr. Cross's manifesto and his argument, and of course it is an old maxim that when you meet a Scotsman you meet an argument. His argument appears to be that since there is no technical skill required in handling sealed packages of arsenical preparations, therefore all restrictions should be removed from the sale of them. Well, gentlemen, that is a very plausible argument, and one which appears to have found some favour with those unsophisticated gentlemen who form the directorate of the Scottish Agricultural Association. But that argument, plausible as it is, tested by fact and history, is fallacious. It was the want of care that is exercised by responsible men which led to one of the most appalling disasters in the way of wholesale poisoning that is within my remembrance. The Arsenic Act of 1851 provided certain regulations for the sale of arsenic, but it was always felt that the efficiency of that Act was most seriously impaired, because at that date it was impossible to draw a distinctive line as to who was and who was not competent to sell. If any corroboration of the soundness of that opinion were required, it was only too fearfully vindicated in that lamentable calamity to which I have referred, which happened some time later. The Pharmacy Act of 1868, backed by public opinion, settled this question of the sale of arsenic, and the sale of similar dangerous commodities has, until the present time, been restricted to competent men. I do not think for a moment that Mr. Cross does seriously entertain the idea that Parliament would be guilty of such an outrage on common sense and public opinion and public security as to permit what would be practically free trade in arsenic and similar poisonous articles. With regard to the opposition from another source, I mean from that benefactor who is wasting his shareholders' money in disseminating splendid examples of lithography, it is needless, perhaps I ought to say bootless, to say anything. We can estimate the quality of the philanthropy from that source, but seriously I do not think that Mr. Cross, after our Scottish friends have opened his eyes a little better, would care to proceed in senseless opposition, more particularly as his only assistants appear to be the irrepressible Tanner and the unspeakable Weir. Now, sir, there is a little matter on which perhaps you may enlighten me. There seems to be an impression that in the event of this Pharmacy Bill becoming law, certain titles have been promised to those gentlemen who have withdrawn their opposition. Personally, I do not care if you furnish me with a title as long as the tale of a kite, but there is an impression abroad that something of the kind is intended. I do not myself attach very much importance to any number of the letters of the alphabet that a man may put after his name. There are many excellent chemists who do not use F.C.S. after their names, and there are some very indifferent ones who do. I know also that there are gentlemen who are perfectly entitled to use F.Z.S. after their name whose knowledge of zoology and comparative anatomy is limited to the daily experience of the dinner table. But if any one does really want a nice taking title, and a cheap one, for five shillings per annum they can buy a full-blown P.A.T.A., and I owe Mr. Glyn Jones a cheap advertisement, because I notice with considerable satisfaction and pleasure that he has refrained on this occasion from interfering with Parliamentary politics. If you will grant me your forbearance for one minute longer I should like to refer to some observations that I made on the Poisons Schedule at the last annual meeting. I pointed out on that occasion that notwithstanding the enormous increase in poisonous drugs the present Schedule has remained practically unaltered for nearly thirty years. I do not think this is as it should be. Why has the executive refrained from taking any action with regard to cocaine? Is there any doubt whatever that cocaine and its salts are poisonous alkaloids within the meaning of the Schedule? Is not it a matter of common knowledge that the unrestricted and ignorant use of cocaine is undermining the health of thousands? It is being taken under false pretences. If you walk along the streets and look in the shop windows, grocers' shops, stores, chemists—ah! even with M.P.S. after their names—you will see flaring show cards of coca wine, life's invigorator, 1*s.* 3*d.* per champagne quart, made with some sound, nourishing, healthy port. I say the Pharmaceutical Council is incurring a grave responsibility for allowing this sort of thing to continue. We cannot shut our eyes to the great changes that are taking place. It appears to be inevitable that the great bulk of those who are entitled to practise pharmacy are driven away into that seething mass of general traders, where, I am sorry to say, self-respect, integrity and conscience are becoming subordinated to the domain of competition. It is possible that this dead weight may before long absolutely sever the last link which binds it to pharmacy; and it is also possible that the Pharmaceutical Society itself may undergo modification, for before long they will have to reckon with the better educated men whom your extended examinations will bring into the trade. I hold very strongly that it is necessary, nay, imperative, for all who wish well to pharmacy to keep themselves thoroughly well abreast of all modern scientific developments. It is in that way that they can best hope to impress public opinion with the importance of the duties that we are often called upon to fulfil. It is a part of our duty—I am afraid one that is often neglected, to educate the public to understand the professional side of our occupation—and we can demonstrate to them how constantly, not simply their health, but their lives are absolutely dependent on the care, on the conscientious use and selection of the drugs we employ. I know that I may be laying myself open to the charge of claiming too much for the professional side of pharmacy. Well, gentlemen, I prefer to claim too much rather than claim too little. I will quote one of England's most celebrated statesmen when addressing the Royal Athenæum at Manchester. He said every man has a right to aspire. A man who does not look up will look down, and is destined to grovel. We do not want the pharmacist to grovel, we prefer rather to aspire, that he may attain that position in the social scale and public opinion that the responsible character of his duties entitle him to occupy.

Mr. Martin (Newcastle) said: Mr. President, when I left home I did not think I should be called upon to take any part in these proceedings, because I had not read the annual report. I put it in my bag and read it on my way to London in the train, and think I ought perhaps to say a word or two. We have heard a great deal about loyalty. I have been lately to meetings of those who think differently from me, but I have not spoken a word or lifted a little finger in opposition to the Pharmacy Bill. Still there is a loyalty to principle; unless my presence here to-day should lead my friends to suppose that I have altered my principles or views with regard to it, I must offer one or two remarks. I am extremely sorry to find by the report of the Council that what I predicted would result from the action that had been introduced by the new Bill has already taken effect—that is, that the Major men are diminishing in such large numbers. The candidates for the Major examination diminished 20 per cent. last year, and in Scotland, although the successful candidates for the Minor are one-third of the whole candidates, the candidates for the Major are less than one-tenth, and the passing of the Major was less than one-tenth of those who presented themselves. I, who believe the future of pharmacy and its future well-being will be promoted solely by education and by giving every inducement and every opportunity for a higher and better education, can but deplore that result, for it is the direct result of the action which the Council is contemplating. I am rather struck by the omissions from the report, and there is one matter which has bulked somewhat largely in the report during the last few years which is conspicuous by its absence now. It may be that everything is progressing so well that there was no occasion to allude to it, but I think it will be to the interest of the Society generally to know what is being done in the Research Laboratory. A large amount of the capital of the Society was spent on that laboratory, and for a number of years we were told to hope on and to hope on, and the result would be satisfactory, but there is no allusion to it in the report. I think it would be interesting for the members of the Society to hear from the President whether its condition is satisfactory and whether good work—I will not say even good pharmaceutical work, I will take a broader standpoint than that—but whether good work for science is being done with the money which has been expended on it by the Society. There is one other omission which I am somewhat surprised to see, seeing that I think it is certainly the most important event in connection with pharmacy and medicine for the past year. That is that there is no allusion in the report to the publication of the new Pharmacopœia. This is not the time or the place to enlarge upon the merits or demerits of that book, but there is a practical fact connected with it which I think is of the highest importance, and I think it is possible, and that it would be wise for us at this annual meeting to spend a few minutes in considering it, and possibly to hear what are your views on the subject. The Pharmacopœia, as

you all know, was published with all the authority of a State document by announcement in the *Gazette* on April 29, but it was published by the printers on May 11. We hear from an eminent authority in pharmacy that he intended to adopt it on Midsummer Day. Again, we have the *ex-cathedra* statement of the President of the Society that the hall-marking of the legal qualification will be imposed on men up till next January, who may still be ignorant of the existence of the 1898 Pharmacopœia.

The President: I beg your pardon.

Mr. Martin: According to the statement of the President of the Society at the last Council meeting, the 1898 Pharmacopœia will not be used in the examination until 1899.

The President: That is not quite accurate in the way you put it.

Mr. Martin: I say you are stamping men as legally qualified to practise Pharmacy, and yet up to January, 1899, you will not ask them in the examination room whether they are acquainted with the 1898 Pharmacopœia.

The President: With anything special to that Pharmacopœia which is not in both.

Mr. Martin: The Pharmacopœia—this is the important point—is the law of the land, or it is not the law of the land. A cannot make it legal to-day and B to-morrow. From a paragraph in the Journal, which we are told is the wisest pharmaceutical publication ever issued, it appears doubtful whether the Pharmacopœia of 1898 has any authority at all, or ever will have. It commences by stating that the wholesale druggists of London, hard-headed, practical men, adopted the Pharmacopœia on May 2, and I think they were wise. I adopted it and gave instructions to my assistants that every prescription which was received, bearing evidence on its face of having been written after April 29, was to be dispensed in accordance with that Pharmacopœia, which I believe to be the law. But is it the law, or is it not? We cannot make it law at any given time that may be convenient to ourselves any more than we can substitute one preparation for another. Therefore, I hope I am not introducing irrelevant matter, and I think it is of sufficient importance to be considered at this annual meeting and to have an expression of opinion upon. It is extremely desirable that there should be not only consensus of opinion, but uniformity of conduct in this matter, because some preparations differ very widely, such as aconite, belladonna, ipecacuanha, and strophanthus. All these preparations, according to the new Pharmacopœia, differ very much from the old, and if a prescription is dispensed at John Bell and Co.'s to-day with tincture of aconite in it, and it is dispensed with the tincture of the old Pharmacopœia, and next week it is dispensed in Maw's according to the new Pharmacopœia, there can be no doubt that will be a very undesirable state of things. The 1898 Pharmacopœia is either the law or it is not. According to the opinion of the wholesale druggists, and according, I should say, to the opinion of medical men, when the Pharmacopœia is gazetted and published it is the Pharmacopœia which we must use for prescriptions written subsequent to that publication.

Mr. Martindale: Whether the prescriber intends it or not?

Mr. Martin: If there is evidence on the prescription that the 1885 Pharmacopœia is intended, that is quite legitimate. The medical man may indicate the Pharmacopœia Germanica or Pharmacopœia Londoniensis, or any other; but if he does not indicate anything and writes a prescription to-day in England, and orders tincture of strophanthus, or aconite, or belladonna, it is the duty of the chemist, I think—but I am here emphasising my individual opinion—to dispense it according to the Pharmacopœia which is to-day gazetted as having been published by the General Medical Council.

A Member: Irrespective of the dose?

Mr. Martin: The dose is a thing which only the medical man in the presence of the patient can determine, and he only can decide what is the right dose for the patient. A large dose in some circumstances is a very small one in others. If a doctor, being up-to-date with regard to the strength of tincture of strophanthus, prescribed a medium dose, intending the new tincture to be used, and it is dispensed in some pharmacy where that book is not yet adopted, there may be a very serious discrepancy in dose. But it seems to me we must take what is written on the face of the prescription. I am surprised at no mention of the Pharmacopœia being made in the report or in the President's address, and I hope the importance of the matter will justify me in troubling the meeting on the subject.

Mr. Hampson: I always considered that Mr. Martin was a cautious man, but it now appears that he is not. He tells this meeting that he intends to dispense these strengthened preparations without any warning to the medical practitioners.

Mr. Martin: They are not all strengthened.

Mr. Hampson: A certain number are. Now he knows, as we all know, that there is no legal authority in this matter excepting the Statute he refers to, but he also knows that all intelligent pharmacists admit that it is very necessary that in future legislation such should be provided, and that there should be a time allotted by which everbody could become acquainted with the new state of things. I am quite sure, if Mr. Martin re-considers what he intends to do, he would rather hesitate, or else he might find himself before a coroner's jury. It is extremely unfortunate that there is no provision for fixing a time when it should become necessary to use the new Pharmacopœia, but I expect that all gentlemen here present will use better discretion than Mr. Martin in this matter. I am obliged to Mr. Martin for his kindness and courtesy in calling attention to the anomalous position of pharmacists with regard to this matter. Whilst I am upon my feet there is another matter which, with the courtesy of the President, I hope you will allow me to say a few words upon. I refer to the Benevolent Fund. I have given the Council on more than one occasion trouble, and perhaps have caused embarrassment, by my pertinacity with regard to the project that I have in view, and which in a very few words I desire to bring under your notice. According to the present arrangement of the administration of the Benevolent Fund, it is necessary that all candidates desirous of obtaining an annuity shall undergo the painful process of canvassing, spending money, and in doing all other things necessary to attain a position at the poll before he or she can receive an annuity. I have very strong views on this matter, although I may be considered a faddist by some, and may be considered foolish in pressing this matter forward, but it has been my custom through life, and I hope it will remain so to the end of the chapter, that where I maintain a conviction, whether it be with regard to the improvement of the Benevolent Fund or any other matter, that I should feel it my duty to press it on every occasion. You must remember, Mr. President and gentlemen, that the Benevolent Fund Committee is acquainted with all the details of the cases that are brought before that Committee. It is the duty of that Committee to inquire into the most minute matters in connection with each case. Before the cases are placed on the list of candidates, perhaps for several years, every minute detail with regard to the condition of the applicant is in the hands of this Committee, and it appears to me that it is a waste of energy, a waste of money, and an unrighteous thing to make it compulsory upon these candidates to run the gauntlet of an election. I may just tell you for your information that the present Archbishop of Canterbury will not allow his patronage to be attached to any voting body with respect to the administration of charities such as our own. I know there is another side to this question. I am told by some of my colleagues on the Council that I am endangering the Fund, that it is quite possible if this change that I have suggested were to take place the amount subscribed would become less. Well, I have a much better opinion of my friends the chemists and druggists, at any rate of those who contribute to the Fund. The gentlemen who contribute to the Fund do not contribute, I am sure, for the sake of this paltry patronage of giving an individual vote. I have a much more worthy opinion of their benevolent intentions. Two years ago we had an admirable illustration of the inequality which exists in this matter. There was one who was in every sense a gentleman, a member of the Society, a pharmaceutical chemist, and a contributor to the Fund for some number of years, and a man of over eighty years of age, mind you. Surely one would suppose that such an individual would be perfectly safe to come out at the head of the poll. He was not elected, but was told to wait another year. They gave him the opportunity of dying in the meantime, but, happily, he did not die, he came in in the next year. My proposal is simply this, that the present Benevolent Fund Committee, with the assistance of two or three members of the Society and contributors to the Fund, shall finally decide upon the most eligible cases, that reports shall be made to the Council, and that the Council should elect those individuals without the strife and turmoil of a fight. That is my proposition. I want to know what is to be said on the other side with regard to the humanitarian point of view. I admit there is a danger that the Fund may temporarily be lessened in amount, but assuming that human

nature as controlling the Fund shall to a certain extent be of a degraded quality, and that the amount may be lessened for twelve months, I maintain that in the following year every contribution to the Fund will have realised the advantage of this improvement, and that the Fund will not eventually suffer. I may have been irregular, because it is unusual that any member of the Council should take part in the discussion, but I feel this matter so strongly that it is simply unbenevolent and inhuman to ask a paralysed individual of eighty years of age or seventy years, to come out in the open and fight with those who are also candidates for participation in this Fund.

Mr. R. A. Robinson: Although we have had a number of interesting topics this morning, there is yet another point that I thought I would like to bring before the meeting. I do not think that to-day either you or your pharmaceutical press friend will complain of want of copy. The points that have been raised by the various speakers are important, they deserve considerable attention, and no doubt will receive it. I would like to say with regard to the Pharmacy Bill that I do not think that Bill is dead yet; I have very great faith in that Bill. I have known of a Bill that was passed at five minutes to twelve on the last day of the session, two years ago, becoming the law of the land. No doubt all these Bills will excite opposition from somebody, and I appreciate your remark that if it comes under the twelve o'clock rule it will have but a slight chance of being passed, but with a good deal of persistence I believe it is more likely to go through. It is really such a small thing, concerning only a matter of the internal affairs of this Society, and does not concern anybody in such a way as to excite opposition. I am glad to see that the opposition that was excited at first seems to have become allayed. Then I observe you say that our Journal has improved, and that the balance against the Society is less than it was. I am very glad to hear that the Journal is improving. I understood that it was so, and I have heard expressions of opinion from many persons that that was the case. What I would venture to say is: Go on improving it. The advertisers, I believe, are better satisfied with it, and if they want anything further by all means give it them and keep up the Journal in the best manner possible, because we cannot do without it. It is better to make the best of it and run it on up-to-date lines, and make it a first-class journal for all classes of pharmacists, and by that means increase its interest in the Society. I have listened with a great deal of interest to your remarks; you said we ought to put our house in order. You made reference to the desirability of not having branch businesses carried on without qualified men in them. I entirely agree with you there. There is another way in which we might put our house in order to our advantage, and that has not yet been mentioned to-day. I refer to the regulation of storage of poisons. That is a matter of some importance, because it is very well known to most of those present that it was a topic that excited a great deal of attention some years ago. Unfortunately, the Government believe that we will not do something that we promised to do in that matter. The President of the Society at that time, instead of having bye-laws for the regulation of the storage of poisons inserted in the Act, I think said that the Council would by means of bye-laws take precautions to do what the Government believed to be necessary with regard to the storage of poisons. It was left in that way, that the Pharmaceutical Society should adopt bye-laws for that purpose. It was not left in the power of the Council. I believe the Council would have made regulations for the storage and keeping of poisons, but it was left to the Society, and when the President came before the Society there was a very considerable outcry against it. The majority of the members then said that they would not have any regulations of that kind, because they said that it was unnecessary and derogatory. I venture to think that a change has come over the members of the Society, and that as a matter of fact we have all been doing voluntarily that which was attempted to be made compulsory, for our own safety and credit. We have all been keeping poisons separate from other things in bottles distinguished from ordinary bottles, and many probably in cupboards locked up. I have taken some trouble to inquire, of course only in the limited circle to which I have access, but I am inclined to think that the members of the calling at this present day would not object to have poison regulations adopted by the Society and enforced. When I say "enforced" I do not mean for a moment that we should have any inspector coming round, but they would be doing that which we promised to do; that is to say, safeguarding the public in that way. I do not wish to enter into the great question as to whether the sale of poisons is the proper basis on which to give us legislation, but rightly or wrongly, that is how the Government did it; the Government said "we must have poisons properly taken care of." We might have been glad if they gave us the monopoly of dealing in all drugs, but they based it on the sale of poisons. I should regret to see the Government bringing in a new Poisons Bill. There would be great opposition to it not merely among chemists, but with all people, because it would be widening the door by which poisonous substances could be procured. I should regret very much if they did bring in a Poisons Bill, allowing poisons to be sold by other persons than registered chemists, which made it compulsory on those persons to adopt regulations which we have not adopted. If we were to protest against the sale of poisons by others than registered chemists they would say: "We are going to insist on such regulations as you ought to have adopted, but which you have not." We have been told over and over again that if we can gain the goodwill of the Government by being willing to put our house in order in every possible way, especially with regard to this point of the storage of poisons, we should be in a stronger position than if we remained as we are, each man doing as he likes, with the result that in some cases there may not be a proper disposal. That is a view that I would like to put before the trade and the profession. There is no danger of undue interference with us. We are now subject to the ordinary law, we have our weights and measures stamped; but there are many other people who have to be subject to the law, such as lawyers; and medical men in the giving of certificates, and as regard lawyers they can only send in their bills in a certain way, so that I can see nothing derogatory to the body of chemists and druggists in having to adopt regulations of that kind for the better safeguarding of poisons. I do not know whether there will be time for an expression of opinion on all the matters mentioned to-day, but that is a point that I have been thinking about, and I would rather that we should ourselves do it, if it will do us any good, than leave it undone. I have heard a former President of the Pharmaceutical Society say that in the pigeon-holes of the Privy Council there was always the fact to be brought against us that we had not complied with these regulations. I do not think it would be found that there was the same feeling among the same men that there was thirty years ago with regard to this matter. I remember at one time, when I was a young man, that I thought it was not a very necessary thing, and that there was not much in it; but I do think now that it is worth doing. I know there are arguments on the other side, but I do not intend to go into those now. The fact that we have gone on as we are for some thirty years is another side of the question. With regard to my friend Mr. Martin's speech, he said, if I understood him, that it was deplorable if, owing to the policy of the Council, the Major men were going up in smaller numbers. But that is not so; it is because they have been going up in smaller numbers that the Council have moved in the matter. The figures that he quoted were not the result of the action that the Council took a year ago. I suppose the real reason was the legislation which made the Minor examination the qualifying examination, and it is because the Major men have been decreasing for many years past that the Council thought it imperative that some other system should be adopted. We all wanted to keep up the standard of examination, and it has been increased and kept up. I do not think that Mr. Martin ought to fancy that the Council by its action has done anything in the least to reduce the standard of examination, which I quite agree with him is the main thing that we ought to look after. With regard to the Benevolent Fund, I have no doubt that the point mentioned by Mr. Hampson will receive attention. I know that he has been a consistent supporter of the view that he has expressed, and I know the difficulties that he has had to encounter. It has been tried in other societies; in some it has succeeded, and failed in others, but I rather think that in such a Society as this it would be worth a trial. I suppose the Council know best, and that they have some better means of judging public opinion than I have, but it seems a pity to put these persons who are badly off in the position of having to canvass and spend money in order to get an annuity. I should think with so careful a body as a sub-committee of the Council, or even the Council itself, that all the subscribers to the Fund would feel that they did not want to have a personal power of voting. I for one should not wish it. I would rather leave in the hands of the Council or a sub-Committee the election of the annuitants to the Benevolent Fund. Those are the only points that I have to mention, and

I venture to think that they are matters of interest to be brought before the annual meeting.

Mr. Martindale: My friend Mr. Martin has made a pointed allusion to something that concerns me a little. I would like to ask him with regard to the British Pharmacopœia on what authority he said it came into force as soon as it was gazetted. I may say the General Medical Council have never been of that opinion—at least, they have not expressed it in writing. I think he has been a little too previous in bringing it into use as soon as it appeared. How are all the chemists and the doctors to get to know at once what is in that Pharmacopœia? I think it is a great mistake to do anything of the kind. I personally asked some of my medical friends what course they wished me to take, and I have made them acquainted with the fact that after a reasonable time I should be prepared to dispense according to the new Pharmacopœia, but that if in the meantime they would make an indication which Pharmacopœia they intended, I should try to carry out their intentions. In the meantime, I hold it is the duty of the dispenser to carry out the intentions of the prescriber. The prescriber cannot know what is in a book immediately it is published, when he has not had a chance of seeing it. Then there is another matter; all my staff has to be acquainted with the Pharmacopœia, and it is impossible for them to know all the intricacies and changes that have occurred in the making of the prescriptions so as to be able to dispense for it immediately it is published. I think it is reasonable to fix a time as I did with my medical friends in my neighbourbood. I said I should be prepared to carry out their intentions if they would indicate which way they wished to go, and that after a certain date, unless they indicated that they meant the old Pharmacopœia, I should be prepared to dispense according to the new Pharmacopœia.

Mr. Hind: With regard to the Pharmacopœia, I take the same view as Mr. Martindale. I have communicated with the doctors around my neighbourhood, and they have all agreed with me that when they have finished prescribing according to the old Pharmacopœia, they will initial their prescriptions to that effect, but up to the present they do not wish to be interfered with. One of them went so far as to say that he did not know that he would use the new Pharmacopœia at all. I do not think we should dispense on the new Pharmacopœia without giving the doctors some notice of it. There is no doubt that a notice to the effect that it is to come into force at some definite period would be of very great assistance to us, but to actually use it right off, as Mr. Martin suggested, would be very risky.

Mr. Lomas: I should like to say something with reference to the remarks made by the President in his address; and that is that in my opinion these remarks of the President will be very welcome to all true men of the Society, and very unwelcome to a great number who are practising what they should not. I allude to qualified chemists having branch shops carried on with unqualified men. I have felt very strongly on this point for years, and I welcome the President's remarks, coming late as they did, but still they are better late than never. It is more than that. What are these unqualified men doing? What is their position? They are robbing the qualified men. Instead of having a qualified man in their shops they have an unqualified man, and therefore I say, What have you to give the men who have passed their examinations? Surely they have a right to conduct these branch shops. It is more than that. Such practices are sapping the very foundation of the Society, and, Mr. President and the Council, you cannot be too strong on this matter. Then I go from that to another point. I believe that the Council are elected to look after the interests of the members and the craft generally. Very well; but what was the position of pharmacists on the Committee for the Revision of the Pharmacopœia? In my opinion it was a most humiliating one, and they would have done well to have declined to have anything to do in the matter. Therefore I would hope that in any future alteration in the Medical Bill that will be looked after, and that if any qualified man takes part in any of these committees he will be on an equality with the others, or if not that he will decline to have anything to do with it. I commend the remarks that were made by Mr. Hampson at the Council Meeting as conveying all that I have meant to say, and more. I cannot put it in a more forcible way. We are really a sort of servant-of-all-work. It will not do, you know. You do not get what you pay for. Is this doing good? Certainly not. If you cannot have your proper position, decline to have anything do with it, which is what I should have done.

Mr. Griffiths: I only wish to occupy your attention for a very few moments to express my very strong approval of the Bill that the Society brought forward rendering qualified chemists eligible for membership. I do this because I was amongst the minority at the last meeting which voted against the proposed Bye-laws of the Society. I know those Bye-laws have been passed, and I also know that it is no use crying over spilt milk. I am very pleased indeed, and I think I am only saying what most of the country chemists—certainly those in rura districts will agree with entirely—that this Bill is one of the most important Bills, although a small one, that has ever been brought forward. I hope you will persevere with that and get the Bill passed as soon as possible. It will then be the duty of every local secretary of the Society to point out to chemists all over the country the necessity for becoming members of the Society, and then you will be able to go further with really sound legislation in the interests of the public. I do not know whether I should be quite in order in making any remarks with regard to the *Pharmaceutical Journal*, but I believe it has been mentioned in the report. I suppose, to put myself in order, I ought to move that the Editor's salary be reduced, but I do not want to do that. I just wish to make a little protest against the spirit in which criticism is sometimes carried on in that Journal. I have often been somewhat pained to note the spirit in which adverse criticism is made by the Editor, and I give as a case in point especially a comment made in "Annotations" on October 16, 1897, on a speech made by a Mr. Harry Jessop, at the Midland Chemists' Assistants' Association. I have never seen that gentleman, and do not know him in the least, but I do not think that the treatment he received in that article was at all just or at all fair. The only reason for the sneers that were launched against him was that he was a young man. I think we must be very careful in these matters, and even if these young men are a little bit rash in expressing their opinions they must be dealt with fairly, and even generously, because it is from these young men that the ranks of this Society must be recruited. A little care should be exercised on the part of the Editor, and perhaps he will kindly remember that a sneer may be very smart, but it is not argument. Mr. Hampson's suggestion that we should have some different method of electing annuitants to the Benevolent Fund should receive serious attention. I think it is very hard that people who have worked hard and who have not been so successful as they deserve should have added to their troubles the necessity of going round begging.

Mr. Martin: May I answer Mr. Martindale's question?

The President: Was it a direct question?

Mr. Martindale: I asked Mr. Martin what authority he had.

Mr. Martin: It would take me a long time to explain all the anomalies and inconsistencies of the Pharmacopœia, but I would like to answer Mr. Martindale's question by another, and that is, on what authority does he fix any date?

The President, in reply, said: I have a long list of notes of many most interesting points which have been referred to by the various speakers, and I will try in a very few minutes to say just a word with reference to each of those to which I think it is necessary to call attention. Mr. Campkin spoke of the Pharmaceutical missionaries in the persons of the President and the Vice-President and of the advantage derived from those visits being made by one of these officials from time to time at the various centres throughout the country. All I can say is that the few visits I have made in different parts of the country have been to me very pleasurable. Still one has one's other business to attend to, and one cannot always go when one is asked, but I have found very great pleasure in visiting these centres, and I do hope that my visits, as I am sure is the case with those of my predecessor, have done good in the districts which we have visited. I can promise my successor, whoever he may be, that he will receive a very warm welcome wherever he goes as President of the Pharmaceutical Society. Mr. Atkinson has asked a question, I think, as to titles promised to those who withdraw opposition to the Bill. The answer to that, as far as I am able to give an answer, is that no such titles have been promised. With regard to the Poison Schedules, and especially with reference to cocaine, I think that cocaine may be considered to be in the Schedule at the present time if it is a poisonous alkaloid. The question is, Is it a poisonous alkaloid? Could we go before a court of law and say that it was a poison or not? I am a little doubtful on the matter. We may agree, and I am sure we do all agree, with Mr. Atkinson that its use at the present time is very objectionable

in many directions, but the question is, is it a poison? Have there been many cases where it has proved fatal?

Mr. Atkinson: There have been some reported recently.

The President: If such is the case, it is a poisonous alkaloid, and is it present in the Schedule? I am sure we are all very delighted to hear Mr. Atkinson's remarks, and we have been very much edified by the tone of those remarks. I hope they will be read very largely throughout the length and breath of the country by every one connected with our calling. I am sorry to say that Mr. Martin has gone, but he made a wail about this Pharmacy Bill. I will give him credit for this, that although I know he opposed the Bill, he has not tried to stop its progress through the House of Commons. I think Mr. Robinson has already answered his contention that the Major figures have shown a diminution since this Pharmacy Bill was discussed. As Mr. Robinson very well put it, it was for the very reason that the Major candidates were on the increase that it was felt most desirable and necessary that some such action should be taken as that contemplated by this Pharmacy Act Amendment Bill. I have pointed out on more than one occasion that all but something like 13 per cent. who obtain the Minor qualification are satisfied with that. When I say they are satisfied, I do not mean that they themselves would not, if they had the opportunity, prefer to go on to the Major qualification, but as a matter of fact they do not. That is a very small percentage, only 13 per cent. or something like that, now, who go on to the Major examination. I am inclined to think and hope that, under the new regulations affecting preliminary examination, in time we shall have men whose general education will be such that they will see the importance of passing the Minor examination, and I hope that we shall all see in the course of another ten years or so a very much higher percentage of men passing the the Major examination, notwithstanding the fact that the present Pharmacy Act Amendment Bill will by that time, I hope, have been passed. Mr. Martin asked a question about the Research Laboratory. That is not a special department, as it were, of the establishment, and it is not mentioned in the finance statement as a special department, but it is still in existence, and I hope that there will be done in it as good work as is being done in it now. If you refer to the last number of the *Journal of the Chemical Society* you will find some very excellent work that has been done by Professor Collie, Mr. Tickle, and others in that laboratory, but the question is to find workers. I think that difficulty would be got over if some gentleman, either here or outside who might read my remarks, would found a scholarship which would enable some of our Major students to study a year in London after they have qualified for the Major examination. Men sometimes do not find it convenient from a pecuniary point of view to stay afterwards and do work in the Laboratory, so that if anyone who, having read my remarks, has a little surplus cash, he might feel inclined to provide a scholarship which would give something substantial to anyone who is qualified as a pharmaceutical chemist. With regard to the Pharmacopœia, I am always afraid to say a word about it. When such doughty champions as Mr. Martin and Mr. Martindale get on their feet I am afraid to say anything. It is, perhaps, singular that there has been no reference made to the Pharmacopœia in the report. I have said before, I think in public, but, at all events, I say it now, if I have not done so, that I am not satisfied with the position pharmacists have taken with reference to the Pharmacopœia. At the same time I think I cannot agree with Mr. Lomas in what he said. I think we did the right thing in taking the only position which was available, and that we were, as citizens and pharmacists, right to help the Medical Council to make that book as satisfactory as possible. I do hope that even if the law is not altered—and I am afraid there will be considerable difficulty in altering the Statute which deals with this matter—in the preparations that are made for the next edition pharmacists will be recognised in a way that will be more useful to the production of the book, and certainly more in conformity with the position which pharmacists ought to occupy. Now with reference to the discussion between Mr. Martindale and Mr. Martin as to when the Pharmacopœia should come into force, I think Mr. Martin really answered Mr. Martindale very well just now by asking the other question — why should Midsummer Day or any other day be taken as the date on which the new Pharmacopœia should be used and the old eschewed? I must confess—and I here speak, gentlemen, plesae, if I may do so, as Walter Hills or John Bell and Co., and not as President of the Society—I do not pretend to speak *ex cathedra* on this point—that I am at one almost entirely with the remarks that have been made on this point. I understand, at all events, that when the Pharmacopœia is available and can be bought by the public, then it comes into force. I am bound to say that, except under certain conditions and circumstances, and there are exceptions to every rule, my firm has made arrangements that the Pharmacopœia should be recognised as the official medicine book on the day after we were able to buy it from the publishers. I am quite ready to admit that there are inconveniences in this arrangement, but you must recollect in this particular instance there have been many opportunities given both to prescribers and also dispensers, through the enterprise of the Editor of the *Pharmaceutical Journal* and others, to make themselves masters of the chief alterations in the Pharmacopœia, and of all those to which special attention was necessary. I should not have referred to this question had it not been raised, because I do not think it really comes properly before us, but the difficulty is that Mr. Martindale takes a certain day, and tells his medical friends that he will take a certain day. But another gentleman may take July 1, while another may think that the medical prescribers and others will not have mastered the details of this Pharmacopœia till next Christmas, and I merely mention this so that you may know what is done in one establishment. With regard to Mr. Hampson's remarks about the Benevolent Fund, I do not think I can go into that now, but as I have said on many occasions, I agree very largely with what he has said, but at the present time, as a practical man, unless I can see there is evidence of support of the views taken by Mr. Hampson by a very large majority of the subscribers to the Benevolent Fund, I do not dare to take the step which he proposes. I must confess I am against the present practice in principle, but I regard it rather as a necessary evil, and I am afraid there are many necessary evils with regard to the collection of money, for instance, fancy bazaars and balls, and that sort of thing, for Church purposes, which are very objectionable. I think people ought to give money without those inducements, but such is the case, and such is human nature. There is one point to which I should like to call attention for a moment, and that is with reference to some remarks made by Mr. Robinson on the poison regulations. I do not know when I have ever said anything on that point, but I am bound to say that so far as I have been able to read and understand the past history of the Society, and the conditions under which the Act of 1868 passed, I must confess that I gather from the words of the Act that we did promise to make poison regulations, and as far as the Council of some time ago was concerned, it did pass, I believe I am right in saying, poison regulations, but it is the Society which has to pass the resolution, and the Society on some great field-day came to the conclusion by some majority that they would not have these suggested regulations as such, but that they would merely adopt them as recommendations. Now, as Mr. Robinson has well said, I believe the great majority of registered chemists do observe such recommendations as we have suggested. I have no fear of inspectorship, or anything of the kind, and I should be very glad myself if the Society could see its way—which I suppose would be at some special meeting convened for the purpose—to express its willingness to pass a resolution to the effect that these recommendations which have been very useful, as is proved by experience, should be made regulations, I firmly believe that if we, not in any spirit of panic, but quietly took that step we should stand in a better position with the Government Department. I am glad to hear that Mr. Griffiths approves of the Pharmacy Bill, and he has had one little go at the Journal. I hope the Editor will bear in mind what he says. Mr. Griffiths did not explain what the sneer with reference to Mr. Jessop was, but I do not think it is a very dreadful thing to say about a man that he is young. As a rule we can all get over that in time. Mr. Jessop certainly had on that occasion, as he has had to-day, a very good advertisement, and I have no doubt we shall hear more about Mr. Jessop, and I do not suppose he minds a little criticism of that kind. If he was a little too severe at the time, I am sure Dr. Paul will be more careful in future. I think I have now touched upon the main points to which reference has been made, but if I have omitted any perhaps you will be good enough to remind me. We have had very little adverse or unkind criticism, which was perhaps to be expected, and I am very much obliged to the speakers for the remarks they have made

n support of the report. I will now put the resolution—

That the annual report and statement of accounts be received and adopted.

The resolution was carried unanimously.

Appointment of Scrutineers.

The President then read the list of names of gentlemen who had been nominated to act as Scrutineers, and their appointment was unanimously agreed to.

The President then called attention to the fact that the following Registers had been laid upon the table in compliance with the provisions of the Act :—

Register of Members, Associates, and Students of the Society.
Register of Pharmaceutical Chemists.
Register of Apprentices and Students under the Act of 1852.
Register of Chemists and Druggists under the Act of 1868.

Appointment of Auditors.

The following gentlemen were appointed to act as Auditors :—

Butt, Edward Northway, 77, Hamilton Terrace, London, N.W.
Lescher, Frank Harwood, 60, Bartholomew Close, London, E.C.
Stacey, Samuel Lloyd, 22, Great St. Helens, London, E.C.
Umney, Charles, 50, Southwark Street, London, E.C.
Yates, Francis, 101, Southwark Street, London, S.E.

The President then declared the meeting adjourned to Thursday at 3 o'clock to receive the report of the Scrutineers.

A Member: I wish just to remark that we have been in the habit of hearing at these annual meetings the voice of Mr. Percy Wells, and I should like to know whether he is on the sick list at all. I understood last year that he had been here regularly for many years, and I have quite enjoyed the enlightenment that comes from his lips. I came here to-day with the full hope of hearing him, and I did not know whether I should not feel inclined to second any of his remarks. I suppose, as we have not heard from him to-day, we may congratulate our President and Council that he accepts their views. I must congratulate you upon having had such a peaceful meeting.

Mr. Carteighe: As I had occasion once to make the observation when I was in the chair, there have been times when the meeting, after expressing their appreciation of our efforts, have never taken the trouble to move a vote of thanks to the chair. As no other member of the Society seems disposed to do that, perhaps you will allow this old moor to move that a cordial vote of thanks be passed to the Council, including myself, for our services during the past year, and allow me further to say, and I am sure my colleagues on the Council will agree with me, that I think a special vote should be passed to you, sir, for your indefatigable exertions in the chair.

Mr. Cooper seconded the resolution, which was put and carried with acclamation.

The President: I am much obliged to you, gentlemen, for that vote. When that gentleman rose to speak just now I thought he was going to say that he had not heard the voice, not of Mr. Percy Wells, but of my predecessor. I am glad that we have heard him now, and I thank Mr. Carteighe for the vote which he has proposed, and Mr. Cooper for seconding it. On behalf of the Council I thank you all, gentlemen, for your kindly appreciation of our work during the past twelve months.

ADJOURNED GENERAL MEETING.

Thursday, May 19.

MR. WALTER HILLS, PRESIDENT, IN THE CHAIR.

The adjourned meeting for receiving the report of the Scrutineers was held on Thursday, May 19.

The Chairman of the Scrutineers, Mr. George S. Taylor, read the following report :—

Scrutineers' Report.

We, the undersigned Scrutineers, appointed at the Fifty-seventh Annual General Meeting of the Pharmaceutical Society of Great Britain, do hereby certify that we have examined the voting papers committed to us, and report the following :—

Voting papers reported by the Secretary to have been issued ..	3756
Voting papers received	1993
Voting papers issued, but not returned	1763
Voting papers received	1993
Voting papers disallowed :—	
Informal	13
Received by post too late	74
—	87
Voting papers registered	1906

Hills	1754	Savory	1536
Martindale	1732	Warren	1520
Symes	1679	Johnston	1479
Allen	1649	Bateson	1469
Atkins	1637	Grose	1430
Newsholme	1634		
Cross	1630		
Corder	1578	Gibbons	1001
Storrar	1570	Campkin	964

George S. Taylor, *Chairman.*

Leo. Atkinson.	J. W. Bowen.	E. J. Eastes.
W. Prior Robinson.	A. E. Tanner.	J. H. Shacklock.
T. H. Powell.	A. J. B. Cooper.	R. Fisher Young.
W. Arkinstall.	H. Cracknell.	H. Wilson.
A. J. Phillips.	C. E. Garman.	C. E. Robinson.
Frank A. Rogers.	F. Ransom.	W. R. Gossling.
H. Bate.	T. Tickle.	

The New Council.

The President, as Chairman of the meeting, then declared that the following gentlemen would constitute the Council for the ensuing year :—

Allen, Charles Bowen, 20, High Road, Kilburn, N.W.
Atkins, Samuel Ralph, Market Place, Salisbury.
Bateson, Thomas, 23, Stricklandgate, Kendal.
Bottle, Alexander, 4, Godwyne Road, Dover.
Carteighe, Michael, 180, New Bond Street, W.
Corder, Octavius, 31, London Street, Norwich.
Cross, William Gowen, 70, Mardol, Shrewsbury.
Grose, Nicholas Male, 8, Temple Street, Swansea.
Hampson, Robert, Norland House, Sevenoaks.
Harrison, John, 33, Bridge Street, Sunderland.
Hills, Walter, 225, Oxford Street, W.
Johnston, John, 45, Union Street, Aberdeen.
Martindale, William, 10, New Cavendish Street, W.
Newsholme, G. T. Wilkinson, 27, High Street, Sheffield.
Park, Charles James, 1, Mutley Plain, Plymouth.
Savory, Arthur Ledsam, 143, New Bond Street, W.
Southall, Alfred, 17, Bull Street, Birmingham.
Storrar, David, 223, High Street, Kirkcaldy, N.B.
Symes, Charles, 14, Hardman Street, Liverpool.
Warren, William, 24, Russell Street, Covent Garden, W.C.
Young, John Rymer, 42, Sankey Street, Warrington.

After the report of the Scrutineers had been received, the President moved, and Mr. Humphrey seconded, a vote of thanks to the Scrutineers for their labours. This was suitably replied to by Mr. George S. Taylor on behalf of the Scrutineers.

Analysis of Silicates.—Le Claire obviates the difficulty met with in the analysis of silicates—the formation of gelatinous hydrated silica—by the following process: The finely porphyrised silicate is mixed with three times its weight of red lead, or less, if alkalis are present, and heated to orange-redness in a muffle for thirty minutes. A liquid glaze is thus obtained, which solidifies on quickly cooling, and is detached from the sides of the crucible. This is then decomposed with six times its weight of a mixture of ordinary and of fuming nitric acid, heated to about 40° C., the result being lead nitrate and silica. When decomposition is complete, the liquid is treated with boiling water, the silica thrown on a filter, washed until free from lead, calcined and weighed. To obtain the lead oxide suitable for the purpose a 15 per cent. solution of lead nitrate is precipitated with oxalic acid, the precipitate is collected, dried, and calcined below a low red heat. A portion is removed, moistened with nitric acid, mixed with the rest, and again calcined. The resulting oxide is in an extremely minute state of division.—*Comptes rendus*, cxxv., 893.

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THE ANNIVERSARY MEETING.

Recent experiences have very forcibly demonstrated the absolute necessity of greater cohesion among chemists, not only in order to be able to protect themselves from attack, but also to admit of their making such advance as is essential for keeping abreast of other callings. Under the influence thus exercised there has been throughout the country a very marked increase of activity in local associations, which was in various ways referred to at the meeting last Wednesday, and it may be that the abnormally meagre attendance on that occasion was really a consequence of this change and of the zealous action taken by local associations with the object of obtaining support to the Pharmacy Bill now before Parliament, having extinguished the desire to come and make a speech at the annual meeting. But though the meeting was unusually small, its tone was without exception one of acquiescent response to the President's plea for co-operation as being the first step towards improvement in the future.

The President, in moving the adoption of the Council Report, spoke of the apparent excess of expenditure over receipts during the past year as being partly a consequence of the method of statement and to a great extent due to payments of an exceptional nature as well as the influence of the new Bye-law, by which the fee for repeated entries to the examination has been reduced. He also showed that by comparison with the previous year the ordinary items of expenditure have been reduced. In the case of the Journal the reduction of net cost has been considerable, and it has fully justified the anticipations of last year. In connection with the annual financial statement, the Council has now decided to adopt a modified practice, and to take into account the several assets and liabilities at the end of the year so as to issue a balance sheet in place of the present statement. Meanwhile, however, the President expressed his satisfaction in being able to state that an account prepared on that method for the past year would have shown that the Society's income for 1897 was about one hundred and sixty pounds in excess of the expenditure. Another very important new departure in connection with the finances of the Society is the decision to establish a sinking fund for redemption of the leasehold property held by the Society.

Referring to the amended Bye-laws which have been approved by the Privy Council since the last anniversary meeting, the alteration they introduced was characterised as one for unqualified satisfaction from the point of view that every body of individuals should endeavour to advance the calling in which they are engaged. As a further ground for this satisfaction, the President recalled the fact that though there was some attempted opposition to the new Bye-laws it was neither in itself of very serious character nor had it such support as would detract from the practical unanimity of the desire to provide for sound education of future candidates for qualification.

In regard to the work of administering the Pharmacy Act, the usual monotony of its proceedings has been broken by the case heard before the Reading County Court, in relation to the sale of a packet of weed killer containing enough arsenic to poison two thousand persons, when a question was raised by the County Court Judge whether an ordinary partnership was not the same as a corporation. Though that case was decided against the Society on a question of fact and the decision was consequently upheld on appeal, the judges of the Court of Queen's Bench were distinctly of opinion that whether a principal be a member of a partnership or not, he is equally liable for offences committed by his servant when acting within the ostensible or implied authority of his masters. In this connection the too common practice of having branch shops managed by unqualified assistants was condemned by the President as a "scandal" and he held it to be the duty of registered chemists to put their own houses in order if they hope to be able to go either to the Courts or to Parliament for anything they may want in the future. During the past year the Council has had to take proceedings in many cases of this kind, and the matter is one demanding the serious attention of chemists.

In speaking of the Pharmacy Act Amendment Bill the President recalled his remarks last year as to the necessity of sinking personal differences of opinion for the sake of securing some general improvement, and after discussing the nature of the opposition by which the progress of the Bill is now prevented, reference was made to the opposition offered in the early stage of the Bill by a few pharmaceutical chemists in Manchester. Though he was glad to say that opposition has now been disposed of and also glad to be able to thank its originators for withdrawing their objections, it could not be overlooked that the prospects of the Bill had been prejudiced by the want of united support in its early stage. But for that the Bill might perhaps have been passed. Of the assistance rendered by local secretaries in obtaining support to the Bill, the President spoke in warm terms of appreciation, and in concluding his address he referred to the work of local associations as having also been of great assistance in promoting a healthy feeling of interest in the work upon which the Council was engaged for the advancement of the craft.

In the report of the speeches which followed the President's address will be found matter that is of sufficient importance to merit careful consideration by all members of the craft, and it should be productive of much useful discussion from various points of view.

METRIC WEIGHTS AND MEASURES.

Alteration of the weights and measures of capacity now in use in this country must necessarily be attended with some degree of inconvenience, for a time, whenever it becomes a matter of legislative enactment, and in view of the probability that commercial considerations may before long lead to a recognition that such an alteration is desirable for estab

lishing uniformity with the practice of other countries, any arrangement by which the inconvenience of the change would be reduced is worthy of some attention. In most countries where the French metric system of weights and measures has been adopted it has been the practice to retain, to some extent, the use of the older denominations of weight and measure for particular metric weights and measures that are in common use. Thus in France the denomination "livre" is still understood to apply to the half kilogramme. A similar application of the familiar denominations of British weights and measures to the approximate metric equivalents would probably help to facilitate the adoption of the metric system in this country and to reduce very much the inconvenience attaching to the change from one system to another.

The small difference between the half kilogramme and the avoirdupois pound offers an opportunity for attempting an adaptation of that and other denominations to metric quantities and the similar relation between the half litre and the pint admits of denominations of measure being adapted, in the same manner, to metric measures of approximate magnitude, so as to realise the special advantages of the French metric system and of a decimal sub-division.

In the event of the kilogramme being adopted as the legal unit of weight for trade purposes, and the half-kilogramme distinguished by the denomination "pound," the only effect of that change would be to require an increase in the price of articles sold by the pound, to the extent of one-tenth, that being the difference between the half-kilogramme and the present avoirdupois pound. In the case of transactions in which larger quantities are dealt with, the adaptation of denominations now in use, to metric weights would not involve differences so large as that between the new pound and the avoirdupois pound. Thus, for instance, fifty kilogrammes or one hundred new pounds would be only one pound twelve ounces and a third less than the present hundredweight, while one thousand kilogrammes or two thousand new pounds would be only about three pounds and a half less than the present ton. Consequently the adoption of the metric system with the retention of the denominations now in use, for trade transactions in large quantities, would not require any considerable alteration in the prices of goods so dealt with.

As to the sub-division of the kilogramme to meet the requirements of trade when smaller quantities are to be dealt with, it may not unreasonably be assumed that, without departing from the principle of decimal division, a half pound or five-tenths of a pound = ·25 kilogramme, would be admissible in practice. A decimal sub-division of the pound would give as the tenth part of a pound, or 0·05 of a kilogramme, a weight nearly twice the avoirdupois ounce. If the denomination "ounce" were applied to this weight the price of articles sold by the ounce would have to be nearly doubled, but the half or five-tenths of the new ounce would differ but little from the present avoirdupois ounce and that might take its place for practical purposes, without requiring much alteration of prices. By further decimal sub-division one-tenth of the ounce or 0·005 kilogramme would be a weight approximating to the drachm, and dividing that into one hundred parts, with the denomination of "grain" = 0.00005 kilo., the new grain would equal 0·77162 of the present grain. Another intermediate weight, the tenth part of a drachm (·0005 kilo.) might also be adopted as the scruple. The kilogramme would then be 20,000 grains, the pound 10,000 grains, the ounce 1000 grains, the drachm 100 grains, and the scruple 10 grains. In this way the use of the gramme weight might be altogether avoided, and the risk of its confusion with the grain done away with. For medical and pharmaceutical purposes the alteration of the grain to a somewhat smaller weight would have less disadvantage than its increase.

One great advantage of the metric system over that now in use in this country is the simple relation existing between the units of weights and measures of capacity, the litre being the volume of a kilogramme of water at its greatest density. The advantage of that simple relation could also be secured for British weight and measures if, according to the plan already described in regard to weights, the litre and half-litre were respectively distinguished by the denominations quart and pint. In that case the gallon (5 litres) would be ten new pints and the decimal sub-divisions of the pint would, respectively, bear the same proportionate relations to the ounce, drachm, and grain as the pint and quart to the kilogramme and the litre, that is to say, the kilogramme being two pounds, and the litre two pints, the new pint would be about one-eighth (2·363 fluid ounces) less than the present imperial pint, while the gallon would be about one-tenth (16·369 fluid

	Kilo or Litre.	Pound or Pint.			New Grains.	Imperial Grains.
	1000	2000 = 1 Ton.				
	50	100 = 1 Cwt.				
	5	10 = 1 Gallon.	... ...	... ...		77,161·768
Grammes.						
1000	1	2				15432·35639
500	0·5	1	Ounce.		10,000	7716·17819
50	·05	0·1	1	Drachm.	1000	771·61782
5	·005	·01	0·1	1	100	77·16178
1	·C01	·002			20	15·432
0·5	·0005	·001	·01	0·1	10	7·71618
·1					2	1·5432
·05	·00005	·0001	·001	0·01	1	·77162

ounces) more than the imperial gallon, as shown in the accompanying tabular statement. The fluid ounce (·005 litre) would be the tenth part of a pint, the fluid drachm (·0005 litre) would be the hundredth part of a pint, and the fluid grain (·00005 litre) or the ten thousandth part of a pint, would be equal to ·845 minim.

WHO IS THE SELLER?

In cases under the Pharmacy Act, difficulty has frequently been experienced in fixing the responsibility for offences against the law upon the right shoulders, and it sometimes happens that whilst an unqualified assistant who has actually sold a poison is fined for so doing, the equally unqualified employer who has instigated him to commit the offence escapes scot free. And it is not to be supposed that shopkeepers will go in much dread of the law if the only individuals who can be punished when illegal sales are effected in their establishments are assistants who do not possess sufficient means to pay the fines imposed by the Courts. The maintenance of the Statute thus becomes increasingly difficult, and the only way out of the difficulty appears to be recognition as a seller of the person on whose behalf the sale is made, as well as the individual who actually hands the article over the counter.

A recent case under the Merchandise Marks Act puts the matter on a proper footing. The assistant of a provision dealer sold an American ham as Scotch, ignoring a notice sent by the proprietor to all his places of business to the effect that no hams were to be sold under any specific name or place of origin. The justices who first heard the case held that the defendant had not taken all reasonable precautions against committing an offence against the Act, and convicted him. An appeal was entered and heard before a specially constituted court in the Queen's Bench Division, and a lengthy judgment was delivered last week. In the course of this judgment, the Lord Chief Justice said it was obvious that, if sales with false trade descriptions could be carried out with impunity so far as the principal of a business is concerned, the Act would, to a large extent, be nugatory. He, however, conceived the effect of the Act to be to make the master or principal liable criminally (as he is already by law civilly) for the acts of his agents and servants in all cases within the sections dealt with, where the conduct constituting the offence is pursued by such servants and agents within the scope or in the course of their employment, subject to this—that the master or principal may be relieved from criminal responsibility where he can prove that he has acted in good faith and has done all that it is reasonably possible to do to prevent the commission by his agents and servants of offences against the Act. The result, therefore, was that the conviction was affirmed, and with costs.

This result is extremely satisfactory, and the judgment might possibly be quoted with advantage when a suitable case under the Pharmacy Act is heard. If, as seems not improbable, the principle should be upheld that not only the person who actually hands over scheduled poison is liable under the Act, but also the proprietor or proprietors of the business, there would appear to be some prospect even yet of doing much to check the spread of illegal trading in poisons. Of course, when a registered individual hands over the poison on behalf of a joint-stock company, the case is hopeless, but, apart from that, much good might, and apparently could be effected.

ANNOTATIONS.

The New British Pharmacopœia causes confusion and puts inspectors in a fix, according to the *Morning Leader*, a writer in which paper, probably for lack of war news or other stirring matter, has attempted to grasp the significance of the sweeping changes in the national medicine book. He goes rather astray at the outset by assuming that the Pharmacopœia contains the standards for all drugs, etc., kept for sale and dispensing purposes, but he is not so far wrong in suggesting that the appearance of the new edition has had all the effects of a cat amongst the pigeons as far as chemists are concerned. A food and drugs inspector, for the county of Middlesex, in the course of a conversation with a *Leader* correspondent, is reported to have said that the whole point with his class is to know when the old pharmacopœia ends, and the new commences, operations. Some chemists are said to have the new book, others haven't, and the inspector thinks it is very hard on those who, perhaps, a month ago, got in "a big stock of drugs made up to old standards," to find them illegal now. But inspectors have no need to worry on that ground, since the British Pharmacopœia is not a standard under the Sale of Food and Drugs Acts.

The Altered Strengths of many B.P. preparations, and particularly of potent remedies, are certainly causing some trouble to many pharmacists, who are puzzled to know exactly under what conditions they should dispense the new preparations in preference to the older ones. Undoubtedly, a prescription dated prior to the publication of the 1898 Pharmacopœia ought to continue to be dispensed as formerly, but at what point should the changed conditions take effect. On the one hand, it is urged that the new formulæ alone are now official, and that the new preparations should be dispensed in the case of all new prescriptions. But others contend that, inasmuch as many medical men have not yet had any opportunity of consulting the new Pharmacopœia, it would obviously be improper to supply the new preparations with which those prescribers are not yet acquainted. It is quite clear that, for some time to come, pharmacists who do much dispensing must be prepared to keep two distinct sets of preparations. The newer ones should invariably be supplied in the case of ordinary sales, but the dispenser must exercise his discretion in deciding which to dispense. He will rid himself of some measure of responsibility in the matter by intimating to all the medical men in his district that, after a certain date, he proposes to dispense the new preparations only in the case of new prescriptions, unless others are specially ordered, and if he can persuade prescribers as well as chemists in his district to agree upon a joint plan so much the better. Let the end of June, for example, be the selected date, and intimate that fact at once, whilst enclosing to each medical friend a copy of the *P.J.* synopsis of the changes in the B.P. formulæ. But little difficulty ought then to be experienced.

This Same Subject is touched upon by the *Medical Press*, which thinks there is obviously something wrong in a scheme which pitchforks a new pharmacopœia on to the medical and pharmaceutical public without any provision for a decent interval of time to elapse before it is to be acted upon. How, it asks, is the practitioner to find time all at once to familiarise himself with the multitudinous suppressions and alterations comprised in the new edition, and what ought the chemist to do with his present stock of drugs prepared in accordance with the previous edition? To

the chemist himself that problem ought not to be difficult of solution, as previously suggested. Some have already made known their intentions in the matter, and the *Medical Press* regards it as fortunate that several of the best known dispensing chemists have formally intimated their intention of postponing the adoption of the new formulæ, etc., except when specially enjoined, until Midsummer Day. Moreover, it expresses the belief that this example will be generally followed. That, however, we do not anticipate, the more especially as many chemists are already supplying the new preparations, but undoubtedly uniformity of procedure is greatly to be desired. The difficulty that arises in this connection should, of course, have been foreseen and provided against by the General Medical Council, but as matters now stand prescribers practically have the matter entirely in their own hands. It is essential, however, that they should be acquainted with the contents of the new Pharmacopœia, and if they will not purchase and read the book itself they should at least follow the advice given by our medical contemporary and digest one or other of the epitomes which, with commendable regard for their convenience, have recently been issued.

Professor Dewar is unfortunate in being so persistently and unfairly charged by implication with taking unto himself the fruits of other men's labours, and the reiterated suggestions of scientific piracy on Professor Dewar's part publicly thrown out by another distinguished experimentalist can only be described as being in the worst possible taste. If Professor Olszewski has liquefied hydrogen it ought not to be difficult for him to prove the fact, but a private letter to an acquaintance cannot well be accepted as satisfactory evidence of the authenticity of the alleged results, and a mere statement of the existence of such a letter is even less conclusive. For the present, therefore, and until overwhelming evidence to the contrary is forthcoming, Professor Dewar and his assistants must be regarded as the first persons who have been able beyond question to liquefy hydrogen, and probably helium also.

As Pointed out in a Letter published in the *Pall Mall Gazette* all the statements so often made in disparagement of the work of Professor Dewar are traceable to an assertion made rather more than two years ago by Professor Ramsay, to the effect that he had received the private letter referred to from Professor Olszewski, stating that he had obtained liquid hydrogen in a static condition. Professor Ramsay was then challenged to produce a document so strangely at variance with Olszewski's public claims, but he did not produce it, and has not produced it to this day. In fact, Professor Dewar said, at the meeting reported this week, that, great as is his gratification at obtaining liquid hydrogen, that would be still greater if he could see the letter he has been waiting more than two years for a sight of. Even this direct challenge failed to produce the document which has given rise to so many calumnious and abusive attacks, and as the writer in the *Pall Mall Gazette* observes, men of honour and men of sense may be left to draw their own conclusions.

The Register of Chemists and Druggists does not include the name of John Henry Williams, who pleaded guilty at the Central Criminal Court this week to a charge of uttering forged cheques. It is needless to say, therefore, that the daily newspapers erred in describing him as a chemist. Neither was Thomas Preston, who committed suicide last week, at Leytonstone, by means of prussic acid, a registered chemist. In like manner it will be found that most of the discreditable actions vaguely laid to the account of "chemists" have in reality been performed by other persons who are in no wise warranted to use the title wrongly assigned to them. Chemists and druggists in the respective districts should invariably write to papers publishing reports that are incorrect in this respect, asking that a disclaimer should appear.

"The Three Presidents' Reception" will be held at the Galleries of the Royal Institute of Painters in Water Colours, Piccadilly, W., on Tuesday next, May 24. The three Presidents are the heads of the Institute of Chemistry of Great Britain and Ireland, the Society of Chemical Industry, and the Society of Public Analysts, and they, together with their wives, are expected to receive and entertain a large and distinguished company. The time of the reception is 8.30 p.m.

The Municipal Technical Schools, Plymouth, have been officially recognised by the Conjoint Board of the Royal Colleges of Physicians and Surgeons for their courses of instruction in chemistry, physics, biology, and pharmacy, so that the time spent in study at the schools will count as one "Annus Medicus" in the medical student's curriculum. It is in connection with the same schools that negotiations have been carried on for some time past with a view to the education of pharmaceutical students there.

The Use of Formic Aldehyde as a Disinfectant has been investigatedby Walther and Schlossmann (*Journ. für Prakt. Chem.*, lvii., 173), who find that the various methods employed work unsatisfactorily. All the usual methods dependent on the production of the vapour of formic aldehyde require a large volume of water vapour to prevent the formation of the solid polymer, paraformaldehyde, which is said to be the less active disinfectant. A glycerin solution of formic aldehyde, "glycoformal," overcomes this difficulty and satisfies all the requirements of efficient disinfection when sprayed from a suitable apparatus as devised by the authors. For a room capacity of 15 cubic metres 1 kilo. of "glycoformal" should be sufficient to destroy all pathogenic germs in half an hour. According to G. L. Taylor (*Amer. Journ. Pharm.*, 70, 195), the failure of many investigators to obtain satisfactory sterilisation with formic aldehyde is due not to its lack of germicidal power, but because the test organisms have not been freely exposed to its influence. This is best accomplished by employing loosely twisted threads of cotton which have been steeped in the pathogenic cultures, and then exposing the cultures on sterilised paper for six hours to the action of the vapours of the formic aldehyde. Drs. Park and Guerard have proved that formic aldehyde can be depended on to produce thorough surface disinfection, and that it does not affect metals or colours in any way, and that the cost is not greater than when sulphur is used.

Mr. Griffiths' Remarks at the Annual Meeting appear to indicate that not only is he unacquainted with Mr. Harry Jessop, but that he has not read the report of Mr. Jessop's remarks, upon which our note was based. Nothing in the nature of a "sneer" was printed in these pages, but Mr. Jessop had seen fit to adopt and give currency to a malicious and untruthful statement regarding the object of the Pharmaceutical Council in endeavouring to effect an alteration of the Bye-laws, as Mr. Griffiths will find on referring to the report published by a trade contemporary, and all that was done in the *Pharmaceutical Journal* was to show an individual's unfitness to pose as a critic of matters concerning which he apparently knew little, and that little imperfectly.

NOTICES OF BOOKS.

'A Synopsis of the British Pharmacopœia, 1898,' by H. Wippell Gadd (London : Baillière, Tindall and Cox. Price 6*d.*, or in cloth 1*s.*), has for its aim to show concisely in what way the new Pharmacopœia differs from the old, and also to furnish a complete synopsis of the former. It includes tables of the alterations, additions, and omissions, with explanatory notes, followed by a complete alphabetical list of all the drugs and preparations of the new B.P., giving their characters or strengths, doses (according to both the Imperial and metric systems), and other particulars. This list constitutes the bulk of the book, and must have involved a very large amount of labour in its compilation. Finally, there is an appendix, including tables of weights and measures, thermometric equivalents, atomic weights, etc. In compiling the book the author has had in mind the needs of medical practitioners, pharmacists and students, and though his book is later than other similar works in making its appearance, his labours will doubtless be suitably recognised.

'The Photographic Tourists' Guide' (London : Pharmaceutical Journal Office, 5, Serle Street, W.C. Price 4*d.*, post free) is a reprint of matter that has appeared in the Photographic Supplements published in connection with the Journal, together with other matter likely to prove useful to amateur photographers on tour. In view of the exceedingly large number of chemists and druggists who are engaged in the photographic trade, it has been thought that they would be glad to distribute a book of this kind, which will take up little room in the pocket, and yet provide the photographic tourist with all the information he usually requires when away from home. The book consists primarily of the concise gazetteer reprinted from the Journal, with a list of dark rooms and dealers in photographic materials in the United Kingdom and abroad, but there are also useful hints to photographic tourists, notes on exposure, a calendar with blank spaces for memoranda, exposure tables, etc. Single copies can be supplied by the publishers, at fourpence each, post free, and terms for quantities will be found in our advertising columns this week.

'Metric Equivalents of Imperial Weights and Measures, and Thermometric Equivalents (London : Pharmaceutical Journal Office, 5, Serle Street, W.C. Price 1*s.* 6*d.* net.) is a reprint of the tables that have been published in the Journal during recent months, but considerably extended ; the figures have also been carefully revised. The equivalents of the metric measures of length, mass, and volume are first given, with the necessary factors for converting them into Imperial units, then follow detailed equivalents of measures of length, and a series of useful conversion tables and rules. Equivalents of measures of mass and volume come next, and thermometric equivalents—in degrees Centigrade, Fahrenheit, and Réaumur—from −40° F. to 600° F.—complete the book, which is of a convenient size to lie on the desk for reference. At the same time the separate sheets—printed on one side only—are large enough to be suspended in the laboratory or dispensary, and in view of the fact that all formulæ in the British Pharmacopœia are now stated in terms of the metric system, every pharmacist ought to possess a copy of the tables.

'The British Pharmacopœia (1898) Formulæ and Processes' (London : Pharmaceutical Journal Office, 5, Serle Street, W.C. Price 4*d.*, post free), is now in its sixth edition. This edition contains several pages of additional matter, and the original notes have been revised and extended in places. No better or more readily comprehensible guide to the changes in the B.P. has yet been published, and both pharmacists and students will find it the best practical guide to that work. The additions render the book more suitable than ever for circulation amongst medical men by chemists or pharmaceutical associations, and as the price is merely nominal no one interested in the progress of medicine can afford to be without it. Early application should be made for copies before the book goes out of print, as it will probably do at an early date.

'Notes on Pharmacy and Dispensing for Nurses,' by C. J. S. Thompson (London : The Scientific Press, Limited, Southampton Street, Strand, W.C. Price 1*s.*), is the title of a slight work of about a hundred small pages, which constitutes one of the Burdett Series of popular text-books on nursing, etc. The chief object of the notes is defined to be the presentation to nurses, in simple language, of a description of the various methods employed in dispensing the medicinal agents they so frequently handle in the exercise of their calling. "Mishandle" might be suggested as a more generally appropriate term, but that is a point of comparatively slight importance compared with the suggestion that the manner of preparing remedies in everyday use should be of value to those who are called upon to administer them. For whilst the medical practitioner knows little about the preparation of the remedies he prescribes, the nurse needs to know less, and it is difficult to conceive of any good reason for assuming that matters should be otherwise. The art of dispensing, as we are told in the preface to this little book, is not an easy one to learn, and it is greatly to be regretted that the author should have gone out of his way to attempt to prove himself wrong in that respect. Nurses have a sufficiently wide field open to them without attempting to infringe upon the province of either the medical man or the pharmacist, and that being the case they will be better without the smattering of pharmaceutical knowledge that the most complete digestion of Mr. Thompson's notes can impart.

'Pharmaceutical Formulas,' by Peter MacEwan, F.C.S. (London : Offices of the *Chemist and Druggist*, 42, Cannon Street, E.C. Price 7*s.* 6*d.* net), is a book that fully justifies its sub-title of "A book of useful recipes for the drug trade." To quote the title-page, it comprises formulas for toilet preparations and specialties, preparations for the hair, dentifrices, perfumes, household and culinary requisites, beverages, antiseptics and disinfectants, inks, varnishes, confectionery, medicinal compounds, and many other preparations related to the art of pharmacy. But, it may be observed, it would pass the wit of man to devise, or even to test, any number of formulas for such a variety of purposes ! That may be, and the book under consideration yet prove the most valuable of its kind now on the market. A book of recipes, every one of which could be personally vouched for by the author, would be literally priceless, and is never likely to exist in a world where self-interest prevails as a matter of course. But trade journals nowadays require to furnish information on topics of all kinds, and from the multitudinous formulas published by the journal he so ably represents, Mr. MacEwan has selected a very large number with care and discretion. He has then conveniently classified them, provided a pithy and concise introduction to each section, and last, but far from least, he has rounded off the work of collation by annotating the formulas in a distinctly practical manner. The work involved in the preparation of the six hundred and seventy pages in the book must have been very great, and chemists who first resort to them for aid are not likely to require much further assistance

from other sources. Although the compiler is careful to disclaim the suggestion that the book is a treatise on practical pharmacy, the hand of the practical pharmacist is visible throughout, and whether it be the preparation of a skin lotion, tooth paste, effervescent drink, furniture polish, or some unofficial galenical preparation, no one is likely to delve in this mine of information without finding something at least approaching what he requires. And since, after all, the practical man expects to find little more than a hint in any formula that may present itself to him, the fact that one's exact requirements are not invariably met in a collection of formulas is not necessarily a reflection upon the value of that collection or upon the ability of its compiler. But the 'Practical Formulas' offered by Mr. MacEwan give much more than the mere hint in many, if not most, instances, and it is not surprising to learn that a second edition of the work is already in the press. It is in a spirit of pure selfishness that chemists who have not secured a copy of the first edition are advised to order a copy of the second, for the more frequently the pages of the book are referred to the greater will be the economy of space in the columns of the Journal which are now devoted to answers to correspondents. And, indeed, the book is very good, and therefore cheap.

'Applied Bacteriology,' by T. H. Pearmain and C. G. Moor, M.A., Cantab. (London: Baillière, Tindall and Cox, King William Street, Strand. Price 12*s.* 6*d.* net), is an introductory handbook for the use of students, medical officers of health, analysts and sanitarians, now in its second edition. The matter is conveniently arranged, has been thoroughly revised by expert hands, and ought to supply the needs of all those for whose use the book has been especially compiled. The introduction treats of the nature, structure, reproduction, etc., of bacteria and their resistance to physical influences. The apparatus used in bacteriological research and the preparation of nutrient media are considered next, then follow descriptions of the methods of bacteriological study. The spread of disease, immunity, bacterial toxins, and serotherapy next come in for their share of attention, after which separate chapters are devoted to very complete monographs on tuberculosis, leprosy, anthrax, typhoid, diphtheria, cholera, pyogenic organisms, erysipelas, gonorrhœa, glanders, syphilis, influenza, tetanus, malignant œdema, bubonic plague, pneumonia, relapsing fever, scarlet fever, smallpox and vaccinia, hydrophobia, malaria, actinomycosis, yellow fever, English cholera, autumnal and infantile diarrhœa, diseases due to parasitic fungi, protozoa in disease, and certain diseases of the lower animals and of plants. In each case a brief account of the discovery of the organism particularly associated with the disease is supplemented by descriptions of the most suitable methods of staining it or cultivating it on media. Fermentation and disinfection also receive due attention, as well as the bacteriological examination of water, filters, milk, air, soil, etc., and the concluding chapter is devoted to a summary of the characters of some commonly occurring organisms not previously described. The book is illustrated with some forty wood-cuts and about eighty coloured figures of preparations, cultures, etc. Regarding the practical value of the work, that is almost definitely vouched for by the publication of this second edition, but it may not be amiss to say that the enormous mass of material available has been carefully sifted, and that portion presented in the book judiciously selected. It is a concise guide, prepared by experts for experts, and the practical applications of bacteriology are probably as satisfactorily dealt with as is possible within the limits of a text-book of convenient size, such as the one under consideration is.

Pharmaceutical Transactions.

Midland Chemists' Assistants' Association.

This Association brought the winter session to a close on the 11th inst., when a meeting was held at the Exchange Restaurant, Birmingham. Mr. F. J. Walton, the recently-elected President, took the chair. The evening was devoted to a discussion on

The New Pharmacopœia,

upon which Mr. F. H. Alcock had already addressed the members (see *Pharmaceutical Journal*, April 30, p. 422).—Mr. Alcock was again present, and opened the discussion by showing several standardised preparations new to the present Pharmacopœia. On the subject of parts in the new B.P., he pointed out that in the table of solubilities it was not made clear whether fluid parts or parts by weight were intended. In some instances it would make an important difference in the figures quoted if parts by weight were intended. With regard to liquor concentratus he had communicated with Mr. Bird, who was of opinion that parts in this case meant parts by volume. Some authoritative statement on this subject was desirable. On the subject of animal products he expressed the opinion that the average pharmacist, unfamiliar with the mode of collection, would have considerable difficulty in obtaining what was necessary to meet the new requirements, and would have in most cases to rely upon the wholesale houses.—Mr. Alcock next spoke of the unusually large quantities used in testing the purity of substances, quoting as instances sulphate of quinine and chloroform, in which case a large quantity had practically to be wasted in ascertaining their purity. Although precise directions were given for ascertaining the purity of the official preparations and chemicals no mention was made of the purity of the re agents to be used in testing, and in recent times especially he had frequently found these wanting in average purity.—The Chairman advised members to confine the discussion to the particular points raised by Mr. Alcock, and invited remarks from any gentleman who had had practical experience in the new preparations. He alluded to the omission of so many decoctions and the question of parts as calling for comment.—Mr. R. D. McAllister pointed out that the Pharmacopœia of 1885 did not take effect for about a year, whereas the present new one had been sent flying over the heads of pharmacists and their students without any warning.—Mr. E. Osborne said he had been informed from Durham, where he was presenting himself in September for examination in materia medica and therapeutics, that the new B.P. having become authoritative, students would be questioned upon its contents. This differed from the decision of the pharmaceutical authorities, and seemed to him to savour of cram. He asked why lin. ammonia contained almond oil, and why liq. ammon. acet. fort. and liq. ammon. cit. fort. had been deleted. This was used by nearly all the medical practitioners and chemists he knew, the practice being to dilute it as required for weaker preparations.—Mr. F. Foster, replying to the point raised about almond oil, said it made the preparation more fluid.—Mr. E. W. Mann, who had prepared tincture of orange from the new B.P., said he found it contained a greater quantity of essential oil, and did not therefore mix clear in water. When used for making syrupus aromaticus it remained cloudy. Referring to the subject of the thyroid glands, he said it was necessary to very carefully examine them before using them for a liquor. He mentioned that out of seven or eight thousand recently examined, 20 per cent. showed smaller or larger cists containing a whitish matter, and had, therefore, to be rejected. Tincture of orange did not mix clear with water, and the syrupus aromaticus prepared with it was distinctly opalescent, and of course could not be filtered without injury to its aromatic properties. Hyd. oleas now contained soap as well as oleic acid, and gave a fatty mass. The B.P. ordered it to be dried, but it darkened at the least attempt to heat it. Liq. hyd. perox., one would suppose from a glance at the B.P., required the 20 volumes of gas when estimated, but this was not the ordinary 20 volumes solution, as 10 volumes came from pot. permang., making the solution simply 10 volumes. With regard to ung. paraffin., unless the B.P. paraffinum molle was kept within the range of the melting point given, the ointment would be harder than it should be, but the paraffin. molle at a lower melting point gave a very useful ointment base. Syrup of glucose was now used as a pill excipient instead of treacle, but it would

be found, unless a special quality of glucose was taken, that it would be a variable product. On the question of parts, he thought an authoritative statement should be made by the compilers of the B.P.—Mr. J. Selby asked why the sarsæ was heated to 71° in liq. sarsæ co. conc. He could see no necessity for changing the name when the two preparations were almost identical.—Mr. R. L. Davis was of opinion that the difference between the old tincture of orange and the new would be very considerable as regards price. There would also be some trouble in the dispensing of nux vomica, as the new tincture would give a precipitate with water.—Mr. Cox referred to the mercury oleate as a very troublesome preparation to make, and very difficult to thoroughly dry. It was difficult to separate the precipitate from the water. Zinc oleate was much clearer and easier to make, and with care could be dried and powdered without any trouble. Lin. tereb. now made a very nice preparation. He hoped that if kept for any length of time it would not turn into a jelly, as it was apt to do under the 1885 Pharmacopœia. The almond oil in liq. ammon. made the production more creamy and fluid than when olive oil was used alone. Many who tried to make mist. olei ricini according to the 1885 Pharmacopœia failed, but now they might congratulate themselves that the trouble was over, as the compilers of the new B.P. had given them a form that was in every way satisfactory. It was a nice creamy preparation, pleasant to look at. Tinct. chlorof. et morph. was now a clear bright green tincture, stronger than under the 1885 B.P., and not at all like chlorodyne, which the work tried to imitate. But the concentrated liquors were a puzzle. It was difficult to say whether they were to be used diluted when infusions were ordered, or whether they constituted preparations of themselves. Again, to what proportions were they to be diluted? The Preface said compounds had been obtained to resemble the liquors which manufacturers had termed concentrated decoctions. In the majority of cases manufacturers made them 1 to 7, that was, 1 fluid part added to 7 parts of water was equivalent to 8 of the fresh infusion. The B.P. quantities worked out 1 to 9 to make 10, and he thought the compilers ought to give the dispenser something to guide him. He took it, when infusion extract was ordered, a fresh one must be used, and that no dilution of the concentrated liquor ought to be allowed as a substitute. He thought syrupus limonis ought to make a nice preparation, and he wondered why mist. cretæ did not contain an even quantity of powder to the ounce. The old mist. of Pecini was a very difficult preparation to make; the new one was much easier and gave a more satisfactory result. Mr. Cox also referred, in conclusion, to the alterations in the formulæ of black wash, which now contained some tragacanth to suspend the precipitate and cause it to adhere more firmly.—Mr. T. H. Thomas inquired whether there was much difference between the therapeutic action of Socotrine and Barbados aloes, because he had been given to understand that there was considerable difference in the cost. No mention was made of the fact that a little chloroform in the pill of phosphorus would prevent the phosphorus from taking fire. He asked, why was the water acidulated into which the tincture was poured in the preparation of podophylli resina; why saffron should be omitted from pulvis cretæ aromaticus; and what was meant by washing out the sulphate in the preparation of ung. zinci oleatis.—Mr. E. Osborne followed with a demonstration of the action and use of the thyroid gland, and showed where it was found in the sheep.—Mr. Alcock, summing up the discussion, said the reason for the temperature of 71° in the preparation of liq. sarsæ co. conc. was to prevent any starch being dissolved, and for the same reason the root was to be cut transversely and not longitudinally. The sulphate referred to in the preparation of ung. zinci oleatis was sulphate of sodium formed by the reaction of the oleate of sodium and zinc sulphate. The concentrated liquors were not to be used when infusions were ordered. He did not think they were to be compared with fresh infusions. The expense of tr. aurantii would be much greater than the old preparation. In fact, the new Pharmacopœia would tend to make things dearer all round. He did not think that liq. sarsæ co. conc. should be sold for dec. sarsæ co. conc.—The discussion then ended.

COMPLIMENTARY DINNER AT FALKIRK.

On Thursday, May 12, Mr. David Murdoch, pharmaceutical chemist, High Street, Falkirk, was entertained by a large number of local gentlemen to a complimentary dinner in the Crown Hotel, on the occasion of his retirement from business, which he has conducted for fifty-one years, and his departure to take up his residence in Edinburgh. Provost Weir presided, and Mr. Wilson, Town Clerk, acted as croupier. An apology for absence was intimated from Mr. J. Laidlaw Ewing, Chairman of the North British Branch Executive, who said Mr. Murdoch was one of the oldest members of the Pharmaceutical Society in Scotland. He took an active interest in the formation of the North British Branch, now nearly fifty years ago, and as a member of Executive and as local secretary for Falkirk during the last thirty years he had rendered great service to the Society.—Mr. Wilson, Town Clerk, proposed the toast "Our Guest."—Mr. Murdoch, in responding, said the original occupant of his shop was Mr. Robert Walker, who was in business for fifty years, and for thirty-five years in his shop, which had thus been an established pharmacy for ninety-seven years. He wished he (Mr. Murdoch) could have stayed a few years longer to complete the century, but health considerations had induced him to give it up, and it was now to be carried on by Mr. R. G. Drummond. When Mr. Walker was the occupant of his shop ninety-seven years ago things were different to what they were now. The old gentleman used to lock his shop-door in the forenoons and walk down to his garden in the Howgate and work away at his herbs. The public knew that if they did not find the "old lad" or "the laboratory," as they called him, in the shop, they would find him in his garden. He was always looked upon as a very skilled person, and numbers of people from Slamannan and elsewhere used to come to Falkirk and ask for "the old lad, the laboratory."—Other toasts followed, songs were rendered by members of the company at intervals, and the proceedings throughout were of a highly interesting and enjoyable character.

HALIFAX AND DISTRICT CHEMISTS' ASSOCIATION.

A meeting of this Association was held on Thursday evening at the Old Cock Hotel. There was a good attendance of members.—The President, Mr. G. M. Cobb, was in the chair.—The Hon. Secretary, Mr. H. C. Brierley, read a letter from Mr. Glyn-Jones (see *Pharm. Journ.*, last week, p. 468).—In the discussion which followed, Mr. H. W. Seely, Vice-President of the P.A.T.A., said that the chemists of this country had the remedy in their own hands by simply joining the P.A.T.A. and letting the big manufacturers see that they were in earnest. There was no doubt but that the P.A.T.A. scheme was the best that had ever been introduced. Messrs. Swire, Vice-President, Bottomley, C. Fielding, Patchett, and others took part in the discussion. A sub-committee was formed, consisting of Messrs. Cobb—the President—Seely, Dixon, W. S. Thompson, Tiffany, and H. C. Brierley, Hon. Secretary, to meet once a month to discuss P.A.T.A. matters.—Permission was given to the P.A.T.A. to use the name of the Association on their stationery.—Mr. Tiffany drew the attention of the meeting to the fact that Munyon's had put up the price of their preparations, alleging that it was done to prevent cutting. This position was held to be illogical, and dissatisfaction was expressed by the members at Messrs. Munyon's proceeding.—The Secretary was instructed to write on behalf of the Association to the Chemists' Aërated Waters Association, asking them to engrave their name on the glass of the syphons, thus lessening the chance of their being lost.—The new Pharmacopœia was then discussed.—The question was raised by the Secretary as to the length of time allowed to chemists in order that they might clear off existing stocks of old B.P. preparations without pecuniary loss.

TUNBRIDGE WELLS AND DISTRICT CHEMISTS' ASSOCIATION.

The above Association was successfully started on May 5, when the first annual dinner was held at the Castle Hotel, Tunbridge Wells. A representative gathering was present, including Messrs. Booth, Chatterton, Dunkley, Gough, Gower, Green, Harris, Hobbs, A. Nicholson, Ogle, Pearmund, Robinson, Rogers, Sells, Tute, and Tweedy. At the conclusion of the dinner the toast of "The Queen and Royal Family" was loyally responded to. Mr. R. Sells next proposed "Success to the Tunbridge Wells and District Chemists' Association," to which Mr. R. A. Robinson responded. "The Pharmaceutical Society" was given by Mr. Dunkley, and Mr. A. E. Hobbs (local secretary) replied. Mr. A. Nicholson proposed "The Medical Profession," and Mr. H. Harris responded on their behalf. The "President of the Local Association" (Mr. R. A. Robinson) was proposed by Mr. Ogle. A most enjoyable evening was spent, songs and recitations being ably rendered by Messrs. Booth, Gough, Rogers, and Hobbs, whilst Mr. Pearmund presided at the pianoforte. The officers of the Association were elected by

ballot immediately before dinner, and are as follows:—Mr. R. A. Robinson (President), Mr. G. Cheverton (Vice-President), Mr. O. Rogers (Treasurer), Mr. A. E. Hobbs (Secretary), and Messrs. Gower, Gough, and Ogle (Committee).

MEETINGS OF SCIENTIFIC SOCIETIES

ROYAL SOCIETY.

At a meeting of the Royal Society held on Thursday, May 12, Lord LISTER, F.R.C.S., D.C.L., in the chair, Professor Dewar, F.R.S., communicated a preliminary notiec of the fact that he had for the first time succeeded in accomplishing the

Liquefaction of Hydrogen and Helium.

It will be remembered that these two gases have until now defied all attempts which have been made to liquefy them. It is true that in 1895 Professor Olszewski momentarily obtained indications of the liquefaction of hydrogen, but was baffled in his attempts to obtain even a small quantity of it in the form of a coherent liquid. His method consisted in subjecting hydrogen to great pressure, and the cold produced by boiling liquid oxygen *in vacuo*. By this means a temperature of −211°C was reached, and by suddenly relieving the pressure and allowing the hydrogen to expand, Olszewski observed the indications of liquefaction referred to. He was able, however, to determine approximately the critical temperature (−233°C) and the boiling point (−243°) of hydrogen and came to the conelusion that the critical point of helium is below −233° C., and its boiling point below −264°. These determinations have, however, generally been considered to have been theoretically determined, and until last week it seems highly probable that hydrogen and helium remained unliquefied. In the course of his remarks Professor Dewar recalled the fact that in 1895 he described an apparatus to produce a jet of hydrogen containing liquid, showing how such a jet might be employed as a means of cooling substances below temperatures which can be reached by the aid of liquid air. All his attempts to liquefy the hydrogen were unsuccessful, but up to the present no other investigator has been able to press the investigation further with any degree of suecess. As the apparatus mentioned worked well, the professor had caused to be constructed a larger plant on the same plan, adding to it special arrangements for the liquefaction of hydrogen. The apparatus took a whole year to build and perfect, and after many trial tests followed by defeat he started on May 10 to cool hydrogen down to −205° C., allowing it to escape continually under a pressure of 180 atmospheres from the nozzle of a coil of pipe at the rate of ten to fifteen cubic feet per minute. As it escaped it was conducted directly into a vacuum vessel doubly silvered and of speeial construetion, surrounded by a spaee which was kept below the temperature of −200° C. These elaborate precautions were successful, for liquid hydrogen began to drop from this vacuum vessel into another, doubly isolated by being enclosed within a third vessel, and in five minutes 20 C.c. of hydrogen were collected. Had a sufficient supply of hydrogen been available, Professor Dewar thought he could have obtained a whole pailful of the interesting liquid. As it was, the hydrogen jet quickly beeame frozen up, owing to the solidification of air inside the pipes. The yield of liquid hydrogen was about 1 per cent. of the gas taken. Repeating this operation on May 12, 40 C.c., were collected. The Professor contented himself with mentioning a few characters and properties of the liquid obtained, reserving a more complete description of them for a future communication. Liquid hydrogen, as obtained above, is a colourless liquid, showing a meniscus as distinct as that of water; its refractive index and dispersion are high, and it shows no absorption spectra. A piece of glass tubing was sealed at one end, and this end was immersed in the liquid. Abundance of solid air immediately collected inside the glass tube. A sample of helium most carefully prepared from the gas from the King's Well at Bath was immersed in the liquid hydrogen, when the helium at once appeared as a liquid. Much interest must naturally centre round this experiment, because it will be remembered that there appeared in the Cracow Academy Bulletin of 1896, a paper by Olszewski, announcing a research on the liquefaction of helium. Olszewski considered helium might possibly prove to be a permanent gas, considering that it is much more difficult to liquefy than hydrogen. About that time Professor Dewar suggested that they might prove to possess about the same degree of volatility, just as is the case with oxygen and fluorine. Passing on to the last property of liquid hydrogen that has so far been determined, the lecturer remarked that the density of the liquid hydrogen must be in excess of the theoretical values, viz., about 0·18 or 0·12, deduced respectively from considerations respecting the atomic volume of gaseous compounds and the limiting density found by Amaget for hydrogen gas under infinite compression. Many years ago the professor himself had determined by experiment the density of hydrogen in palladium at 0·62 for the combined substance. It remains to be proved what is the real density of liquid hydrogen at its boiling point. But the boiling point has not yet been determined with accuracy. In conclusion, and speaking more generally, Professor Dewar went on to say that all the so-called permanent gases have now been condensed by the aid of manipulative skill at atmospheric pressure in spite of doubts on the subject expressed by so renowned a physicist as Clark Maxwell. The fact that at last we have arrived at a temperature within 20° or 30° of absolute zero opens up quite a new field to scientific inquiry and investigation, for the problem of the near future will be to find out the properties of matter at absolute zero. It is historically interesting to note that Faraday in 1823 liquefied the first gas, viz., chlorine. Sixty years later air was liquefied by Wroblewski and Olszewski, and now in 1898 the last two gases to resist liquefaction, viz., hydrogen and helium, are obtained as astatic liquids. Assuming, in a thermodynamic sense, the gap bridged over between the liquefaction of chlorine and air to be the same as that between the liquefaction of air and hydrogen, we may take it as an index of the rapid rate of scientific progress at the present day in that the latter was accomplished in one-fourth the time required by the former. But this result must have been long delayed but for the engineering skill which Mr. Lennox has brought to bear on the problem, together with the manipulative ability and loyal perseveranee of both Mr. Lennox and Mr. Heath.

In the discussion that followed, Sir William Crookes, Sir J. Crichton Browne, Sir Edward Frankland, Mr. Ludwig Mond and others expressed their admiration of Professor Dewar's achievement. They all concurred in congratulating him and his assistants on this fine piece of work. Like Alexander, said Sir Edward Frankland, there remained no worlds for him to conquer. Lord Rayleigh testified to having seen the first droppings of this interesting liquid, and said that, from the little he had seen of it, there was no doubt in his own mind that the liquid was hydrogen.

Professor Ramsay questioned the purity of the sample of helium operated upon, and mentioned that, in 1895, Professor Olszewski had written him a personal letter, conveying the information that he had obtained liquid hydrogen. It would be interesting if Professor Dewar corroborated the determinations of critical and boiling points made by Olszewski. In reply Professor Dewar warmly repudiated the suggestion that hydrogen had been liquefied by Olszewski, and called upon Professor Ramsay to produce the letter in public.

A cordial vote of thanks to Professor Dewar was then proposed by the President, and heartily accorded by the meeting.

ROYAL INSTITUTION.

On Thursday, May 12, the Right Hon. Lord RAYLEIGH, M.A., D.C.L., LL.D., F.R.S., Professor of Natural Philosophy at the Royal Institution, gave the first of a series of three lectures on

Heat.

Lord Rayleigh proposed to consider heat in its relation to material bodies, leaving to text-books the subject of radiant heat. In passing, he observed that the term radiant heat is open to objection; it is rather energy of radiation, which when absorbed, becomes heat. Among the various theories that have from time to time been put forward as to the nature of heat, none has retarded progress so much as the theory of "caloric." It is difficult to say to whom this theory is due; no doubt the French mathematicians, Fourier and Laplace amongst the number, and many of the great chemists were largely responsible for its development. It is certain that no physicist of the first rank has looked on the caloric theory with favour. Newton did not believe in it, Rumford and Davy looked upon it with disfavour, and Young spoke of it with sarcasm. The theory that is now very generally held presupposes that the molecules of

a body, being set in motion, cause the phenomenon of heat. The motion of these particles is invisible, since neither the body as a whole nor any part of it can be seen to move. From these preliminary remarks as to the nature of heat the lecturer went on to describe some of its properties and the effects produced by heat on certain material substances. Unlike electricity, heat does not readily lend itself to accurate experimentation ; this is due to its relatively easy conduction through materials of every kind. No substance is impermeable to heat, though some offer more resistance to its passage than others. There is less difference between good and bad conductors in respect of heat than is the case with electricity. Hence heat cannot so readily be isolated. Among so-called poor conductors of heat may be cited paper and wood. Many interesting problems have been solved dealing with the relation of heat to solid bodies, such as a ball of copper. Thus provided the temperature remains constant and the temperature at the surface is known, it is possible to calculate the temperature at any point of the interior. Again, it has been proved that the extremes of temperature always lie on the surface of a conducting body ; therefore no point of the interior can be so hot as the surface of a hot body nor so cold as the surface of a cold body. An experiment (a modification of that originally devised by Sir W. Grove) was shown illustrating the fact that a given volume of hydrogen cools a strip of heated platinum foil more rapidly than does the same quantity of air. An electric current was passed through a piece of platinum foil contained in the centre of a glass globe filled with air. The platinum soon became red-hot. The air was removed as thoroughly as possible by means of a pump and its place taken by hydrogen gas at the same pressure. On passing a current of the same strength it was apparent that the platinum became less hot. This is due to the higher conductivity of hydrogen. Passing on to the question of registration of temperatures, it was demonstrated that the hand alone is capable of appreciating a difference of 1°. It is humiliating to think how comparatively small an alteration of temperature affects the human body prejudicially. The various forms of thermometer were then described and discussed, especially air thermometers for registering temperature at constant volume and at constant pressure. Inasmuch as in using air thermometers we measure the volume of the residual air, it follows that absolute zero cannot be registered by means of this instrument. The law of Boyle must not be pressed too far. An apparatus was described for the registration of temperature which depends on the fact that the electrical resistance of a coil of platinum wire varies directly with the temperature. The thermo-electric junction method was commended for use in furnaces at high temperatures, on account of its wide range and high degree of accuracy. The well-known experiment was performed in which an electric current is passed through a long piece of platinum wire stretched taut between two fixed points. The heat developed causes the metal to expand, and it drops to a considerable extent. The development of terrific forces by the prevention of expansion of various materials and the many applications of this important principle next received attention. The original development of winds was traced to heat, since the sun's rays initiate the upward current of heated air, its place being taken by cold air. Winds are not only horizontal ; vertical winds are very prevalent in some parts. This accounts for the sustained flight of birds, which apparently float in an almost passive manner in the air. The lecturer had spent many hours during last winter watching the flight of birds in India. He noticed that they generally chose a place to windward of some large obstacle, where they were certain to find upward currents of air, because winds beating against an object strike upwards in order to surmount it. Birds, therefore, invariably place themselves in such a position as best enables them to avail themselves of the vertical currents. Lord Rayleigh, in conclusion, pointed to the support given to the above-mentioned theory of heat by the kinetic theory of gases, and mentioned that the only difficulties in the way of its entire acceptance result from considerations with regard to the different specific heats of certain elements at varying temperatures.

On Friday, May 13, Professor W. A. Tilden, D.Sc., F.R.S., gave a lecture on

Recent Experiments on Certain of the Chemical Elements in Relation to Heat.

Professor Tilden confined his attention to the consideration of the specific heats of elements, and discussed their behaviour in regard to the law enunciated by Dulong and Petit, which reads as follows in the *Ann. Chem. Phys.*, 1819: "Les atomes de tous les corps simples ont exactement la même capacité pour la chaleur." In the first place, out of consideration for those of his hearers who were unfamiliar with the subject of specific heat, the lecturer described and demonstrated, in the simplest manner, the nature of specific heat. Thus, repeating Tyndall's well-known experiment, three balls, made of copper, tin, and lead respectively, were transferred from hot oil to a flat cake of wax. They melted their way through in the order given. The same balls placed in water heated it to different temperatures, copper communicating more heat than tin, and tin than lead. Each melted a different weight of ice, in the same order. Again, when placed in a vacuous space it took different periods of time for them to cool down from a given to a lower temperature. By expressing these proportions in figures and referring them all to water as unity, we obtain numbers which are known as specific heats. Adverting for a moment to the history of the development of this subject, it was mentioned that Lavoisier the chemist, and Laplace the mathematician and physicist, about the year 1720, were probably the first to take it up. It was they who invented the first ice calorimeter, but owing to the fact that the atomic theory of Dalton had not been formulated, they were unable to leave any very definite results. Thirty years later Dulong and Petit devised the method of mixture for determination of specific heats. One of the first problems that they attacked and solved was this: Do bodies in cooling, say from 200° to 100°, give out the same amount of heat as in cooling from 100° to 0°? It was found that the value generally increases slightly with higher temperatures. Their method of cooling led to the discovery of the law which bears their name. In this connection it is interesting to note that in published papers of their own time one finds the names reversed, *i.e.*, Petit and Dulong, not Dulong and Petit. They found that on multiplying the observed specific heat of an element by its atomic weight in most cases an approximately constant number was obtained. Twenty years later Regnault investigated this subject. He condemned the method of cooling for the determination of specific heats of solids, and preferred the method of mixture. His memoir on the subject will remain for all time a model of precision. But one great defect marred all his work, and, to his credit be it said, this was due to no fault of his own ; the elements he worked on were not in an absolutely pure condition. Modern methods of purification of substances were yet unknown. Investigators cannot be too particular in starting with pure substances in determining physical constants. After a lapse of thirty-five years Hermann Kopp investigated and discussed at great length the law of Dulong and Petit, but his researches lose part of their value on account of the fact that his methods were less accurate than those of his predecessors. In 1870 Bunsen invented his ice calorimeter. He investigated this subject, not to prove the specific heats of elements, but to justify the method of determining them. Many scientific inquirers have asked the question, Is the law of Dulong and Petit strictly valid in the case of metals, leaving out of the question boron, silicon, carbon, beryllium, and most non-metallic elements? Kopp considered that it was only an approximation to the truth. Though he was probably correct, Dr. Tilden thought his conclusions were based on inconclusive evidence, inasmuch as the atomic weights were not known nearly so accurately as they are to-day, through the careful investigations of Stas and Dumas. The lecturer next discussed those variations of the physical condition of elements that may tend to cause inaccurate determinations of the two factors entering into the equation which tests the law in question. It is essential that these two factors, viz., the atomic weight and the specific heat, should be precisely determined, in order to prove or disprove the law. Among the variations just referred to may be mentioned the unequal distance that separates different metals from their melting point. This was demonstrated by taking balls composed respectively of tin, lead, bismuth, and an alloy of these three metals. On immersing these four substances in water it was noticed that the alloy fused immediately. It follows from this that the fusible metal at normal temperatures is in a different molecular or atomic condition from that of the elements themselves. The influence of change of temperature on the molecular condition was next shown in the case of platinum. It is infusible in the blow-pipe flame, and requires the heat produced by the admixture of oxygen with the coal gas in the blow-pipe flame to fuse it. At ordinary temperatures no amount of hammering will cause two sheets of platinum to weld, but the application of a moderate heat at once enables the operator to weld the metal with the assistance of a moderate application of

pressure. In this instance, at a temperature below the melting point of the platinum, a change has been induced in the relation of its ultimate particles to one another. In the case of platinum, however, difference of temperature causes but little variation in specific heat. A copper wire, coated with silk, was stretched taut between two supports, and heavily weighted. On bringing near it a hot iron, the wire stretched and finally broke in two. It is known that for variations in temperature between, *e.g.*, 100°, 200°, and 300°, copper shows slightly different specific heats. It follows that, though the relative distances of metals from their melting point affects many of their physical properties, yet only slight variations of specific heat for the same element are apparent. Therefore the relative distance of a metal from its melting point will not greatly affect the product of the specific heat into the atomic weight. Another factor, allotropy, was mentioned, which in some cases might affect the equation. It is well known that carbon, sulphur, phosphorus and other non-metallic elements assume allotropic modifications under different conditions; consequently their physical properties, *e.g.*, specific heat and melting point, are considerably modified. This phenomenon is rare in metals. Bunsen determined the specific heat of two varieties of tin, one normal, the other after exposure to a low temperature during several months of an exceptionally cold winter; he found the specific heats were respectively 0·0559 and 0·0545. There is considerable difficulty connected with the determination of some metals; an example was mentioned an alloy of silver and zinc made by Messrs. Haycock and Neville, of Cambridge. It possesses a superficial red colour, which disappears on exposure to the heat of a calorimeter. It cannot be said, however, that allotropy has much to do with the divergence of all the common metals from strict compliance with the aforesaid law. Kopp came to the conclusion that each element, when sufficiently removed from its melting point, has a definite specific heat which is but little affected by alterations in its ordinary physical conditions. The only way open to a sure test of the validity of Dulong and Petit's law is to determine with absolute exactness the values which enter into the equation, viz., the atomic weight and specific heat of one or two elements. Professor Tilden had entered the field at this point, and, by taking two metals closely related as to melting point, etc., in as pure a condition as it is possible to obtain them, he determined and compared their specific heats. Nickel and cobalt were taken in the first place, since their atomic weights (approx. 58 and 59) differ only by about one unit. Next gold and platinum were investigated in the same way, then copper and iron. The apparatus employed was that devised by Mr. Joly and known as the Differential Steam Calorimeter. This method depends on the fact that if a cool body be placed in an atmosphere of steam, water condenses upon it until the temperatures of the body and the steam are equal. By weighing the water and noting the initial and final temperatures of the body, also the initial temperature of the steam, it is possible to calculate the specific heat of the body. The apparatus is excessively simple, consisting of a hollow copper drum in communication with a vessel in which water is boiled. The substances whose specific heats are required to be determined are hung, by means of delicate platinum wires passing through the top of the drum, from the lower surfaces of scale-pans belonging to a balance placed above the calorimeter. In order to demonstrate this method of determination aluminium and lead were taken. Each was hung in the drum containing steam and attached to the scale-pans, as already indicated. In a few seconds, on raising the beam, it was noticed that the aluminium had condensed on its surface more moisture than the lead. Professor Tilden's laborious investigations have led him to the conclusion that the law of Dulong and Petit is only an approximation, working, as he has done, with the greatest care, using the purest substances and the most refined modern appliances. Regnault and Kopp's divergences were due partly perhaps to differences in physical circumstances attending their experiments, but in a greater degree to the presence of impurities in the substances employed. At the same time he considers that these divergences found by all careful investigators are not wholly accounted for in this way, but are due to some extent to some inherent property belonging to the metals themselves. What this property is can only be a matter of speculation. It may be connected with the arrangement of the atoms of a molecule in space. An atom is supposed to be a highly elastic body vibrating in different directions. In order to impress this idea on the minds of his hearers the lecturer scattered some white sand on the surface of a blackened brass plate mounted on a stand. The plate was caused to vibrate by means of a bow, and attention was called to the particles of definite geometrical pattern that was instantly formed by the sand. In conclusion, Professor Tilden remarked that this subject requires, and is receiving, further investigation, because it may ultimately lead to important discoveries in regard to the nature of the chemical elements themselves.

BRITISH ASSOCIATION ARRANGEMENTS.

A meeting of the local Executive Committee of the British Association for the Advancement of Science and Art was held at the Literary and Philosophic Club, Berkeley Square, Bristol, last week, under the Presidency of Mr. J. W. Arrowsmith, when the secretaries reported that a number of gratifying replies had been received from the United States and Canada. Among those expected to be present at the meeting in September are the Mayors of Winnipeg, London, Ontario, Toronto, St. John, N.B., Victoria, B.C., Baltimore and Boston; Dr. John George Bourinot, Honorary Secretary of the Royal Society of Canada; the Hon. G. W. Ross, Minister of Education; Dr. A. B. Macallum, Principal of the University of Toronto; and Dr. H. T. Bovey, Principal of the McGill University, Montreal; the Presidents or other representatives of the Boards of Trade of Toronto, Winnipeg, St. John, N.B., Victoria, B.C., and Montreal; the President of the Harbour Board of Montreal, and the general managers of the Canadian Pacific and Grand Trunk Railways. The following arrangements are proposed for the week: On Tuesday, September 6, advantage will be taken of so many Trans atlantic visitors being in the city to open the Cabot Memorial Tower. The Cabot Committee will probably arrange for the banquet to be held the same evening. On Wednesday the work of the Association begins with the presidential address in the Colston Hall by Sir Wm. Crookes, F.R.S. On Thursday the various sections will meet for business. A biological exhibition will be opened by Sir John Lubbock at the Zoological Gardens, and in the evening there will be a conversazione at the Clifton College, to which invitations will be issued by the Chairman of the Council (the Lord Bishop of Hereford), the Head Master of Clifton College, and Mrs. Glazebrook. On Friday there will be a lecture in the Colston Hall by Professor W. J. Sollas, F.R.S. On Saturday a number of excursions will be arranged. The Mayor and citizens of Bath will entertain a party in that city. Expeditions will also be made to Stanton Drew, Cheddar, Raglan Castle, Aust, the Severn Tunnel works, and Bradford-on-Avon, and there will also be a river excursion to Avonmouth Docks and Chepstow. In the evening there will be a banquet in the Colston Hall, under the auspices of the Bristol Chamber of Commerce, and a lecture to working men by Professor E. B. Poulton, F.R.S., at the Young Men's Christian Association Lecture Hall. On Sunday the Dean of Bristol has arranged for a special service at the Pro-Cathedral. There will be a sacred concert and organ recital in the Victoria Rooms during the afternoon. On Monday there will be a second evening lecture at Colston Hall by Mr. Herbert Jackson, and on Tuesday a conversazione will be given by the Local Committee at the same place. On Wednesday the concluding meeting of the Association will be held, and a banquet will be given to a limited number of invited guests by the Master of the Society of Merchant Venturers. On Thursday excursions will be made to Tortworth, where the Earl of Ducie will entertain a small party of guests; to Nailsworth and Stroud, to the sources of the Bristol Water Supply, to Longleat, to Bowood, to the Swindon Engineering Works, and to Wells and Glastonbury, where the party will be entertained by the Mayor and Dean and Chapter of Wells, and the Mayor of Glastonbury. Communications had been made to Montreal and Toronto as to a long-distance excursion at the end of the meeting, and the representatives of both cities had selected Devonshire as the county they would most prefer to visit, and arrangements are now being made for an excursion through Devonshire *vid* Exeter, Torquay, Dartmouth, Kingsbridge, Plymouth, Tavistock, and across Dartmoor to Newton Abbot.

Halogens in the Hair.—According to Howald (*Zeitschr. fur Physiolog. Chem.*, 1897, 209), iodine or bromine may readily be detected in the hair of patients undergoing treatment with iodides or bromides. These elements form organic compounds which are localised in the hair; they are not found in normal hair.

MEDICAL JOTTINGS.

Mr. Victor Horsley, the most recently appointed of the direct representatives of general medical practitioners on the General Medical Council, takes his duties seriously. He furnishes another report to his electorate, alleging that, immediately after the new President had been appointed to the chair he committed a deliberate attack on the rights of individual members of the Council and perpetrated a new and very serious infringement of constitutional government. It would appear that after the November session last year Mr. Horsley commenced a research among the valuable archives of the Council to determine, first, the exact position of many legal questions concerning the practice by medical men of their profession; secondly, the methods according to which the legal work of the Council is conducted; and thirdly, the cost to the Council of such legal work. For several months—that is, up to April 7—he carried out these investigations; visited the office from time to time, inspected such documents as were necessary for the elucidation of different points, the Registrar producing the same when requested. In the course of this work he states that he became aware of certain grave matters, which he communicated without reserve to Sir William Turner, who was then the acting Chairman, and who was elected President on April 5. Upon April 7, Mr. Horsley suddenly received notice from the Registrar that he was instructed by the President to refuse any access to any document or financial paper belonging to the Council unless permission of the Executive Committee or of the Council had previously been obtained. Having ascertained that the Registrar was acting solely under the President's instruction, Mr. Horsley wrote to the President and asked him:—1. By what regulation of the Council or legal enactment he sought to debar him of his right and privilege to inspect the documents of the Council for the purpose of preparing work for the Council's session. 2. Whether he included all documents in his embargo; and 3. Whether he considered that he, like his colleagues, was similarly debarred from inspecting any document unless he had previously obtained the permission of the Executive Committee or Council. Instead of complying with Mr. Horsley's request the President declined to answer any of these questions, and Mr. Horsley states that he is taking steps to remove the hindrance to his work and contends that neither the Medical Acts nor the Standing Orders of the Council confer any such power as that which the President has claimed.

The Bentham Trustees have presented a fine oil portrait of Robert Brown, the celebrated Scottish botanist, to the Museum of the Royal Gardens at Kew.

Mr. Brudenell Carter, Consulting Ophthalmic Surgeon to St. George's Hospital, writes as follows to a contemporary respecting the accuracy of a statement to the effect that hospital surgeons and physicians commonly accept fees from wealthy persons accidentally admitted:—"In London, on account of situation, a large proportion of such accidental admissions come to St. George's Hospital; and, what I know to have been the invariable practice of the late Sir Prescott Hewett with regard to them has also, I believe, been the practice of his colleagues, and, so to speak, the unwritten rule of the institution. Sir Prescott not only refused to accept any kind of pecuniary recompense from such persons on account of services rendered to them during their stay, but he also absolutely refused to continue his attendance upon them as private patients after they were discharged. His reason was his determination to occupy the some position towards the richest as towards the poorest patients in the ward. But then he was wont to say, 'It is not enough for a surgeon to be honest, he must be chivalrous'; and the whole of his professional life was an illustration of the principle thus briefly enunciated."

The Late Sir Richard Quain's Will has been proved. He left personal estate to the value of £116,820.

Gouna.—Dr. Jas. Adam, of West Malling, communicates to the *Lancet* that he has found this drug invaluable in obstetric ulcerations of the mucous membrane when ordinary antiseptics, astringents, and other remedies had produced little or no effect. Gouna is the Hottentot name for a species of *Mesembryanthemum*, and said to be a domestic remedy used by the natives of the South African seaboard for a variety of ailments internally and as a lotion or gargle. Internally it is used in the sore mouth of children during teething, in diphtheria, chronic diarrhœa, scurvy, etc. Externally as a gargle in sore throat, bleeding gums, and ulceration of the throat and lips.

Fatal Mistake by a Dispenser.—The *Lancet* Australian correspondent writes that on March 7, Dr. S. P. Williams, of Fitzroy (a suburb of Melbourne), called at a druggist's shop and asked for a solution of sulphate of morphine for hypodermic injection, and then drove on to see a patient, whom he injected with the solution which had been dispensed. The doctor was in the habit of using morphia, and gave himself an injection also. He then went towards home, but was soon seized with violent convulsions and pain, and recognised that some mistake had occurred and drove to a neighbouring practitioner's house, arriving in a collapsed condition. He was found to be evidently suffering from the effects of atropine, and though he rallied somewhat, died the next morning. His patient was affected with similar symptoms, but not so severely, and fortunately recovered. The mistake arose through the druggist keeping morphia sulphate and atropine sulphate in similar bottles with written labels, and the dispenser who had taken the wrong bottle was committed for trial for manslaughter by the coroner at the inquest.

Pulex Irritans.—The *Lancet*, in replying to a correspondent as to the best way of exterminating the flea pest, points out that as a prevention thorough and systematic cleaning is the first principle. English lavender kept with clothes or in beds has been attended with good results, and paraffin acts similarly, but the smell is disagreeable. If the body be sponged with weak vinegar and water before retiring for the night, the irritation will often be allayed, and the application of sal volatile or salt and water is often remedial. A strong infusion of quassia freely used as a wash is said to cause swarms of fleas to vanish "as if by magic." A little chloroform poured on the clothes over the point of attack soaks through and permanently quiets *Pulex irritans*, and allays the irritation of the bite.

LEGAL INTELLIGENCE.

Calvert's Disinfectants.

The action of F. C. Calvert and Co. *v.* D. Calvert and Co. was heard before Mr. Justice Bigham, on Tuesday last in the Chancery Division of the High Court of Justice. The action was brought for an injunction to restrain the defendant, David Calvert, of Calvert Avenue, Shoreditch, from passing off his goods as and for those of the plaintiff's. The plaintiff's firm was established in 1859 by Mr. F. Crace Calvert, a chemist of Manchester, who introduced the use of carbolic acid as a disinfectant, and their goods were now known all over the world as "Calvert's." The defendant had lately started in business, and plaintiff alleged that he used the word "Calvert" in such a way as to be likely to deceive. For instance, he had copied the words "strongly recommended by the medical profession." During the examination of the first witness his Lordship interposed, and suggested that the parties might very well come to terms. The defendant had a right to trade in his own name so long as he did not pass off his goods as, and for, those of the plaintiff's.—On behalf of the defendant an undertaking was at once offered that he would only trade as "David Calvert," dropping the "and Co."—This undertaking was accepted, and it was arranged that neither party should advertise the fact that an undertaking had been given.—His Lordship made no order in the action.

Mr. Astbury, Q.C., Mr. John Cutler, Q.C., and Mr. Sebastian appeared for the plaintiff. Mr. Eve, Q.C., and Mr. Greenwood represented the defendant.

To Remove the Stains of Picric Acid.—Prieur states that a little lithium carbonate dissolved in water will at once remove the yellow stain of picric acid from the hands when applied with friction. If a pinch of the moistened carbonate be placed upon stains produced by the acid on linen, the colour will be discharged. Now that the acid is being widely used as a dressing for burns, this simple means of removing its stains will be useful.—*Rev. Med. Pharm.*, iv., 365

THE ALCOHOLIC MENSTRUA OF THE NEW B.P.

BY. F. C. J. BIRD.

The table on the opposite page gives the proportions of 56 o.p. spirit, of alcohol 90 p.c. (58o. p.), or of 60 o. p. spirit, and water (both by measure and by weight) required for the production of one gallon or one litre of the weaker alcoholic menstrua of the new Pharmacopœia. No pretension is made to minute scientific accuracy, the quantities being approximate only, but the range of error is well within that of the hydrometers and measuring vessels used in the laboratory. Proof strengths are given to the nearest half degree, avoirdupois weights to the nearest $\frac{1}{8}$ ounce, percentages within ·05, and specific gravities within ·0005 of the calculated figures. The alcohol has been kept rather above the theoretical quantity to compensate for the slight loss of spirit which usually occurs during the manipulation of alcoholic liquids. Considerable heat is developed on mixing alcohol and water, and when it is remembered that the temperature of the liquid may from this cause be raised by as much as 9° C. (16°·2 F.) the advantage of knowing the exact quantities which will, after contraction has taken place, produce a given volume at 15°·5 C. is very evident. In the second division of the table the proportions for mixing by weight to obtain a product of one gallon, or one litre, are indicated. During hot weather, and especially when dealing with a considerable bulk of liquid, it is found simpler, quicker, and more accurate to weigh the spirit and water instead of reducing to 15°·5 C. and measuring, and the method of mixture by weight, as far as the dilution of alcohol is concerned, has much to recommend it, and deserves to be more generally adopted. The 7 and 1 and 2 and 1 mixtures are used in the preparation of Ext. Bellad. Liq. and Liq. Senegæ Conc., respectively, and the 1 and 1 mixture for the adjustment of Tr. Opii.

The gallon quantities, divided by 8, give the proportions necessary for one pint of any of the alcohols, but for odd volumes it is more convenient to take the figures corresponding to the litre. For example, if 17 fl. ozs. of 70 per cent. alcohol are required, it is evident on inspection that 7·777 fl. ozs. of 90 per cent. alcohol and 2·416 fl. ozs. of water produce 10 fl. ozs., and multiplying by 1·7, the proportions for 17 fl. ozs. are found to be 13·22 fl. ozs. of 90 per cent. alcohol, and 4·1 fl. ozs. of water. In a similar manner the proportions for any other quantity may be calculated. All measurements of alcohol or water, for accurate results, must be conducted at 15°·5 C.

Apparent specific gravities of the official diluted alcohols at temperatures from 2° to 25° C. (35° to 77° F.).

Degreess C.	90 per cent.	70 per cent.	60 per cent.	45 per cent.	20 per cent.	Degrees F.
2	·8454	·9010	·9242	·9529	·9795	35·6
3	·8446	·9002	·9234	·9522	·9793	37·4
4	·8438	·8994	·9226	·9515	·9790	39 2
5	·8429	·8986	·9218	·9508	·9787	41
6	·8421	·8977	·9210	·9502	·9785	42·8
7	·8412	·8969	·9203	·9495	·9782	44·6
8	·8404	·8961	·9195	·9488	·9780	46·4
9	·8395	·8953	·9187	·9481	·9777	48·2
10	·8387	·8946	·9179	·9474	·9774	50
11	·8378	·8936	·9171	·9468	·9772	51·8
12	·8370	·8928	·9164	·9461	·9769	53·6
13	·8361	·8920	·9156	·9454	·9767	55·4
14	·8353	·8912	·9148	·9447	·9764	57·2
15	·8344	·8904	·9140	·9440	·9761	59
15·5	**·8340**	**·8900**	**·9135**	**·9436**	**·9760**	**60**
16	·8335	·8895	·9132	·9433	·9759	60·8
17	·8327	·8887	·9124	·9426	·9756	62·6
18	·8318	·8879	·9116	·9419	·9754	64·4
19	·8310	·8871	·9108	·9412	·9751	66·2
20	·8301	·8863	·9100	·9405	·9748	68
21	·8293	·8854	·9093	·9399	·9746	69 8
22	·8284	·8846	·9086	·9392	·9743	71·6
23	·8276	·8838	·9078	·9385	·9741	73·4
24	·8268	·8830	·9070	·9378	·9738	75·2
25	·8259	·8822	·9062	·9371	·9735	77

The figure in the fourth decimal place is not intended to be scientifically accurate, but merely seems to qualify the one preceding it.

So much depends upon accuracy in the prescribed strength of the alcoholic menstrua employed for certain pharmaceutical preparations, that in order to guard against error (especially when the method of mixture by volume has been adopted) it is often advisable to check the specific gravity of a diluted alcohol before use. This may be done either with a proof scale hydrometer or preferably with an instrument graduated to show degrees of specific gravity. Very small hydrometers 5 to 6 inches in length, with scales marked in single division, are now easily obtainable; they are fairly correct to within half a degree, and are the most suitable for the purpose. But before a true reading can be taken the liquid must either be brought to the standard temperature of 15°·5 or a correction made for temperature by observing the temperature and apparent specific gravity at the time of the experiment, and ascertaining the real specific gravity at 15°·5 C. by reference to the following table, which embraces the extremes of temperature likely to be met with in this climate.

Fifty-eight over-proof (more exactly 57·7 to 57·8 o.p.) will probably become the recognised proof strength for 90 per cent. alcohol, just as 56 o.p. was the common expression for the 55·4* o.p. rectified spirit of the 1885 Pharmacopœia. It is a matter for congratulation that "proof spirit" as a standard of alcoholic strength, with its complications of "over" and "under-proof" is now likely to become, pharmaceutically, but a memory of the past. However useful and convenient the proof system may be for the purposes of the British Excise, the simpler and more rational system of volume percentage adopted in the Pharmacopœia must commend itself to everyone as being better adapted to the requirements of pharmacy.

Authorities differ as to the exact percentage of alcohol in alcoholic liquids at given specific gravities, the discrepancy in the tables becoming more marked as the higher figures are reached: The tables by Dr. E. R. Squibb, Otto Hehner, and Dr. T. Stevenson are the most recent, but it is questionable whether any published table is absolutely accurate throughout. The specific gravities, according to Dr. Stevenson, of the B.P. diluted alcohols, were published in the *Pharmaceutical Journal* for April 16, p. 376. These are again given for comparison, side by side with the official specific gravities, Hehner's and Dr. Squibb's figures, with which latter the B.P. gravities are in almost complete agreement.

Per cent. by volume.	Sp. gr. (B.P. 1898).	Sp gr. (Squibb).	Sp. gr. (Stevenson).	Sp. gr. (Hehner)
90	·8340	·8340	·8338	·8339
70	·8900	·8900	·8899	·8898
60	·9135	·9135	·9135	·9131
45	·9436	·9434	·9436	·9436
20	·9760	·9760	·9760	·9762

In the preface to the new Pharmacopœia it is stated that alcohol (90 per cent.) is the name given to a mixture containing, in one hundred volumes, ninety volumes of ethyl hydroxide, and under spirit. rectificatus the further statement is made that the sp. gr. of such a mixture is ·834. The accuracy of this has been called in question, presumably on the ground that Stevenson assigns to 90 per cent. alcohol a sp. gr. of ·8338. But if the official percentage of 85·65 by weight (Squibb and Hehner), or Stevenson's 85 60, be accepted as correct, the true percentage by volume can be ascertained by multiplying either of these percentages by the specific gravity (·834) and dividing the product by the specific gravity of absolute alcohol, which is usually taken as ·7938. Dr. E. R. Squibb, however, in an elaborate and careful series of investigations (*Ephemeris*, May, 1884,) succeeded in obtaining an absolute alcohol of sp. gr. ·7935. On applying the above rule to both the official and Stevenson's percentages by weight, and using Squibb's gravity of ·7935 for absolute alcohol, the percentages by volume for the two values are found to be 90·02 and 89·97 respectively, either of which is within about three-hundredths per cent. of 90. The volume strength of ·834 alcohol as given in the Pharmacopœia is therefore correct and in accordance with the latest determination.

A NEW METHOD FOR THE DETERMINATION OF CASEIN.—Déniges gives the following method for determining casein in milk. 25 C.c. of milk, are mixed with 20 C.c. decinormal potassium mercuric iodide solution and 2 C.c. of acetic acid; the volume is made up to 200 C.c. and the liquid filtered. The mercury left in 100 C.c. of the filtrate is determined by adding 10 C.c. liquid ammonia and 10 C.c. decinormal potassium cyanide solution and titrating with decinormal silver solution until a persistent turbidity results. The quantity of casein corresponding to the decinormal silver solution used up is calculated by means of a table compiled by the author.—*Pharm. Centralh.*, xxxviii., 571.

* According to Dr. Thomas Stevenson s tables.

ALCOHOL CONVERSION TABLE, BY F. C. J. BIRD.

Menstrua, B.P., 1898. Per cent. by volume.	Per cent. Absolute Alcohol by Weight.	Proportions for Mixing **BY VOLUME.** from Spt. Rectificatus (56 o. p.), S.V.R., 56 o. p., at 15°·5 C.	Water at 15°·5. C.	from Spt. Rectificatus (Alcohol, 90 p. c.), Alcohol, 90 p c., at 15°·5 C.	Water at 15°·5 C.	from 60 o. p Spirit. 60 o. p. spt. at 15°·5 C.c.	Water, at 15°·5 C.	Proportions for Mixing **BY WEIGHT.** from Spt. Rectificatus (56 o. p.), S.V.R., 56 o. p.	Water.	from Spt. Rectificatus (Alcohol, 90 p.c.). Alcohol, 90 p. c.	Water.	from 60 o. p. Spirit. 60 o. p. Spirit.	Water.	Product. Sp. Gr., and Proof Strength at 15°·5 C. Product.	Sp. Gr.	Proof Degs.	Weight of one gallon.
Alcohol, 90 p.c.....	85·65	142¼ f.oz. 889 C.c.	* 18 f. oz. abs. alc. 112 C.c. abs. alc.			157⅞ f.oz. 985·9 C.c.	2⅝ f. oz. 16·4 C.c.	lb. oz. 7 7 744·9 Gm.	* 14½ oz. abs. alc. 89·3 Gm. abs. alc.			lb. oz. 8 2⅞ 817·7 Gm.	lb. oz. 2⅝ 16·4 Gm.	1 gall. 1000 C.c.	·834	58 o. p.	lb. oz. 8 5½
Alcohol, 79·65 p.c. {Alcohol, 90 p.c., 7 vol. Water, 1 vol.}	73·12	143¾ f.oz. 897·7 C.c.	18 f. oz. 112·6 C.c.	141⅗ f.oz. 884·6 C.c.	20⅛ f.oz. 127·1 C.c.	139¾ f.oz. 872·5 C.c.	22½ f. oz. 141 C.c.	lb. oz. 7 8½ 752·3 Gm.	lb. oz. 1 2 112·6 Gm.	lb. oz. 7 6⅛ 737·8 Gm.	lb. oz. 1 4⅜ 127·1 Gm.	lb. oz. 7 4 723·7 Gm.	lb. oz. 1 6½ 141 Gm.	1 gall. 1000 C.c.	·8645	40 o. p.	lb. oz. 8 10½
Alcohol, 70 p.c.....	62·50	126⅜ f.oz. 789·2 C.c.	36½ f. oz. 228·5 C.c.	124⅝ f.oz. 777 7 C.c.	38⅝ f. oz. 241·6 C.c.	122¾ f.oz. 766·8 C.c.	40⅝ f. oz. 254·1 C.c.	lb. oz. 6 10 661·5 Gm.	lb. oz. 2 4½ 228·5 Gm.	lb. oz. 6 7⅞ 648·5 Gm.	lb. oz. 2 6⅝ 241.6 Gm.	lb. oz. 6 5⅞ 640 Gm.	lb. oz. 2 8⅝ 254·1 Gm.	1 gall. 1000 C.c.	·890	22·5 o. p.	lb. oz. 8 14½
Alcohol, 60 p.c.....	52·15	108⅜ f.oz. 676·4 C.c.	55⅜ f. oz. 346·8 C.c.	106¾ f.oz. 666·6 C.c.	57¼ f. oz. 357·8 C.c.	105¼ f.oz. 657·3 C.c.	59 f. oz. 368·5 C.c.	lb. oz. 5 10⅞ 566·9 Gm.	lb. oz. 3 7⅜ 346·8 Gm.	lb. oz. 5 9 555·9 Gm.	lb. oz. 3 9¼ 357·8 Gm.	lb. oz. 5 7¼ 545·2 Gm.	lb. oz. 3 11 368·5 Gm.	1 gall. 1000 C.c.	·9135	5·5 o. p.	lb. oz. 9 2¼
Alcohol, 46·2 p.c. {Alcohol, 90 p.c., 1 vol. Water, 1 vol.}	38·95	83½ f. oz. 521 3 C.c.	80¾ f. oz. 505 C.c.	82¼ f. oz. 513·7 C.c.	82⅛ f. oz. 513·3 C.c.	81 f. oz. 506·1 C.c.	83½ f. oz. 521·8 C.c.	lb. oz. 4 6 436·6 Gm.	lb. oz. 5 0¾ 505 Gm.	lb. oz. 4 4⅝ 428 3 Gm.	lb. oz. 5 2⅛ 513·3 Gm.	lb. oz. 4 3¼ 419·8 Gm.	lb. oz. 5 3½ 521·8 Gm.	1 gall. 1000 C.c.	·9415	19 u. p.	lb. oz. 9 6¾
Alcohol, 45 p.c.....	37·85	81¼ f. oz. 507·5 C.c.	83 f. oz. 518·4 C.c.	80⅛ f. oz. 500 C.c.	84¼ f. oz. 526·6 C.c.	79 f. oz. 493 C.c.	85½ f. oz 534·8 C.c.	lb. oz. 4 4⅛ 425·4 Gm.	lb. oz. 5 3 518·4 Gm.	lb. oz. 4 2⅞ 417·2 Gm.	lb. oz. 5 4¼ 526·6 Gm.	lb. oz. 4 1½ 408·9 Gm.	lb. oz. 5 5½ 534·8 Gm.	1 gall. 1000 C.c.	·9435	21 u. p.	lb. oz. 9 7
Alcohol, 28·45 p.c. {Alcohol, 20 p.c., 2 vol. Alcohol, 45 p.c., 1 vol.}	23·32	51½ f. oz. 321·4 C.c.	111¾ f.oz. 698·2 C.c.	50¾ f. oz. 316·7 C.c.	112½ f.oz. 703·4 C.c.	49⅞ oz. 311·7 C.c.	113⅜ f.oz. 708·6 C.c.	lb. oz. 2 11⅛ 269·2 Gm.	lb. oz. 6 15¾ 698·2 Gm.	lb. oz. 2 10⅜ 264 Gm.	lb. oz. 7 0½ 703·4 Gm.	lb. oz. 2 9⅜ 258·6 Gm.	lb. oz. 7 1⅜ 708·6 Gm.	1 gall. 1000 C.c.	·967	50 u. p.	lb. oz. 9 10¾
Alcohol, 20 p.c.....	16 30	36⅛ f. oz. 225·5 C.c.	126 f. oz. 787·3 C.c.	35⅝ f. oz. 222.2 C.c.	126½ f.oz. 791 C.c.	35⅛ f. oz. 219·2 C.c.	127 f. oz. 794·3 C.c.	lb. oz. 1 14⅜ 189 Gm.	lb. oz. 7 13⅞ 787·3 Gm.	lb. oz. 1 13¾ 185·2 Gm.	lb. oz. 7 14½ 791 Gm.	lb. oz. 1 13⅛ 181·8 Gm.	lb. oz. 7 15⅛ 794·3 Gm.	1 gall. 1000 C.c.	·976	65 u. p.	lb. oz. 9 12¼

* In this case absolute alcohol is to be added, not water.

EXTRACTS FROM CONSULAR REPORTS.

The Value of the Olive Oil exported from Jerusalem in 1897 amounted to £3500 against £6050 in 1896.

Colocynth exported from Jerusalem, while increasing in quantity in 1897, was of less value than in 1896, 44,000 lbs. having been shipped in the former year, realising £1000, as compared with 33,335 lbs. value £2500 in 1896.

Nearly all the Asphalt used in France, Consul Hertslet reports, is supplied by the Island of Trinidad.

Demand for "Patent" Medicines and Perfumes.—Consul Cusack-Smith reports that there is a considerable sale for "patent" and other medicines in Samoa, "such as Epsom salts, painkiller, and the like." There is also a good market for a cheaper kind of perfumery, although the products of good English and French makers are to be met with.

The Imports of Castor Seed into Marseilles during the year 1897 show a decrease of 15,000 tons as compared with the previous year, the deficit being accounted for by the short crops in India. The consequence was that prices rose from 25 fr. 50 c. per 100 kilos. in January to 30 fr. 50 c. in September.

Raw Sulphur imported into Marseilles during 1897 amounted to 39,940 tons as against 25,175 tons in 1896.

Chemical and Pharmaceutical Products from Great Britain do not appear to find a good market at Bilbao (Spain), the market being supplied partly from France, but chiefly by Germany. Surgical instruments, syringes, and similar articles sold by chemists and druggists are very largely supplied from Germany. The United Kingdom so far has had the best of the competition for the supply of chemical products used in industries, but Belgium is a close competitor for caustic soda and carbonate of soda, while recently France, Germany, and Belgium have entered the field with Great Britain in the supply of chloride of lime, France running closest in the race.

Indian Opium imported into Pakhoi (China) continues to decrease in quantity year by year, although the falling off during 1897 was very slight, being 17,903 lbs., as against 18,252 lbs. It is chiefly consumed by the wealthy Chinamen in the district, but is gradually being ousted from the market by its Yunnan competitor, which, however, is of inferior quality.

Aniseed Oil and Star Aniseed exported from Pakhoi show a falling off during 1897, due partly to the fact that it was the alternating "bad" year, and partly to the efforts made by the French authorities to attract this branch of trade to Tonkin. The centre of the aniseed collection, reports Acting-Consul Wilkinson, is Lungchow, whence, until 1896, practically the whole amount destined for foreign consumption was conveyed by porters to Pakhoi, and thence by steamer to Hong Kong. During that year the Protectorate of Tonkin imposed an export duty of 50 c. per kilo. on aniseed oil destined elsewhere than to France, where oil of apparently Tonkin origin was admitted free.

Decimal Balances, according to Consul Bernal, are used in almost every business house in Rio Grande do Sul, whether wholesale or retail, and although they are mostly of German manufacture, the Consul is of opinion that there should be a good market for similar balances of British manufacture.

French Cameras, which at one time had the Brazilian market almost to themselves, are now experiencing severe competition from Germany. Dry plates, bromide and other paper, are supplied chiefly from Great Britain. Photograph mounts are imported from Germany.

One of the Largest Drug Distributory Centres in the United States is St. Louis, where a large business is done in chemicals, essential oils, patent and proprietary medicines and druggists' sundries. The amount turned over in 1897 was £5,000,000. The city possesses one of the largest drug establishments in the country. The business is reported to have increased last year from 15 to 20 per cent.

LETTERS TO THE EDITOR.

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

The New Pharmacopœia.

Sir,—It is with much regret that I notice what appear to be unnecessary alterations in the formulæ of the tinctures of the new British Pharmacopœia. This is especially noticeable in the cases of tincture of orange and tincture of myrrh. The former is now ordered to be made from fresh peel, and a more unfortunate error could not have been perpetrated, seeing that bitter oranges can only be obtained for about six weeks or two months in the year, as I was informed by a good authority at Covent Garden. A tincture made from the fresh peel has been official since 1874, and was seldom prescribed, so that there was no widespread desire for this change. Again with tincture of myrrh, which is now ordered 1 in 5 instead of 1 in 8. This is essentially a popular remedy, being almost entirely used as a mouth wash, and very rarely prescribed for internal use. It may occasionally be ordered in a gargle, and in that case the weaker tincture would mix better. Doubtless there is some wise and good reason for the change, but it is not obvious, and the alteration is decidedly unfortunate. There will probably be a difficulty sooner or later with the tincture of nux vomica, and I hope that difficulty will not be a serious one, but I have my doubts. As I read the Pharmacopœia, all the ingredients for the ointments are now taken by weight, but as pharmacists have hitherto been accustomed to measure liquids, it would have been better to add a footnote, so as to avoid errors.

London, May 16, 1898. W. Murton Holmes.

Sir,—I observe from your valuable "Synopsis of the 1898 Pharmacopœia," that with the exception of three, viz., ung. chrysarobini, ung. hydrargyri, and ung. picis liquidæ, all the unguenta of the old B.P. have been either deleted or modified by changing the ingredients themselves, the proportions of ingredients, or the methods of preparing. It is most gratifying to find that the B.P. now directs certain ointments, especially boric and carbolic, to be made with paraffinum molle album. This in a small way will enhance the reputation of the book as a "standard and guide." But is the Pharmacopœia meant to be a "standard and guide" only in the dispensing of prescriptions? Surely not. However, it is questionable whether it will be accepted as a guide, in this particular, in ordinary retail. Hitherto it has been customary to supply the yellow or white variety of ointment *ad libitum*. Usually the yellow was supplied probably on account of its relative cheapness. As the public, generally, have thus been taught to expect a yellow boric and yellow carbolic, the pharmacist will continue retailing ung. acidi borici flavum and ung. acidi carbolici flavum until he is pounced upon by the "inspector." In dispensing, the white ointment will henceforth almost certainly always be supplied, and should any pharmacist get himself into trouble by dispensing the yellow, he will only have himself to blame. I observe, also, that, notwithstanding Professor Attfield's note in his famous volume *re* tr. ferri perchloridi, that preparation is still retained.

Bootle, May 17, 1898. Thos. W. White.

Sir,—On looking through the new British Pharmacopœia, 1898, and coming to bismuth oxycarbonate, I am surprised to find that a most important test for impurity is omitted. The B.P. for 1885 was careful to provide against any trace of nitrate by requiring the preparation to be examined with H_2SO_4 and indigo sulphate, and that the colour of the indigo should not be discharged; thereby showing that nitrate was not present. Now, the test is not only neglected, but a nitrate reaction permitted. This is certainly not an advance in chemical science. Our firm, Alfred White and Sons, Castle Street, Saffron Hill, E.C., always makes bismuth oxycarbonate which will answer this requirement

of the older B. P., not only because so directed, but because the bismuth is a truer and better carbonate. Why is this strange change made by those who have drawn up the new book? Is it because of the difficulty of obtaining the purer article? If so, surely this is not a wise or sufficient reason, especially when the proper article can be made. I think there ought to be a return to the better directions of the B.P. of 1885.

London, E.C., May, 18, 1898. A. Dowler White.

Solutions of a Dispensing Problem.

Sir,—The following method appears to me to give very good results on dispensing the ointment referred to by "Aratus Sum." Keep the zinc ointment at a creamy consistency with the aid of a warm mortar; gradually add the glycer. borac., thoroughly incorporating; then add the liq. plumbi, stirring, not too vigorously, until the whole of the liquor is taken up. Set aside to cool. It makes a firm, smooth ointment, as you may judge by the portion I send. I found it required much patience and a little time, as well as a considerable amount of manipulation. I presume it is not necessary to say that the zinc oxide must be finely powdered before attempting to make the ung. zinc. benz.

Lewisham, S.E., May 12, 1898. Graham Bott.

Sir,—In reply to "Aratus Sum" with reference to the following prescription given at the recent Minor examination :—

℞ Glycerin. Borac. ..... ʒiv.
Liq Plumbi .... ʒiv.
Ung. Zinci Benz. .....ad ʒij.
M. ft. ung. Sig. m. d. u.

I find by rubbing the borax and zinc oxide together with the glycerin into a smooth paste, adding the adeps benz., and afterwards the liq. plumbi and aqua (used in preparation of glycerin borac.) previously mixed together, a satisfactory ointment is obtained.

Knowle, Birmingham, May 14, 1898. R. Kathleen Spencer.

Sir,—In response to "Aratus Sum," in your last issue, the ointment is best prepared by heating the glycerin. boracis and the liq. plumbi together first. This facilitates decomposition, a bulky precipitate resulting, then adding the ung. zinci and thoroughly mixing at as low a temperature as possible; when nearly cold run into covered pot while stirring. Prepared in this way the ointment is only slightly granular. A sample is enclosed herewith.

May 14, 1898. (A. E. S. 133/17.)

Sir,—If "Aratus Sum" will make his zinc ointment in a four ounce wide-mouth bottle (fitted with cork), and when the ointment is of the consistence of cream, add the mixed liquids about a drachm at a time, shaking well after each addition, he will find little difficulty in turning out a satisfactory preparation.

Waterloo, Lancs., May 16, 1898. T. S. Hodgson.

Sir,—In answer to your correspondent "Aratus Sum," I have tried the ointment and find it most successful, if made in the following manner :—Allow the ung. zinci benz. to get quite cold, add drop by drop the liq. plumbi and glycerin. borac., previously mixed. This gives a perfectly smooth and elegant preparation. It only requires time and patience.

A. M. C. (133/44).

*** The specimens of ointment sent by our correspondents are smooth and satisfactory products, there being only a slight tendency to separation of water. [Ed. *P.J.*]

A Botanical Experiment.

Sir,—The following experiment may be of interest to lovers of botany, and will partially explain the two colours (mauve and white) found in the cuckoo flower (*Cardamine pratensis*). Two strong plants were carefully removed from the ground and potted. One was allowed to grow in the open and the other placed under cover, the only light allowed being that which passed through an amber coloured glass. In less than three days the bloom under the amber glass had assumed a distinct mauve colour, whilst that left in the open was white, or nearly so.

313, Sydenham Road, S.E. May 16, 1898. A. W. Nunn.

ANSWERS TO QUERIES.

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

Botanical.—It is the fasciated scape of *Endymion nutans*. [*Reply to* G. R. J.—10/23.]

Preparations of the New B.P.—The law says nothing on the point, and opinions are divided respecting the matter. See Annotation. [*Reply to* E. F.—10/8.]

Tincture Processes.—You are not of necessity bound to adopt the official processes, so long as the product meets the B.P. requirements. [*Reply to* Chamomile.—10/15.]

Maceration.—You must not add to the bulk of the product unless an addition is distinctly specified. [*Reply to* J. J. A.—10/22.]

Botanical Paper.—The *Journal of Botany*, published monthly (1*s.* 8*d.*), is probably the most suitable paper for your purpose. [*Reply to* E. W. P.—9/34.]

Microscope.—There is a small book called 'Common Objects of the Microscope,' published at 1*s.* That may serve your purpose. We are unable to help you in the other matter, and doubt whether such a remedy can be found. [*Reply to* Inquirer.—10/16.]

Ung. Capsici.—The new preparation is most unsatisfactory; it is not sufficiently firm when set, and the spermaceti tends to crystallise out. [*Reply to* ·880.—10/29.]

Medical.—We cannot advise you in the matter; apply to a medical man. [*Reply to* Anxious.—10/27.]

Changing Box.—There is not the slightest objection to the use of a changing box, provided that it works all right. You do not state what make you intend to use. Of course, above ¼-plate they become very cumbrous and heavy. Write again and let us know which you propose to get. [*Reply to* H.—10/13.]

Combined Toning and Fixing Bath.—There are very grave objections to the use of these baths, because they are so liable to cause sulphur toning. The most satisfactory is undoubtedly the following :—Dissolve 8 ozs. of hypo in 40 ozs. of water, add 1 oz. of potassium sulphocyanide, then add ¼ oz. lead nitrate and ½ oz. alum dissolved in 4 ozs. of water; boil for half-an-hour, allow to cool, and add 5 grs. of chloride of gold. This quantity should tone not more that two and a half sheets of paper, and the prints must be well washed prior to toning. [*Reply to* H. R. B.—9/33.]

Developer.—The formula you send is an adaptation of one of Lainer's. There is not much, if any, advantage in using the ferrocyanide, but you are wrong about the solubility of this salt, for, according to Schiff, 1 part of $K_4Fe(CN)_6 3H_2O$ is soluble in 4·28 parts of water at 15° C. The best formula would be: Hydroquinone, 300 grs.; potassium metabisulphite, 300 grs.; potassium bromide, 150 grs.; caustic potash, 400 grs.; water to 10 ozs. For use, dilute 1 part with 9 parts of water.—[*Reply to* Greig.—10/26.]

Baking Powder.—There are many forms of baking powders, all of which owe their properties to alkaline carbonates and an organic acid, mostly tartaric acid. Some of the cheaper forms in the market contain alum, or "superphosphate" of calcium, instead of tartaric acid, but both these are objectionable ingredients. One or other of the following should suit you :—(1) Cream of tartar, 6; sodium bicarbonate, 3; ground rice, 1. (2) Cream of tartar, 19; tartaric acid, 8; ammonium carbonate, 1; sodium bicarbonate, 17; ground rice, 7. (3) Sodium bicarbonate, 12; tartaric acid, 8; ground rice, 3. [*Reply to* Glasgow.—10/11.]

Botanical.—The leaves sent possess all the histological characters of digitalis. [*Reply to* Macduff.—9/4.]

Blanc-mange Powder.—This is nothing but cornflour sweetened and flavoured, about 5 parts of cornflour to 4 of white sugar. [*Reply to* Glasgow.—10/11.]

Apprenticeship Declaration.—The declaration need not be signed by the actual employer, all that is necessary is to find some suitable person to sign it. [*Reply to* H. J.—9/25.]

Collapsible Tubes.—You can obtain vaseline with 1 per mille of hyd. perchlor. in collapsible tubes from Marshalls, Limited, 27, Red Lion Square, W.C. [*Reply to* F. R. B.—10/5.]

Book of Formulæ for Summer and Winter Beverages.—We know of no work devoted exclusively to such matters. If you will state any particular recipes you require, we may be able to find some suited to your wants. [*Reply to* C. G. S.—9/18.]

Stills for Distilled Water.—You will probably find the patent automatic stills of Morris and Wethered, suitable for your purpose. You can obtain full information concerning them from Llewellyn and James, of Bristol. [*Reply to* Cephalalgic.—9/15.]

Preparation of Ammonium Acetate Solution.—We are glad to hear that we have helped you to solve your problem. Doubtless your inference is correct, and the cause of the coloration is as you state. [*Reply to* T. D.—132/38.]

Metric Equivalents.—The figures given in the Journal are taken from a Board of Trade report published in August last, and therefore superseding all previous equivalents recognised by the Standards Office. The differences you note are due to more careful measurements and comparison of the prototype measures and their official copies. [*Reply to* F. J. Y.—10/7.]

Freezing Machines.—We can only speak from experience of an ammonia freezing plant, which was found to work satisfactorily. It does not require skilled labour; when once installed, intelligent use is all that is needed. Ammonia is generally preferred as the cooling medium. We know of no book devoted specially to the subject; there are articles on the subject in Ure's 'Dictionary of Arts, Manufactures and Mines.' [*Reply to* Mellor.—9/36.]

Custard Powder.—This might be made with a similar basis to egg powder, omitting the tragacanth and increasing the sugar. Flavour with essential oil of bitter almonds or vanilla, or the following will do: Powdered tragacanth, 2 ozs.; cornflour, 18 ozs.; powdered turmeric, ¼ oz.; essential oil of almonds, 30 minims; essence of lemon, 1 drachm; powdered sugar, 2 ozs. Rub the essences well with the sugar, then mix with the other ingredients. [*Reply to* Glasgow.—10/11.]

Ready Means of Distinguishing Between Phenacetine, Antipyrine, and Acetanilide.—Apart from the official chemical tests, which it is needless to reproduce here, you can readily distinguish these bodies by their solubilities in water and melting points. Antipyrin is at once distinguished by being readily soluble in its own weight of water and having a melting point of 113° C. (235°·4 F.). Acetanilide has a melting point close to this, viz., 113°·5 C. (236°·5 F.), but is only soluble to the extent of 1 in 200 of cold water. Phenacetin is also insoluble, but its melting point, 135° C. (275° F.), at once distinguishes it from acetanilide. [*Reply to* Cephalalgic.—9/15.]

Fruit Crystals for Summer Drinks.—You will probably find a general basis of 29 parts of sugar in small crystals, and 1 part of tartaric or citric acid in the same form suitable for the preparation of these articles. A portion of the sugar should first be rubbed down with sufficient concentrated essence of the desired flavour, and the whole suitably coloured. Thus, to make a lemon crystal, use sugar, 29 ounces; citric acid, 1 ounce; terpeneless lemon oil, 30 minims—and if desired, a little saffron to tint. Pineapple, raspberry, strawberry, and other fruit preparations may be prepared in a similar way, using the artificial essences in the requisite proportion to give the desired flavour when diluted. [*Reply to* N. S.—9/32.]

Composition of Powders.—We fail to see what good purpose would be served by analysing powders given to you as a test at an examination, and time is too precious for us to undertake useless tasks. [*Reply to* E. B.—10/9.]

Burra Gokeru or Bara Gokhru.—You will find information regarding the properties of this drug, the fruit of *Pedalium murex*, in the 'Extra Pharmacopœia,' in 'Pharmacographia Indica,' and in Dey's 'Indigenous Drugs of India.' Both the latter works are in the Pharmaceutical Society's Library. [*Reply to* M.—10/25.]

Reyer's Combination Laboratory Bracket.—The device was described in the American *Pharmaceutical Review*. We do not know where the brackets could be obtained over here, but any intelligent blacksmith could make them for you from the figure given. [*Reply to* J. H. T.—9/28.]

Chemical Food.—The B.P.C. formula for this, using 160 instead of 120 grains of calcium carbonate, and substituting 3 ounces of triple orange-flower water for 3 ounces of distilled water in that formula, will give you approximately the preparation you require. [*Reply to* Glasgow.—10/4.]

Books for Elementary Study.—See the article on "The Students' Library" in our Students' Number (Sept. 11, 1897, p. 232). There you will find all the information you require with regard to books. There is a glossary such as you name in John's 'Flowers of the Field,' an excellent book for beginners in field botany. Henslow's 'Dictionary of Botanical Terms' is a work of wider scope. [*Reply to* Ill All.—10/2.]

Preservatives for Soup.—Probably "formalin" in the proportion of 1 in 1000 would be best, as it is harmless in that proportion, whereas opinion is divided as to the harmlessness or otherwise of other preservatives. You should sterilise the soups in the bottles first by placing them in a kettle of cold water up to the neck, and plug the mouth of each with cotton wool, then slowly heat up to the boiling point and keep at that temperature for half an hour; next quickly add the preservative and cork up with sterilised corks at once. [*Reply to* J. H. T.—9/26.]

Spirit to Give a Coloured Flame.—We do not quite know what you would define as a "ghastly" appearance. Probably a little barium chloride added to the spirit or, better still, sprinkled on the flame, would have the desired effect. Even common salt may answer, as it gives—as, of course, you know—an intensely yellow flame, which, in the dark, gives a decidedly ghostly appearance to the complexion. The saffron you refer to would not influence the colour of the flame at all. It was probably only added to tint the solution. [*Reply to* J. H. T.—9/26.]

Egg Powder.—As you are probably aware, many of the so-called egg powders are devoid of any egg, being mere tinted cornflour mixtures. Something on the following lines will give you an "egg" powder closely resembling some commercial articles:—Cornflour, 32; turmeric, 1; sugar, 4; powdered tragacanth, 2. Mix and flavour with vanilla or lemon. If you prefer it, sufficient aqueous extract of saffron may be rubbed with the flour to tint it instead of the turmeric. We do not recommend the sale of such articles, except on the explicit understanding that they contain no eggs. It is obviously incorect, if not illegal, to vend such things under the name. [*Reply to* Glasgow.—10/11.]

INFORMATION WANTED.

Hospital Phenol.—The name of makers of a brand of carbolic acid known as "Hospital Phenol."—10/10.

CORRECTIONS.

B.P. (1898) Formulæ and Processes.—Two correspondents point out an obvious error in the directions for making Injectio Ergotæ Hypodermica, printed in the Journal for April 16, at page 371. The solution should be made up to 150 fluid parts, not 100 parts as stated. This and other corrections have been embodied in the sixth edition of the reprinted synopsis of the B.P. formulæ and processes, which is now ready.

COMMUNICATIONS, LETTERS, etc., have been received from—Messrs. Anning, Barfoot, Blythe, Brentworth, Clarke, Crisford, Duncan, Evans, Greig, Jenkins, Jesper, Jones, Lake, Liveing, Lunan, Mollison, Potter, Sage, Shillinglaw, Spencer, Tocher, White.

Pharmacy and the Allied Sciences.

A REVIEW OF CURRENT WORK.

Meat Extracts. Meat extracts may be roughly divided, according to C. R. Valentine (*Journ. Soc. Arts*, xlvi., 430), into four classes, (1) the original Liebig's extract or its modifications, (2) flavoured or medicated solutions and bouillons, (3) meat jellies, and (4) meat juices. The second class is claimed to have had the addition to the extract of some albuminoids that coagulation and straining have removed, and this class, whilst more of a food, is not so stimulating as the Liebig's extract, because not so condensed. Meat jellies are made by boiling down the gelatinous parts as well as the lean of meat, and then in many cases adding meat extract. Meat juices are made from lean meat by adding an equal weight of water, then squeezing under heavy pressure and freezing out the greater part of the water. An ordinary bullock gives 400 lbs. of lean meat, which yields about 10 lbs. of extract. The Australian meat extract is made from meat which has been cut up into cubes, then extracted by its own weight of water at 175° F. for about twenty minutes. The juice is then strained and concentrated in a vacuum pan until it attains a brown pasty mass, containing from 13 to 16 per cent. of water. Meat extracts should consist of about 16 per cent. of water, 53 per cent. of extractive soluble in alcohol, 13 per cent. extractive insoluble in alcohol, and 18 per cent. or more mineral matter. A good extract should always have an acid reaction, its colour should be a characteristic yellowish-brown and it should have an agreeable meat-like odour and taste. It should be entirely soluble in cold water and should be free from albumin, fat, and gelatin. In the discussion following the reading of the paper, the Chairman (Mr. M. Carteighe) stated that extract of meat by itself was no more a food than alcohol; it required to have something mixed with it which gave more force than the mere stimulating action of the soluble constituents of flesh, which were largely saline matters. There were a number of excellent preparations for that purpose and the results were promising, though he must say that he had found some of the most vaunted preparations of the least value. That might be due to the fact that the necessary amount of fibrinous material to be added had not yet been exactly ascertained.

Modification of Bechi's Test. The following modification of Bechi's test for cottonseed oil, devised by M. Tortelli and R. Ruggeri, is said to be capable of detecting the addition of 1 per cent. of cottonseed oil to olive or other vegetable oils. Fives grammes of the oil are saponified by boiling with alcoholic potash solution, and the alkaline soap solution neutralised with acetic acid. This is then poured in a thin stream, when boiling, with constant agitation, into a warm mixture of 50 C.c. of 10 per cent. lead acetate solution and 250 C.c. of water. The lead soap thus obtained is washed with three successive portions of water of 60 to 70° C, cooled, well drained, then gently boiled in 120 C.c. of ether under a reflux condenser for twenty minutes. After cooling, the ethereal solution is decanted, filtered, and washed twice with 60 C.c. of 10 per cent. HCl and once with more dilute acid, and then with water, the acid washings containing lead chloride being rejected. The ethereal solution is filtered into a small flask and the solvent distilled off. The flask is then washed out with a reagent consisting of 10 C.c. of 90 per cent. alcohol and 1 C.c. of 5 per cent. silver nitrate solution. The mixture is transferred to a test tube, which is plunged into a water bath heated between 70° and 80° C. If the original oil be pure the liquid remains unaltered for fifteen minutes or even for hours. If cottonseed be present, however, even in as small a quantity as 1 per cent., the liquid quickly shows signs of reduction, which becomes more intense in time.—*L'Industria*, through *Union Pharm.*

Sterilised Milk. It is well known that milk is more or less altered in taste and colour by sterilisation. Dr. A. Wroblewski finds from the results of his experiments to ascertain the effect of sterilisation on the chief constituents of milk, such as milk sugar, albumin, and casein, that milk is so far altered by sterilisation that the milk sugar is partly caramelised—a very small amount of lactic acid being also formed—the albumin is coagulated, and the casein partly precipitated, or at least brought into such a condition that it can be readily precipitated by acids. Pasteurisation acts in a similar manner, but to a less extent. It is concluded, however, from a chemical point of view, that milk is not rendered less favourable to digestion by being sterilised.—*Oesterr. Chem. Zeit.*, i., 5.

Iodised Oils. By combining iodine and sodium iodide with a small amount of glycerin, A. Schmitt finds that the solution is readily taken up by oils, and the preparation thus obtained is stable and elegant. It is thus possible to prepare an iodised oil quickly without the application of heat, which in the case of cod-liver oil is a great advantage. The proportions used are sublimed iodine, 1 gramme, sodium iodide, 25 centigrammes, glycerin, 1 to 2 drops. Rub together until dissolved, then add the prescribed amount of cod-liver or other oil.—*Union Pharm.*

Activity of Pancreatin. E. Choay finds that pancreatin prepared according to the official method of the 'Codex' and evaporated at a maximum temperature of 45° C., is markedly inferior in saponifying power to the aqueous extract evaporated *in vacuo* at 38° C., although, if carefully prepared, the official preparation is equally active in proteolytic and in amylolytic power. The saponifying action was determined by the method of Henriot, which consists in allowing the ferment to act upon a solution of monobutyrin of known strength, and then titrating the butyric acid liberated. A commercial specimen of pancreatin examined at the same time was found to be very defective both in proteolytic action, and in its hydrolysing action on starch, not exerting more than half the amylolytic action of the specimens prepared by the author.—*Journ. Pharm. Chim.*, 6 ser., vii., 418.

Persian Opium and Haschish. Bonati states that Persian opium is sent by the growers to market packed in earthenware basins. The dealers mix it with grape syrup and roll it out into sticks which are wrapped into white glazed paper. Opium is often adulterated with the aqueous extract of the capsules and of the seeds of *Ruta silvestris*; fresh poppy petals are also pulped and mixed with it. It is usually smoked in a special pipe, in quantities of 1 to 4·5 grammes (1 miscal) at a time. Haschish is obtained in Persia by rolling the flower stalks and leaves of the hemp for hours vigorously on rough woollen carpets, when the viscid sap adheres to the pile on the carpet. It is scraped off with a knife and rolled into balls or sticks. The carpets are washed with water, the washings being exposed to the sun on china plates and thus evaporated, furnishing a preparation of less value; the best haschish is smoked in a pipe in doses of 0·24 to 1·2 gr. The oil of *Cannabis indica* is a very strong narcotic, a very small dose

mixed with food being sufficient to send a large number of people to sleep for 24 to 72 hours. It is frequently used for criminal purposes, and Dervish fanatics are usually victims to the drug. *Journ. d. Pharm. o. Els. Lother.*, xxv., 25.

Choline and Trigonelline in Strophanthus.

It is apparent from current literature that the various species of *Strophanthus* furnish strophanthin of different composition and different action. Commercial strophanthin is, in the experience of H. Thoms, largely produced from *S. hispidus* seeds instead of from the dearer *S. kombé*, and varies greatly in toxic action. Most strophanthins contain varying amounts of nitrogen. The author has succeeded in separating the nitrogenous bodies by treating the aqueous solution of the glucoside with ammonium sulphate, by which the strophanthin is precipitated. The filtrate of the ammonium sulphate precipitate is found to contain choline and trigonelline.—*Zeit. d. Allg. oest. Apoth. Ver.*, xxxvi., 205.

Volatility of Iron.

H. Pellat finds that metallic iron is capable of giving off traces of volatile matter which affect the photographic plate even when a piece of paper is placed between them; but if an iron ring enclosed in a glass cell be placed in contact with the plate, no image of this is obtained on developing; this shows that the action cannot be due to radiations similar to those discovered by Becquerel with uranium. The effect is attributed by the author to the volatilisation of minute traces of metal, such as by means of delicate electrical processes he has previously shown to occur. The exposure of the plate to the influence of the metal exceeded four months in duration.—*Comptes rend.*, cxxvi., 1338.

Ozone and Artificial Perfumes.

H. Trillat reports on the advantageous employment of ozone applied on the commercial scale in the laboratories of the Société Anglo-Française des Parfums Perfectionés at Courbevoie as an oxidising agent in the production of vanillin from iso-eugenol, anisic aldehyde (aubépine) from anethol, and heliotropine from iso-safrol. On the manufacturing scale each ozoniser used is capable of producing 150 grammes of ozone per hour. The yield of completed products is found, when working with large quantities, to compare favourably with experiments on the small scale, and the cost of production compares favourably with that of other oxidizing agents. The fact that the use of chemicals, and therefore the production of by products, is obviated is also a great advantage in the process.—*Moniteur Scientif.* [4], xii., 351.

Wax Excretion within the Cells.

Professor M. Moebius describes an example of this phenomenon in the case of a species of *Rhus*. In the ripe fruit the wax-cells form a layer in contact with the resin-passages. In these parenchymatous cells the wax forms a thick incrustation on the cell-wall within the cell. The wax is probably a product of the transformation of starch. The wax-cells contain a granular protoplasm and a nucleus, but there is very little starch.—*Ber. Deutsch. Bot. Gesell.*, vol. xv., p. 435.

Physiology of Gentianose.

E. Bourquelot infers that gentianose, the specific sugar of gentian, like sucrose in the beetroot, is split up into assimilable sugars in the course of the growth of the plant by special ferments, which are localised in the growing parts of the plant. A solution of gentianose was without action on Fehling's solution, but the same solution to which a little of the powdered growing parts of *Gentiana acaulis* had been added gave a copious reduction. This species of gentian was used because, at the time of conducting the experiment, the growing parts of *Gentiana lutea* were not available. It was also found that the soluble ferments of *Aspergillus niger* causes the hydrolysis of gentianose, so does invertin, but less rapidly than with saccharose. Emulsin, saliva, and diastase are without action on gentianose.—*Journ. de Pharm.* [6], vii., 369.

Stinkwood as a Fish Poison.

In order to capture fish, Pool states that the natives of Surinam whip the water with the wood of *Lonchocarpus violaceus*, Bth., a papilionaceous tree which contains a substance having a narcotic action on the fish. The wood, which has a disagreeable odour, is called "Nekoe" by the natives, and stinkwood by European settlers.—*Pharm. Centralh.*, xxxix., 282, through *Nederl. J. Jdschr., o. Ph.*, 1798.

Organic Acids and Growth.

From a series of experiments on the action of citric, malic, tartaric, and tannic acids on the growth of pollen tubes, Signor G. Lopriore obtained a uniformly favourable result. There was, however, a variation, according to the species, in the influence of different acids of the same concentration. With solutions varying between 1 : 50,000 and 1 : 60,000, definite results were obtained.—*Bot. Zeitung*, vol. lv., 2te Abtheil., p. 362.

Suppository Making.

F. A. Kerr having found the various existing methods for making suppositories unsatisfactory, has devised another, on which he asks for expressions of opinion. In the case of the following prescription:—

℞ Iodoform	.....	20 grains.
Alc. Ext. Belladonna	.....	4 ,,
Powdered Opium	.....	4 ,,
Cacao Butter	.....	*q.s.*

Mix into fifteen suppositories.

first soften the extract of belladonna with water, then add the powdered opium, and mix to a soft or watery paste. The next step is to incorporate a sufficient quantity of wool-fat, after which the cacao butter is melted and poured on a tile. Now add the iodoform and the mixture containing the extract, thoroughly incorporate, and cool to the consistency of a stiff ointment, using ice if necessary. The mould used is a thin aluminium capsule, which is filled with the mass as if it were a gelatin capsule to be filled with quinine. After filling, the mould is immersed in a basin of hot water sufficiently long to loosen the contents, and the suppository is then emptied into a basin of ice water. It is then finished, and is said to be as solid and to have the medicaments as equally distributed as if it had formed part of a batch of well-made pills.—*Bulletin of Pharmacy*, xii., 220.

New Form of Sieve.

J. F. Strawinski has devised a sieve for pharmaceutical purposes which lessens the liability to contamination of powdered drugs. The body or frame of the sieve is made of brass, tinned on the inner surface, and at the base of the frame is a coarse threading, over which a collar containing the sieve-plate is screwed. On the exterior of the collar are five finger-holds, so that it may be adjusted quite firmly. The sieve-plates are made separately, and in adjusting the apparatus all that is necessary is to place one of the plates, of the desired mesh, in the collar, before attaching the latter to the frame. The model constructed by the author has five sieve-plates, each of the proper mesh for producing the degrees of fineness specified in the U.S. Pharmacopœia. Several points of superiority are claimed by the author for his invention, including durability, less liability to contamination, and compactness.—*Am. Journ. Pharm.*, lxx., 268.

AN EXAMINATION OF COMMERCIAL SAMPLES OF BENZOIN AND GUAIACUM RESIN.*

BY J. EVANS.

A short time ago, Mr. Dunlop read a paper at a meeting of the British Pharmaceutical Conference, in which he showed that the benzoin of commerce contained a large quantity (up to 30 per cent.) of substances insoluble in spirit, and suggested that cognisance should be taken of this fact in the official description of benzoin. As Mr. Dunlop gave no indication of the actual quality of the benzoins he examined, beyond merely the trade designation, it was suggested to me by Professor Greenish that it would be desirable to obtain from different wholesale houses and elsewhere, samples of benzoin of good quality, and ascertain the proportion of residue left when the sample was treated with spirit and also the amount of ash yielded by the residue, as the official description and tests for benzoin should be designed so as to exclude inferior qualities, but should not be so stringent as to make it impossible to procure benzoin answering the official tests. Acting upon Professor Greenish's suggestion, several samples of both benzoin and guaiacum resin were procured from the leading London drug houses, and also from the Society's Museum, through the kindness of Mr. Holmes. The results obtained will, I hope, be not altogether uninteresting to members of this Association.

In the first place I will discuss benzoin. The B.P. describes benzoin as a balsamic resin obtained from *Styrax benzoin*. It occurs in masses composed of loosely agglutinated tears, or more generally the tears are closely compacted together by a deep amber-brown, reddish-brown, or greyish-brown translucent substance. In some specimens the tears are an inch or more in length, and when first broken they have an opaque milk-white appearance, so that the masses then present an almond-like character; while in other specimens the white substance is very small in amount, and the masses when broken resemble reddish-brown granite. The Pharmacopœia further states that it is soluble in spirit, but no mention whatever is made of the presence of foreign impurities, which exist in the commercial drug to a large extent, as will be seen from the results obtained. Again, in the German, Austrian, and United States Pharmacopœias, there is no mention of the presence of impurities insoluble in spirit. In the French 'Codex,' there is a short note to the effect that all inferior samples containing débris, etc., should be rejected. The 'Pharmacographia' states that benzoin is distinguished as of two kinds, Siam and Sumatra. Each kind occurs in various degrees of purity and under considerable differences of appearance. In Siam benzoin there is always present a certain admixture of fragments of bark, wood, and other accidental impurities. The Sumatra benzoin, when of good quality, consists of numerous opaque tears set in a greyish-brown resin and mixed with fragments of wood and bark. When of inferior quality, the white tears are wanting and the proportion of impurities is greater, some samples having been seen consisting almost wholly of bark. In comparing the Siam and Sumatra varieties, the 'Pharmacographia' states that the Sumatra benzoin is weaker and less agreeable in odour, and generally contains more impurities than the Siam drug. The 'National Dispensatory' mentions that, with the exception of impurities, consisting of fragments of bark, wood, etc., benzoin should dissolve in five times its weight of alcohol.

Although the presence of impurities is noted by most authors, yet the extent to which such an impurity may occur is not defined. I examined nine samples, one Penang, two Siam, and six samples of best gum benzoin. On submitting these six last mentioned to Professor Greenish and Mr. Holmes for inspection, four of the samples were described as good commercial Sumatra, and the other two as seconds. I will describe as briefly as possible the process employed in assaying the samples. The whole sample was first powdered and passed through a No. 20 sieve. The powder was then thoroughly mixed, and 25 grammes of each sample were macerated in successive quantities of spirit, the spirituous solutions being passed through a previously weighed filter paper. The residue on the filter paper was thoroughly washed with more spirit until that which passed through contained no trace of dissolved matter. It was then dried in a hot-air oven, and after allowing it to cool in a desiccator it was weighed. The processes of drying and allowing to cool in a desiccator were repeated several times until a constant weight was obtained. This, minus the weight of the filter paper, gave the weight of insoluble matter present. The residue was then ignited in a weighed platinum dish, and after allowing it to cool in a desiccator it was weighed. This weight, minus the weights of the platinum dish and of the ash left by the filter paper, gave the amount of ash present in the residue. My results may be briefly summarised as follows:—

Sample.	Description.	Percentage of Insoluble Matter.	Percentage of Ash Yielded by the Insoluble Matter.
A	Good commercial Sumatra	8·54	4·8
B	,, ,, ,,	10·25	4·2
C	,, ,, ,,	9·45	4·9
D	,, ,, ,,	7·13	3·9
E	Seconds	10·67	6·1
F	,,	10·16	5·4
G	Very fine Block Siam	1·3	20·1
H	Commercial Siam of good quality	2·48	11·9
I	Penang	6·17	6·6

From this table it will be seen that the four samples of commercial Sumatra of good quality contain from 7·1 to 10·2 per cent. of impurities insoluble in spirit, consisting, as shown, by the small percentage of ash, mainly of organic matter, probably bits of bark, wood, etc., judging from the appearance of the residue. Even the two samples sent as best gum benzoin, but judged to be of second quality, contained not much more impurity insoluble in spirit, viz., 10·6 and 10·6 per cent. The residue in these two samples also consisted mainly of fragments of bark and wood. The two samples of Siam benzoin (G and H) contained much less impurity insoluble in spirit, viz., 1·3 and 2·4 per cent., but the percentage of ash in these two samples is much higher, viz., 20·1 and 11·9. The Penang, which is a variety of Sumatra benzoin, occupies an intermediate position between the Sumatra and Siam varieties. At the present time it would be difficult to obtain Sumatra benzoin with much less than 10 per cent. of impurities insoluble in spirit, but there appears to be no reason why, with greater care in the collection of the drug, Sumatra benzoin should not be placed on the market in a much purer condition. These figures differ considerably from those of Mr. Dunlop (*P.J* [4], v., pp. 140, 141), but it must be remembered that the six samples of Sumatra were all bought as the best gum benzoin, and four of them were judged by experts to answer that description, the other two being judged to be of somewhat inferior quality. Much benzoin is imported containing more impurities, but it must be remembered that such benzoin is not fit for making official preparations. The conclusions to be drawn from these results are:—

1. That commercial samples of benzoin contain a large percentage of matter insoluble in spirit, in the form of bits of bark wood, and inorganic impurities.

* Read before the School of Pharmacy Students' Association.

2. That a standard should be fixed in the B.P. for the amount of matter insoluble in spirit.

3. That the standard for such impurity should not in any case exceed 10 per cent.

4. That Siam benzoin, which contains the least amount of impurities insoluble in alcohol, should be used in all the official preparations.

Turning now to the guaiacum resin, six samples were assayed. Samples A, B, C, and D were judged by experts to be good block guaiacum resin; Sample E, fine tear; Sample F, seconds. The B.P. describes guaiacum resin as obtained from the stem of *Guaiacum officinale* or of *Guaiacum sanctum* by natural exudation, by incision or by heat. It occurs in roundish or somewhat oval tears, or more commonly in large masses containing fragments of wood, bark, and other impurities. I may here give a brief account of the method of extracting the resin by means of heat. A log of wood is supported in a horizontal position above the ground by means of two upright bars. Each end of the log is then set on fire and a large incision having been previously made in the middle, the melted resin runs out therefrom in considerable abundance. The resin is chiefly collected from *Guaiacum officinale*, which yields a greater proportion than *Guaiacum sanctum*. The 'Pharmacographia' states that guaiacum resin is sometimes imported in a very foul condition and largely contaminated with impurities arising from a careless method of collection. The 'United States Dispensatory' mentions that alcohol dissolves all the resin with the exception of impurities. The 'National Dispensatory' states that sometimes guaiacum resin is very impure and contains as much as 16 per cent. of wood, bark, etc.

In a note on guaiacum resin, by F. L. Smith, of Wolverhampton (*P. J.* [4], iv., pp. 101, 102), the author states that he examined the residue left by commercial guaiacum resin in making the tincture. The results he obtained were as follows:—Percentage of residue 15·7. Percentage of ash on incineration 3·36. The author further stated that the residue appeared to be fragments of wood and bark. As I have mentioned before, six samples were examined and the process employed in assaying them was precisely similar to that described in the case of benzoin. My results may be tabulated thus:—

Sample.	Description.	Percentage of Matter Insoluble in Spirit.	Percentage of Ash Yielded by the Residue.
A.....	Good block resin	2·59	56 2
B.....	,, ,, ,,	7·66	18·0
C	,, ,, ,,	7·89	23·1
D.....	,, ,, ,,	10·60	18·7
E.....	Fine tear	1·54	11·5
F.....	Seconds	9·00	20·2

From these results it will be seen that the four samples of good block guaiacum resin contain from 2·9 to 10 per cent. of impurity insoluble in spirit, and the amount of ash left by the residues on incineration varies greatly, the residue of sample A yielding as much as 56 2 per cent. of ash. Sample E, which was described as fine tear, contains much less impurity insoluble in spirit, viz., 1·54 per cent. Sample F, which was described as seconds, contains 9 per cent. of insoluble matter, 20 per cent. of which is inorganic. Finding that the amount of impurity, in the form of fragments of wood, bark, etc., varies so much in different samples of guaiacum resin, a note should be made in the Pharmacopœia of the limit of such impurities. Judging from the results obtained, the amount of impurity insoluble in alcohol should not exceed 7 5 per cent., but there is no reason why it should not be as low as 5 per cent. From the table it will be observed that the fine tear contains the least amount of impurity, and so should be used in making the official preparations. In conclusion, I may state that I am indebted to Professor Greenish for permission to use the Pharmacy Laboratory of the Pharmaceutical Society, where I carried out my investigations.

L'ASSISTANCE PUBLIQUE, OF PARIS, AND ITS INTERNES EN PHARMACIE.*

BY A. SERÉE.

Pharmacist of the First Class, ex Interne of the Paris Hospitals.

General Description of Work.

Among the philanthropic undertakings instituted by the City of Paris, with a view to the assuagement of human misery, the work of L'Assistance Publique occupies the front rank. Everyone in the immense city of Paris who is suffering, hungry, deserted, sick, or indigent comes and applies to it in his trouble, and it—in the semblance of a mighty Sister of Mercy—smooths away the misery, and, as far as it is possible, heals his wounds.

The Assistance Publique directs the operations of the hospitals, almshouses, and asylums; it administers outdoor relief in the people's own homes by means of the Bureaux de Bienfaisance and L'Assistance Médicale, and it cares for the orphans and waifs and strays. Its influence is exerted annually over more than half a million souls, and the yearly expenditure necessitates the disbursement of about thirty-eight million francs. This sum of money is partly provided by the liberality of generous donors, the balance being made up by subventions from the City authorities.

General Organisation.

The Assistance Publique is worked by a Director, assisted by a Board of Management composed of thirty-five members chosen from among the important personages of the civic and medical circles of Paris.

The greater part of the food stuffs and other stores necessary to the operations of the Assistance Publique are prepared or housed in the General Stores, which consist of the provision, bakery, wine and spirit, butchers and central stores, and the Central Pharmacy of the Hospitals.

Pharmaceutical Organisation.

As a pharmacist, it is this latter portion of the service which shall now occupy my attention.

The Central Pharmacy of the Hospitals has its buildings and warehouses situated in Paris itself at the Quai de la Tournelle. From there it is that the medicines, either simple or compound, all ready prepared, as well as chemicals, syrups, tinctures, extracts, and powders are despatched to the hospitals or almshouses in the city or those situated farther out in the suburbs. In each hospital (there are about twelve or fifteen, almost all within the city boundary) there is a pharmacy, the head of which is a chief pharmacist, having at his command several "Internes en Pharmacie," five to nine in number, according to the importance of the hospital.

The "Internes en Pharmacie."

These "Internes en Pharmacie" are entrusted with the final preparation or dispensing of the various medicines in the form of potions, pills, mixtures, etc., ordered for the use of the sick inmates by the chief physicians. The title "Interne en Pharmacie," much sought after by the majority of students, in consequence of the advantages it carries with it (advantages at the same time pecuniary and honorific), is only bestowed after having passed several very stiff examinations, into the details of which it will be worth our while to enter.

Examinations for Admission.

The examinations are four in number, and require about two months' time, more or less, according to the number of students presenting themselves. There are forty or fifty places to be filled yearly, for which some 150 or 200 candidates offer themselves in competition, so that it is truly a case of "many called but few chosen."

First Examination.

The candidates, who must be at least twenty years of age, and not more than twenty-seven, are called upon in the first examination

* Translated from the French by Harold Wyatt, jun., and read before the Liverpool Chemists' Association.

to recognise various materia medica specimens of botanical origin, medicinal plants, leaves, roots, rhizomes, barks, seeds, flowers, resins, etc. Twenty specimens are arranged on twenty plates on a table in the public Examination Hall, and six or seven examiners, nearly all of whom are professors of the School of Pharmacy, or chief pharmacists to the hospitals, conduct the examination. The candidates, divided into parties of ten in each, are shut up in adjacent rooms, and are admitted into the Examination Hall one by one, being made to defile past the twenty plates and name, if they can, the specimens, giving the French name, Latin name, and botanical order of each. Ten minutes exactly are allowed each candidate for the recognition of these twenty substances. A name wrongly given counts as two bad marks, and each plant not recognised as one bad mark. If the candidate has not recognised at least fifteen specimens, or if he has wrongly named more than two or three, he is eliminated, and cannot present himself for the subsequent examinations. Often a third or fourth part of the aspirants are thus weeded out as the result of this first examination.

Second Examination.

The second examination is to some extent a repetition of the first, but with the difference that the twenty specimens for recognition are compound galenicals, such as pill masses, tinctures, simple and compound, syrups, powders, and extracts, as well as some chemical substances. Ten minutes are also allowed for this portion of the trial, at least fifteen specimens having to be correctly named or the candidate is plucked, and the field of battle again strewn with the corpses of the slain, which may not be resuscitated until the next year's trial.

Third Examination.

The third examination is oral. The candidates, still in groups of ten in separate rooms, are led forth one at a time and shut up in a small room without books or notes of any kind and with only a chair, table, and a small sheet of paper to distract their attention. On the paper are written two questions, one on pharmacy, the other on chemistry. The questions are really the titles of two substances or subjects about which the candidate has to lecture the examiners. After being shut up and left to his meditations in this room for ten minutes by the clock, during which time he is supposed to mentally develop his discourse, the candidate is ushered by an attendant into the public hall, where he mounts a rostrum, and for ten minutes must expatiate upon his subjects as eloquently and as learnedly as he can. For instance, the subjects may be castor oil and chloroform, about which he has to tell all he knows, and so much the worse for him if at the end of ten minutes he has not managed to bring out the chief points of interest and the more important facts chemically and pharmaceutically relating to these bodies. Marks are given by the examiners to the candidate according to the amount of erudition shown, and also to the eloquence brought into requisition.

This third examination is not eliminatory.

Fourth Examination.

The fourth examination is written. All the candidates (by this time generally reduced to one half the original number) assemble in the amphitheatre, and seated at desks and armed with pen, ink and paper, await their questions, which they draw in turn out of a basket placed on a central table. The questions, three in number, are on chemistry, natural history, and pharmacy ; for example :—

No. 1, Chemistry. "Write an essay on Sulphides."

No. 2, Natural History. "Write an essay on Leeches."

No. 3, Pharmacy. "Write an essay on the Distilled Waters."

It lies then with each competitor to write to the full extent of his knowledge on each of these three subjects, to speak of the leeches' suckers, their eleven stomachs, three jaws, each with sixty microscopical V-shaped teeth, etc. The contest is almost as to who shall write quickest and cover the most paper. Four hours are conceded for the development of these three questions, at the end of which time one has to give in one's work, pack up, and move out. If the truth must be told, it must be confessed that many candidates go out before the end of the allotted time, having only managed to cover a few meagre pages of foolscap. As for them their fortune is easily told—they will remain at the gate of Paradise! The next and subsequent days the authors of the various theses read their scientific and pharmaceutical literature in public before the assembled examiners, who award the marks. The good and bad marks obtained in the four trials are calculated, and the places awarded accordingly. Then, at a special convocation, the successful students are proclaimed "Internes en Pharmacie" in order of merit, and receive each one a "carte d'interne," which the proud and happy recipient piously guards as does the triumphant soldier who sees shining on his breast the medal which his courage and bravery have obtained for him.

Duties of Internes.

We have seen how the title of "Interne" may be won ; let us now glance at the duties which pertain to the office. Each morning about seven or eight o'clock the doctor's rounds take place, at which time each "interne" must report himself to his medical chief, who, with his "interne en médecine" accompaning him, as well as several medical students and even doctors desirous of attending the chief's lectures, begins his visiting round of the patients' cots. He stops longer at the interesting cases, examines, sounds, and questions and prescribes this or that medicine. The interne en pharmacie, note-book in hand, writes down the doctor's orders, and when the medical visit terminates, hastens back to the pharmacy, where he rapidly dispenses the potions, pills, and other medicines ordered. The bottles, provided with numbers corresponding with those of the patients' beds, are carried to the wards by the male attendants or the sisters. At eleven or twelve noon all work is finished ; then comes "lunch."

The internes leaving the pharmacy assemble in their own private dining-room, which in common with the pharmacy, "salle de garde" and bedrooms, is generally in a building somewhat removed from that occupied by the patients. Their cook, whom they pay out of their own pocket, has prepared for them, also at their own expense, an appetising spread. They eat, drink, make merry and engage in animated converse, and what with a constant stream of jokes and wine running in unison, gaiety reigns supreme and the poor patients, their pains and misery, are forgotten. They talk politics, literature, fine art, philosophy, even socialism. At that happy age of twenty summers at what does one hesitate? "Homo sum, et nihil humanum a me alienum puto!" But time goes on, the afternoon arrives, they leave the table and the hospital, for every afternoon the internes are free, with the exception of the one on duty, who must not quit the premises. An electric bell connects him with the pharmacy, and he must be ready day and night to execute any urgent prescriptions delivered to him by the "Interne en Médecine." The "internes" are on duty according to the roster. In the afternoon some attend the lectures of the School of Pharmacy, others visit the Botanical Gardens or the Library, and others again do none of these, but drink beer and smoke their pipes in the "Brasseries." There are a few who shut themselves up at home, surrounded by their favourite books, and read hard ("potassent ferme") for future examinations. In the evening there is dinner about seven o'clock, after which more conversation, philosophical, scientific, or otherwise. When the finances are flourishing a visit may be paid to the theatre, concert, or to the boulevards, the rich often paying for the poor, and as each student passes through alternations of opulence and poverty, according to whether he is more or less removed from the time of his receipt of the paternal remittance, there springs up a kind of collective republic, one paying for the other, each in his turn. Neither the German Karl Marx, nor the Frenchman Jaurès, nor the English socialists themselves have as yet been able to establish similar practical socialism in modern society.

But as the date of the examinations at the School of Pharmacy draws near, pleasure and feasting are banished, at any rate, by the real students. These latter shut themselves up in their dens, and until early morning struggle manfully with their chemistry. They soon believe themselves serious rivals of Berthelot or Attfield. In botany they would pit themselves against the great Linnæus himself, and would have discovered Attwood's machine during their course of physics if he had not saved them the trouble by forestalling them, and they fall asleep pondering upon the invention of a motor for a navigable balloon !

Happy age that ! and happy the life of an Interne en Pharmacie ! His emolument is scanty—only forty francs a month and lodging—but his hope and faith in the future are immense. He knows not the disenchantments of life nor the deceptions experienced at a riper age. A free good fellowship—a lasting friendship—grows up between these seven or eight youths living together day by day in close association, having the same tastes, the same occupations, and the same hopes. Perfect equality exists between them. What more can be desired than this to be really happy ?

As a result this good fellowship begun during the Internat endures for a life-time, and it is a red letter day for each one when these "ex internes" meet in after life. All cherish a happy remembrance of the years passed in the Internat. Happy years of a happy youth gone never to return!

THE ANALYSIS OF SALTS.

The Third Group.

Separation of the Metals of Group III.

As mentioned in the last article (see last vol. p. 318) the precipitate obtained on adding ammonia may contain the hydrates of iron (ferric), chromium, and aluminium. When these are collected, washed, and dried, they lose water and are converted into oxides, Fe_2O_3, Al_2O_3, Cr_2O_3. The dried oxides are fused with sodium carbonate and potassium nitrate (or chlorate). The iron oxide is unaffected by this treatment, and remains as an insoluble reddish-brown powder. The aluminum oxide combines with the alkali to form a soluble potassium aluminate—

$$Al_2O_3 + K_2CO_3 = 2KAlO_2 + CO_2.$$

The chromic oxide also unites with the alkali in presence of oxidising agents, like KNO_3 or $KClO_3$, to form yellow potassium chromate, $K_2CrO_4 = K_2OCrO_3$.

$$\text{(i.)}\ Cr_2O_3 + 3O = 2CrO_3.$$
$$\text{(ii.)}\ CrO_3 + K_2CO_3 = K_2CrO_4 + CO_2.$$

The fused mass is, therefore, boiled with water, any ferric oxide filtered out, and the filtrate divided into two parts. One part is examined for chromium by adding an excess of ammonium chloride. This decomposes the potassium aluminate—the reaction being hastened by warming—and a precipitate of hydrated aluminium oxide, $Al_2O_3{\cdot}2H_2O$ or $Al_2O(OH)_4$, is produced. This oxyhydrate is rather denser than the gelatinous normal aluminium hydrate, Al_26HO, precipitated by addition of ammonium hydrate to solutions of ordinary aluminium salts.

$$2KAlO_2 + 2NH_4Cl = Al_2O_3 + 2KCl + 2NH_3 + H_2O.$$

A relatively large amount of ammonium chloride is required for this reaction, because a considerable quantity of potassium carbonate has been used in the formation of the aluminate by fusion, and the excess of K_2CO_3 uses up ammonium chloride—

$$K_2CO_3 + 2NH_4Cl = 2KCl + (NH_4)_2CO_3.$$

Instead of adding ammonium chloride, one can add hydrochloric acid until a distinctly acid reaction is obtained after warming. This decomposes the aluminate, forming aluminium and potassium chlorides—

$$2KAlO_2 + 8HCl = Al_2Cl_6 + 2KCl + 4H_2O.$$

By now adding ammonia a gelatinous precipitate of aluminium hydrate is obtained—

$$Al_2Cl_6 + 6NH_4HO = Al_26HO + 6NH_4Cl.$$

The portion of the fluid reserved for the detection of chromium will be yellow from the presence of potassium chromate if this element be present. Confirmation of this is obtained by adding acetic acid to a faint acid reaction to convert the excess of alkaline carbonate to acetate, and then solution of lead acetate: a yellow precipitate of lead chromate will be obtained—

$$K_2CrO_4 + Pb2C_2H_3O_2 = PbCrO_4 + 2KC_2H_3O_2.$$

It is necessary to convert the carbonate of potassium into acetate before adding the lead solution, otherwise a white precipitate of lead carbonate will be obtained. If manganese be present in the original solution the fused mass obtained by heating the group precipitate with alkaline carbonate and nitrate will be green from the formation of potassium manganate. For although the manganous hydrate precipitated by ammonia is soluble in excess of this reagent, particularly in presence of ammonium salts (like the hydrates of zinc, nickel, and cobalt), during the heating and filtration (after addition of ammonia) to separate the hydrates of iron, aluminium, and chromium, some of the manganous salt becomes oxidised to mangano-manganic oxide, Mn_2O_3, which, being insoluble in ammonia, is precipitated along with the iron, aluminum, and chromium. When this precipitate is dried and fused with alkaline carbonate and nitrate, the manganese oxide (compare Cr_2O_3) is oxidised to green potassium manganate, $K_2MnO_4(K_2O,MnO_3)$, which dissolves in water and interferes with the reactions for the detection of aluminium and chromium. If a green solution is obtained here, the alkaline solution before acidifying is heated and treated drop by drop with alcohol until the green colour is just removed. The manganate is reduced by the alcohol, aldehyde being formed, and the manganese is re-precipitated as Mn_2O_3.

$$2(K_2O{\cdot}MnO_3) + 3C_2H_6O =$$
$$4KOH + Mn_2O_3 + 3C_2H_4O + H_2O.$$

The brown precipitate of Mn_2O_3 should be filtered out and the filtrate tested as described for aluminium and chromium.

Fourth Group.

To the alkaline filtrate from the third group precipitate, ammonium sulphydrate is added. This precipitates zinc, manganese, nickel, and cobalt as sulphides, these being insoluble in water or alkali. If we suppose these four metals to be present as chlorides, and let M stand for Zn, Mn, Co, or Ni, the following equation represents the reaction:—

$$MCl_2 + (NH_4)_2S = MS + 2NH_4Cl.$$

They were not precipitated by sulphuretted hydrogen, because this reagent was applied in presence of free hydrochloric acid. Addition of great excess of ammonium sulphydrate should be avoided, because nickel sulphide dissolves to some extent under these conditions. When this occurs the filtrate is brownish-black. If a black filtrate is obtained it must be boiled to remove the excess of ammonium sulphide when the black nickel sulphide is usually deposited. If, after boiling, the filtrate is not colourless, add hydrochloric acid until a faint acid reaction is obtained, and boil again. This should effect the entire removal of nickel.

Separation of the Metals of Group IV.

The separation of these four sulphides may be effected in several different ways. The simplest method is perhaps to treat then with *cold dilute* hydrochloric acid, which dissolves MnS and ZnS, forming the corresponding chlorides, $MnCl_2$ and $ZnCl_2$. Shake the mixture for some time—*without warming*—and then filter—the filtrate contains the manganese and zinc chlorides, while the black sulphides of nickel and cobalt remain on the filter. Note that NiS and CoS are not precipitated by sulphuretted hydrogen from solutions of nickel and cobalt salts in presence of free hydrochloric acid. When precipitated from alkaline solutions, however, they do not re-dissolve in *cold dilute* HCl, but if the acid be strong, or *hot* dilute acid be employed, they do dissolve. The filtrate containing the manganese and zinc is now well boiled to remove every trace of sulphuretted hydrogen formed by the solution of the sulphides—

$$MnS + 2HCl = MnCl_2 + H_2S.$$
$$ZnS + 2HCl = ZnCl_2 + H_2S.$$

The fluid thus freed from H_2S is now *cooled*, and then caustic potash in excess is added. The zinc hydroxide first produced dissolves in the excess of KOH, forming a soluble zincate of potassium—

$$\text{(i.)}\ ZnCl_2 + 2KOH = Zn(OH)_2 + 2KCl.$$
$$\text{(ii.)}\ Zn(OH)_2 + 2KOH = K_2ZnO_2 + 2H_2O.$$
$$(ZnO,H_2O)\quad (K_2O,H_2O)\quad (K_2O,ZnO).$$

The manganous hydroxide is precipitated, being insoluble in the excess of potassium hydroxide, but quickly absorbing oxygen becomes converted chiefly into brown mangano-manganic oxide, Mn_2O_3. This precipitate must be filtered off and tested by confirmatory reactions for manganese, *e.g.*, fusion on platinum with potassium carbonate and nitrate to form green potassium manganate. Ammonium sulphide is added to the alkaline filtrate containing the zinc. This precipitates zinc sulphide, since ZnS is insoluble in alkali. Zinc and manganese may also be separated by taking advantage of the solubility of MnS and insolubility of ZnS in acetic acid. This may be utilised in two ways:—Either the precipitated sulphides are treated with acetic acid, or H_2S is passed through the solution containing the two metals in presence of free acetic acid (not hydrochloric acid, which prevents the precipitation of both MnS and ZnS).

The separation of the nickel and cobalt sulphides is somewhat difficult, owing to the close resemblance between the proper-

ties of the corresponding salts of these two metals. Indication of the presence of nickel will probably have been obtained by the partial solubility of NiS in ammonium sulphide. The presence of cobalt may also be shown by heating a small portion of the sulphides with the borax bead. The blue colour produced by cobalt compounds completely masks the relatively weaker red-brown tint communicated to the bead by nickel. Their separation is most simply effected by means of the insoluble double nitrite of potassium and cobalt. The sulphides are dissolved to chlorides by boiling with strong hydrochloric acid. Addition of a few drops of nitric acid (forming aqua regia) hastens the solution. Since free hydrochloric acid prevents the precipitation of the double nitrite, caustic potash is added to alkaline reaction, and then excess of acetic acid. The necessity for this free acetic acid will be seen subsequently. A large excess of solid potassium nitrite is now added so as to saturate the fluid. The mixture is warmed and then set aside for *at least* an hour. Under these conditions any cobalt present is precipitated as $Co(NO_2)_3$, $3KNO_2$, a yellow somewhat crystalline precipitate, forming slowly. This compound is very sparingly soluble in water, and practically insoluble in presence of excess of KNO_2. Note that the cobalt has become trivalent, for the double nitrite contains cobalt*ic* nitrite, $Co(NO_2)_3$. If we add KNO_2 to a neutral cobalt solution a double cobalt*ous* compound, $Co(NO_2)_2 2KNO_2$ is obtained. In presence of excess of potassium nitrite and free acetic acid, which yield free nitrous acid—

$$KNO_2 + HC_2H_3O_2 = KC_2H_3O_2 + HNO_2$$

the cobalt*ous* compound is oxidised to cobalt*ic* at the expense of this nitrous acid, which is thereby reduced to nitric oxide—

$$2HNO_2 = H_2O + 2NO + O.$$

Nickel does not form an analogous compound, and will be found in the filtrate from the potassium cobaltic nitrite. From this it may be precipitated as nickel sulphide by heating with ammonium sulphide. Any black precipitate so obtained must be tested in the borax bead. Another method for the separation of nickel and cobalt depends upon the behaviour of their cyanides in presence of potassium cyanide. Cobalt also here passes into the cobalt*ic* state and forms a cobalticyanide—analogous to ferricyanide—of potassium, in which the cobalt becomes a part of the acidulous radicle and does not respond to the ordinary tests, while nickel does not undergo this change. This method is not so satisfactory or simple as the one already described.

Fifth Group.

The filtrate from the fourth group is concentrated and the fifth group (barium, strontium, and calcium) precipitated as carbonates by addition of ammonium carbonate. Magnesium carbonate, although insoluble in water, is not precipitated here on account of the formation of soluble double magnesium-ammonium compounds, as already mentioned. The exact separation of the fifth group requires care for its successful performance, for the following reason: when ammonium carbonate is added, the following reaction takes place, M standing for any one of the three metals Ba, Ca, or Sr—

$$MCl_2 + (NH_4)_2CO_3 = MCO_3 + 2NH_4Cl.$$

If the mixture be boiled the reaction is partly reversed, particularly in presence of large excess of ammonium salts, and this latter condition always occurs at this stage of analysis, because of the previous use of ammonium salts for the separation of the preceding groups. This reversed reaction is exhibited, for example, by calcium carbonate—

$$CaCO_3 + 2NH_4Cl = CaCl_2 + (NH_4)_2CO_3.$$

The liquid after addition of ammonium carbonate should be, therefore, only slightly warmed to promote the aggregation of the precipitated carbonates into a sandy crystalline condition, so as to render their separation and washing easy, but *not boiled*. If the mixture be boiled, a portion of the precipitated carbonates undergoes the reverse reaction already mentioned. The barium, strontium, or calcium chloride so formed, being soluble, will go into the filtrate and will form a precipitate and be mistaken for magnesium when sodium phosphate is added for the detection of that metal.

Separation of the Metals of Group V.

The carbonates of barium, strontium, and calcium are now dissolved in acetic acid, acetates of the metals being formed and carbon dioxide evolved.

$$MCO_3 + 2HC_2H_3O_2 = M(C_2H_3O_2)_2 + H_2O + CO_2.$$

Barium is separated as chromate by addition of (neutral) potassium chromate—

$$Ba2(C_2H_3O_2) + K_2CrO_4 = BaCrO_4 + 2KC_2H_3O_2,$$

barium chromate being insoluble in water or acetic acid. Strontium chromate is only slightly soluble in water, but more easily in presence of the excess of acetic acid used in dissolving the carbonates, while calcium chromate is easily soluble in water only. Strontium and calcium will, therefore, be found in the filtrate from the yellow barium chromate. The exact separation of these two metals is rather tedious, but a simple method sufficient for most purposes is as follows. To a *small portion* of the filtrate some saturated solution of calcium sulphate is added, and the mixture set aside for some time. If strontium be present a precipitate of $SrSO_4$ will be obtained, since it is much less soluble (1 in 7000) than $CaSO_4$ (1 in about 400).

$$Sr(C_2H_3O_2)_2 + CaSO_4 = SrSO_4 + Ca(C_2H_3O_2)_2.$$

In this case the reserved portion of the filtrate is treated with dilute sulphuric acid and set aside to allow the complete deposition of the strontium sulphate.

$$Sr(C_2H_3O_2)_2 + H_2SO_4 = SrSO_4 + 2HC_2H_3O_2.$$

This precipitate will include some calcium sulphate if the quantity of calcium salt present amounts to enough to reach the limit of solubility of the calcium sulphate.

$$Ca(C_2H_3O_2)_2 + H_2SO_4 = CaSO_4 + 2HC_2H_3O_2.$$

In any case, however, *all* the calcium sulphate does not come down on account of its slight solubility in water, and sufficient will always be found in the filtrate from the strontium precipitate to yield a precipitate of calcium oxalate on the addition of ammonium oxalate, since calcium oxalate is practically quite insoluble in water or acetic acid.

$$CaSO_4 + (NH_4)_2C_2O_4 = CaC_2O_4 + (NH_4)_2SO_4.$$

Sixth Group.

The filtrate from the fifth group contains now only salts of magnesium, potassium, sodium, and ammonium. Since the group precipitants added in the course of analysis have been ammonium compounds, the presence of ammonia must be determined by examination of the original substance. This filtrate is divided into two portions, one larger than the other. To the smaller portion sodium phosphate is added. If magnesium be present a *crystalline* precipitate of ammonio-magnesium phosphate is obtained.

$$MgCl_2 + Na_2HPO_4 + NH_4HO = MgNH_4PO_4 + 2NaCl + H_2O.$$

Since this compound is much less soluble in water containing free ammonia, some solution of ammonia is added. The precipitate appears in dilute solutions only on standing and any small precipitate obtained, not distinctly crystalline, should be viewed with suspicion, since it may be due to traces of calcium, etc., not completely precipitated in the previous group. The larger portion of the filtrate is evaporated to dryness and ignited to remove the ammonium salts, since these form also an insoluble double chloride with platinum perchloride. The ignited residue, therefore, may contain magnesium (whose presence is determined by examination of the other portion) potassium and sodium. It is dissolved in the least possible quantity of water, the solution placed in a watch-glass, acidulated with hydrochloric acid, and platinum perchloride added. A yellow precipitate of double chloride of platinum and potassium, $K_2PtCl_4 = 2KCl.PtCl_4$, is obtained if potassium be present. The corresponding sodium compound is easily soluble. If neither magnesium, potassium, nor sodium be present, the filtrate from the fifth group will contain nothing but the excess of ammonium salts used as group reagents; when evaporated and ignited it therefore leaves no residue.

PRACTICAL PHARMACOGRAPHY.

CARYOPHYLLUM.

Syn. Cloves, Eng.; Clous de Girofles, Fr.; Gewürznelken, Germ.; Garofani, Ital.; Cravinho, Port.; Clavo, Sp.

Macroscopic Characters.—Cloves consist of the dried unexpanded flower-buds of *Eugenia caryophyllata*, Thunb. They are of a reddish-brown colour, about 10 millimetres long and 5 millimetres in diameter. The upper portion consists of

Fig. I.—CARYOPHYLLUM.—*a*, Natural size (Penang clove); *b*, longitudinal section magnified; *c*, tranverse section through the ovary; *d*, pollen grain magnified; *e*, bast fibre.

four closely-imbricated petals, forming a globular head and enclosing numerous stamens inserted at the base

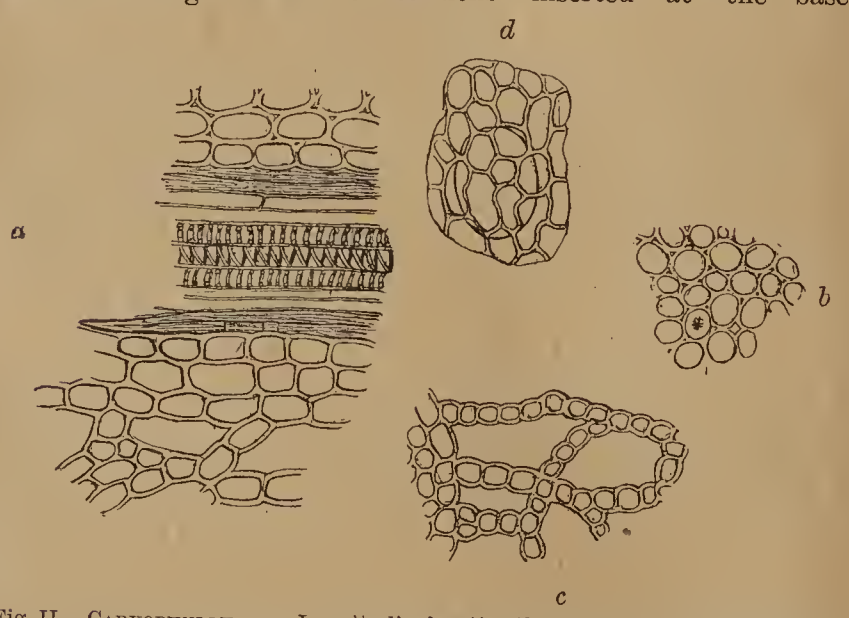

Fig. II.—CARYOPHYLLUM.—*a*, Longitudinal section through a fibro-vascular bundle; *b*, collenchymatous cells with cluster crystal, from outer parenchyma between the oil cells and fibro-vascular bundles; *c*, porous tissue near the centre of the calyx tube; *d*, lower epidermis of the petals. After Tschirch and Oesterle.

of the petals, the latter arising from a quadrate epigynous disk, the angles of which are directed towards the four triangular spreading calyx teeth. The ovary is two-celled, and contains numerous ovules. It is enclosed in the fleshy calyx tube a little below the calyx teeth, and is crowned with a short subulate style, which arises from a depression in the disk. The calyx tube is nearly cylindrical, slightly tapering, and compressed below. If the cloves are of good quality, the surface exudes essential oil when indented by the finger-nail, and they present a bright brown colour and plump appearance, and have pale brown petals. On cutting through the calyx tube transversely an irregularly double ring of large oil cavities of an oval or radially elongated form are seen near the circumference (Fig. III., *pe*). The odour and flavour of cloves resemble those of eugenol, and they have, like it, a biting taste. There are several varieties in commerce, but these do not differ in structure, being distinguished chiefly by their appearance, size, and colour, due to the care taken in their collection and preparation for the market. Those of Penang are the largest, and are plump and of a bright brown colour, those of Amboyna being rather smaller but of a dark brown colour, and those of Zanzibar still smaller, dark coloured, with the buds frequently broken, and containing stalks and foreign matter.

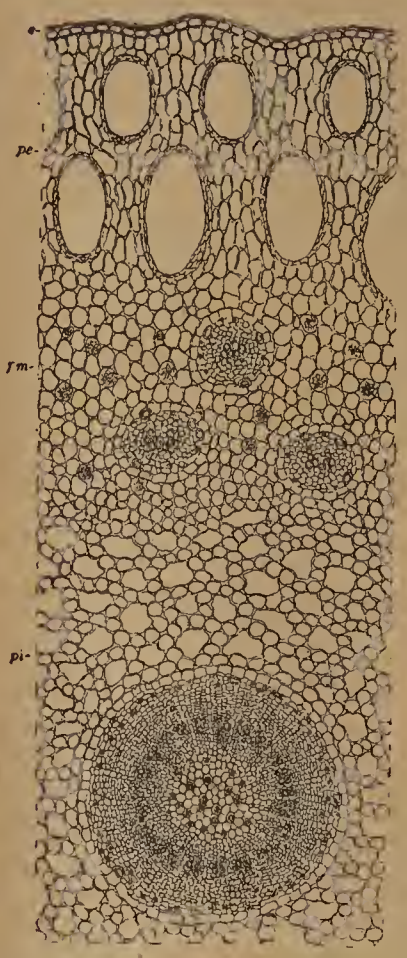

Fig. III.— CARYOPHYLLUM.— Transversese ction of half the calyx tube. After Planchon and Collin.

Microscopic Characters.— The epidermal cells possess outer walls of considerable thickness, 13 to 14 μ, but which are not strongly cuticularised. The layer beneath the epidermis consists of thin-walled cells containing two or three rows (Fig. I., *c*) of large oval oil cells, often 300 μ in diameter (Fig. III., *pe*). Still further inwards is a layer of collenchymatous cells (Fig. II., *b*), a ring of about thirty fibro-vascular bundles (Fig. III., *fm*), and then a layer of tissue containing large intercellular cavities (Fig. III., *pi*). The centre of the calyx tube is occupied by a dense ring of fibro-vascular bundles (Fig. III., *pi*, and Fig. II., *a*). The spiral vessels are comparatively small, but the bast fibres are very broad, with a large lumen (Fig. I, *e*), and the tissue surrounding the bundles frequently contains numerous cluster crystals (Fig. II., *b*, and III., *fm*). Nearly the whole of the tissue gives a dark blue reaction with ferric chloride, due to the presence of eugenol. *Powder.*—The chief characters noticeable

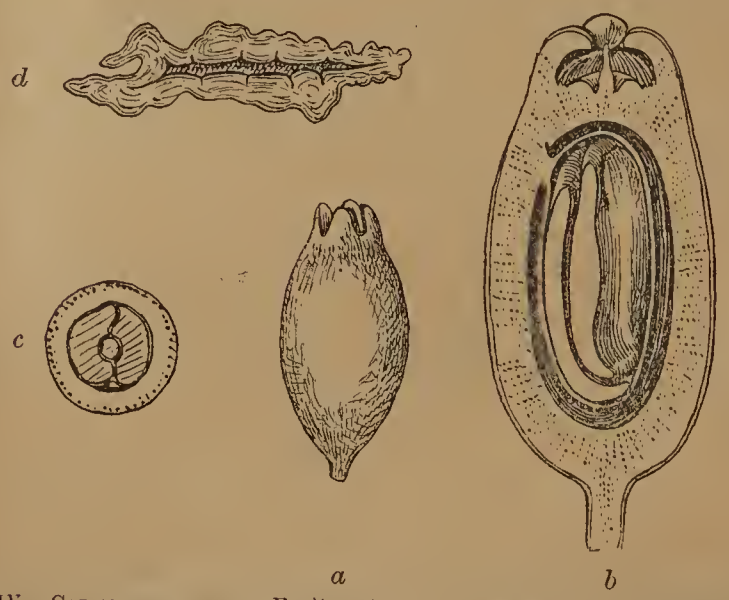

Fig. IV.—CARYOPHYLLUM.—*a*, Fruit, nat. size; *b*, ditto magnified, longitudinal section, showing the large suspended seed with two large cotyledons; *c*, transverse section of fruit; *d*, bast cell from the fruit-wall. After Tschirch and Oesterle.

are the large bast fibres, the triangular pollen grains (Fig. 1, *d*), the vascular bundles, with slender spiral vessels, the numerous brownish cluster crystals, and the absence of starch

and stone cells. The collenchymatous tissue and oil cells are not easily recognised, since the powder met with in commerce is rarely very fine, but torn fragments of the lines of cells forming the air cavities (Fig. II., *c*, and III., *pi*) are more easily distinguished. The powder is sometimes adulterated with the fruits or fruit-stalks of cloves. The powder o f the former may be recognised by the presence of starch grains (Fig. V., A), and large irregularly formed bast cells (Fig. IV., *a*), the latter by the numerous, almost isodiametric, but unequally thickened stone cells (Fig. V., C). Bast cells of irregular

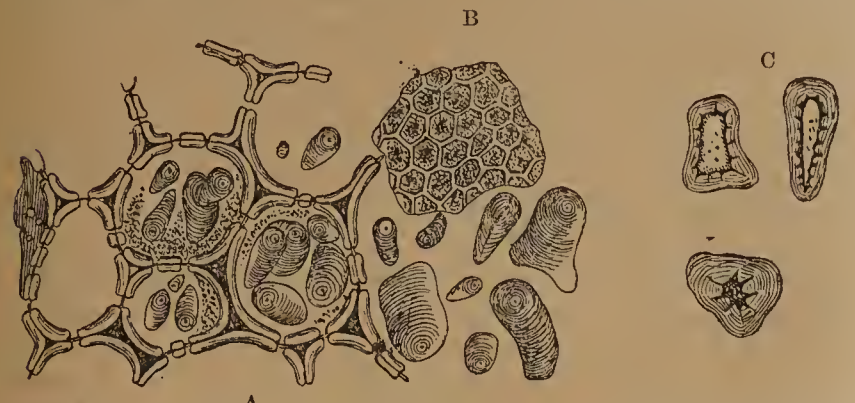

Fig. V.—Caryophyllum.—A, Tissue of the cotyledons with the starch grains *in situ*; B, epidermal tissue of the cotyledons. After Müller. C, Sclerenchymatous cells from clove stalks. After Tschirch and Oesterle.

form occur also in the fruit-stalks, but no starch. Fuller details of structure may be found in Tschirch and Oesterle's 'Anat. Atlas,' taf. xiii.

CARUI FRUCTUS.

Caraways, Eng.; Fruits de Carvi, Fr.; Kümmel, Germ.; Alcaravie, Port.; Alcarabea, Span.

Macroscopic Characters.—Caraways are the dried ripe fruit of *Carum carvi*, Linn. There are several commercial varieties imported from Holland, Russia, and occasionally from Mogador; they are also produced in the Eastern Counties of England. The varieties met with in English commerce vary in size, colour, and purity. The English, which are the most esteemed, are of brighter tint than the Dutch, which are of a dark brown colour. The Russian are smaller and often mixed with much dirt and *débris* of the fruit stalks. Occasionally

Fig. I.—Carum Carvi.—*a*, Russian variety, natural size and magnified. *b*, English, Do. *c*, Mogador, Do.

a large pale variety is imported from Mogador. It is about half as long again as the English kind. The English caraways consist of separate mericarps, which are about 3 to 4 Mm. long and rather more than one millimetre in diameter, somewhat curved, and tapering towards either end. The five pale longitudinal ridges are barely half as broad as the shining dark brown furrows, in each of which lies a large conspicuous vitta. There are also two vittæ on the commissure or flat side of the fruit. The odour and flavour of caraways somewhat resembles that of dill, due to the presence of carvol in the essential oils of both fruits.

Microscopic Structure.—The epicarp consists of somewhat quadrate colourless cells with flexuose walls, and is furnished with stomata (III. *e*), and a small one in each ridge of the fruit. Each ridge contains a fibro-vascular bundle (II. D, III. *fb*, and *tr*). The vittæ are chambered, and are lined with a brown polygonal epithelium (III. *cs*). There is also one small oil receptacle outside each vascular bundle in the ridges of the fruit. These are not represented in

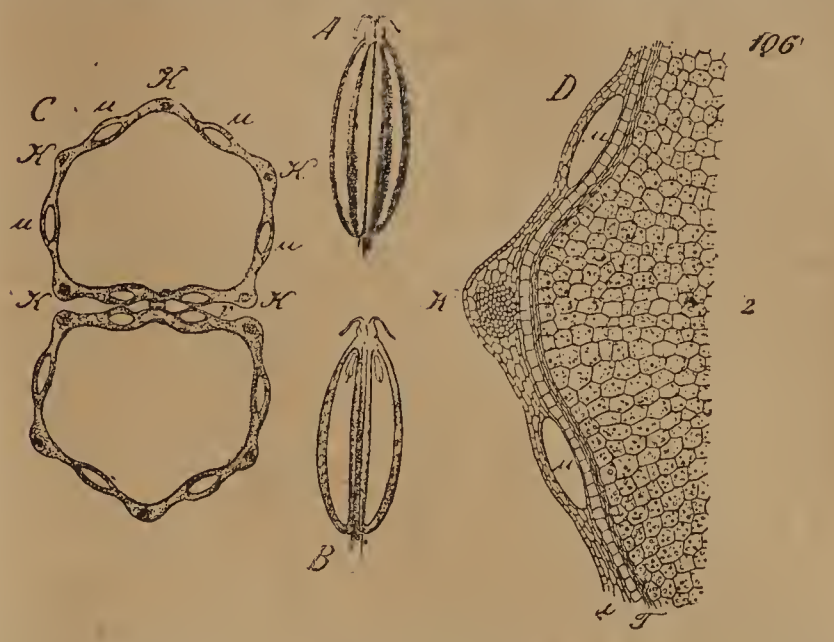

Fig. II.—Carum Carvi.—A, entire fruit magnified, showing ridges; B, longitudinal section, showing embryo and albumen; C, transverse section of fruit; D, portion of ditto, showing structure. After Berg.

Berg's figure (II. D). The mesocarp consists of brownish-yellow angular cells (III. *m*), and the endocarp has elongated cells (III. *en*). The endosperm has colourless thick-walled angular cells containing aleurone grains and oil (III. *a*).

Fig. III.—Carum Carvi.—Powdered fruit; *a*, albumen, containing aleurone grains and oil; *fb*, wood fibres in the ridges of the mesocarp; *cs*, cells of vittæ; *e*, striated cells of epicarp with stomata; *m*, cells of mesocarp; *sc*, sclerogenous cells of the mesocarp; *en*, cells of endocarp; *es*, cells of inner integument of seed. After Collin.

The principal features in the powder are the brown polygonal epithelium of the vittæ, the wood fibres and narrow spiral vessels of the fibro-vascular bundles of the ridges, the long, narrow, brownish-yellow cells of the endocarp, and the absence of crystals and starch. The development of the vittæ in caraway fruit has been described in the *Pharmaceutical Journal* [4], vi., p. 259, by Mr. H. E. Matthews. The small vitta outside each vascular bundle is not represented in Fig. II. D., but may be seen in the figures given by Mr. Matthews, p. 260.

Protectin.—Under this name Evens and Pistor have introduced a very thin silky paper which is impregnated on one side with a solution of caoutchouc. It can be sterilised like any other compress. It adheres firmly to the skin and all materials and products, so that, by means of small pieces of this paper, any desirable bandage can be formed. The use of the material is particularly recommended in operations, for protecting wounds and surfaces from infection. —*Pharm. Zeit.*, xlii., 6726.

COLONIAL DRUGS IMPORTED INTO GERMANY.

An interesting paper by P. Siedler appears in the *Ber. der Deutsch. Pharmaceutischen Gesellschaft*, describing some drugs recently imported into Germany, and it indicates the attention that new products receive in that country, as well as the rapidity with which the teaching in technical schools and museums is bearing fruit. Kola nuts are now imported from the German colonies of Togoland and the Cameroons, and have been sent over in the fresh state. Herr Siedler thinks that the taste of the fresh seeds will not be agreeable to European palates, and that they are only suitable for use when dried and properly prepared. The fresh nuts, as imported, were frequently mouldy; the fusty odour passed off, however, on exposure to the air for a time. He found that the kola nuts from Togoland and the Cameroons yielded, by the ammonia and chloroform method of Keller, an average of 1·621 per cent. of mixed caffeine and theobromine. Some difficulty was experienced in assaying the fluid extract and liqueur of kola, but by the use of chloroform saturated with gaseous ammonia he was able to overcome the difficulty. The seeds of *Dimorphandra* offered some time since in London marked as kola appear to have reached Germany, and are identified by Herr Siedler as those of *Dimorphandra mora*, Schomburgk, of Guiana; but it is not evident on what grounds they are identified as that species. The seeds of *Lucuma mammosa* imported as sapota or "macogany" nuts, and those of the bitter kola (*Garcinia kola*, Heckel), are confounded with the true kola, but neither contain caffeine.

Gum arabic has been imported into Hamburg, from German S. W. Africa, to the extent of 5000 kilos last year, partly in the natural form, and partly in coarse powder freed from adhering bark. The coarsely powdered gum is considered not worth importing, and the other, although yielding a more viscous solution than Khordofan gum, is apparently the mixed product of several trees, as it contains a good deal of gum that swells without dissolving. Herr Siedler found it deficient in ash, since it yields only 1·71 per cent. of ash, as against 2·7 to 4 per cent. of ash in Khordofan gum (Flückiger). A drug named "njimo" from the Cameroons possesses a yellow colouring matter, a very bitter taste, and acts as a sialogogue. These characters seem to indicate a *Xanthoxylum*, *Toddalia*, or allied genus.

A number of products from the Portuguese island of Saõ Thomé, on the West African coast, have been examined by Herr Siedler. One of these is the indiarubber of *Manihot glaziovii*, which he found to be very inferior to the product grown in Ceara, showing that the climatal or terrestrial conditions do not suit the plant, and affording a useful lesson to planters of the necessity for ascertaining the conditions that suit plants before commencing plantations. A kind of gutta percha called "azeitona," and obtained from *Sideroxylon densiflorum*, Baker, appears to be of very inferior quality.

Balsam of S. Thomé is the name of an oleoresin yielded by the Pao Oleo (*Santiriopsis balsamifera*, Engl.), a Burseraceous tree. The terebinthinate oleoresin flows spontaneously from cracks or wounds in the tree, and is collected in cocoanuts, and is placed in the sun to become clear. A bottle of the balsam thus clarified costs about 1000 to 3000 Reis. It is highly valued by both the whites and blacks in the island for healing wounds. Internally it is taken for catarrh of the bladder and bronchitis. The dose is 0·3 to 2·0 gr. It is also used in the form of pills, pastilles, syrup, emulsion, electuary, and tincture. All who cross to Europe from S. Thomé and Principe usually carry a flask of the balsam with them.

Cinchona bark from *C. officinalis*, *C. calisaya*, and *C. succirubra* were received from the same island, where the cultivation commenced in 1864, with, unfortunately, the comparatively worthless *C. Pahudiana*. In 1869-71 plants of *C. succirubra* were sent from the botanical gardens at Coimbra, as well as a few of *C. officinalis*. From 1878-1885 other species were sent, including *C. lancifolia*, Mutis., *C. micrantha*, R. et P., *C. cordifolia*, Mutis., *C. caloptera*, Miq., *C. Haiskailiana*, Miq., *C. calisaya*, R. et P., and vars. *anglica* and *Javanica* and *C. Ledgeriana*, Moens. Between 1880 and 1887, 1,600,000 cinchona trees were planted, mostly *C. succirubra*, the best growing at an elevation of 1000 metres. Some of the more important planters have founded a quinine manufactory at Lisbon for utilising the bark they produce.

A lemon-grass oil from Saõ Thomé possesses distinct peculiarities. It has been examined by Mr. H. Haensel, who finds that it differs from citronella oil of *Andropogon nardus* and the lemon-grass oil of commerce in its optical inactivity, these oils rotating a ray of polarised light to the left, behaving thus like citral.

Another drug described by Herr Siedler is axin, the product of *Coccus axin*, a Mexican insect feeding on species of *Zanthoxylum* and *Spondias*. It is of a dark or orange-yellow colour, tolerably clear, melting at 35° C., soluble in ether, chloroform, and boiling alcohol, but easily becomes brownish and rancid, and is then insoluble in ether and alcohol. It consists essentially of palmitic and lauric acids, and, according to Worlée, is a good remedy for prurigo. Almadina is the juice of a Euphorbiaceous plant in German West Africa, said to be very poisonous, but procurable in quantity.

THE ELECTROZONE PROCESS.

The fluid termed "Electrozone"—produced by the electrolytic action of a current of electricity generated by the dynamo—has been proved, by trials at Maidenhead, to be an absolute bactericide in the treatment of effluent from the Town Sewerage Works. The course followed there is by sedimentation with ferrozone, and filtration through sand and polarite. The effluent is met by a jet of electrozone, and both commingle in a flow of about forty seconds to the brook, which discharges into the Thames a couple of miles down stream in a perfectly sanitary condition. Dr. Kanthack, of Cambridge, has reported that the amount of available chlorine in the electrozone necessary to sterilise the filtered sewage effluent is only one-fifth of a grain to the gallon. This minute quantity practically destroys all bacteria, for out of every million, after a few minutes' contact, not ten survive the treatment. Electrozone is also an effective deodorant, by reason of its annihilation of the gas-producing organisms. These results show an immense advance over the best processes of sewage treatment in use.

Dr. Rideal, in his report, expresses the opinion that an economical method of disposing of sewage would be by utilising the bacteria in the first instance by passing the sewage through screens and beds of porous materials, in which the solids might be liquefied by bacterial action and the putrescible organic matter converted into nitrates, which are harmless from a chemical point of view, but are associated with innumerable bacteria which can be destroyed by electrozone. A great feature in the Electrozone Process is its perfect adaptability to large fluctuations in the rate of discharge of sewage. All chemical precipitations, as well as those based on filtration or irrigation, are affected injuriously by differences of flow. It is, therefore, very important to have the effluent sterilised to its full extent when a large body of flood water is coming down. Further, Dr. Kanthack shows that even if the effluent contains a large quantity of albuminoid and saline ammonia, which form good culture media for the growth of micro-organisms, that growth does not make appreciable progress for some forty-eight hours after the application of the electrozone, a point of enormous importance.

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DEATHS BY POISON.

In the Registrar-General's fifty-ninth annual report for England, which has just been published, 1091 deaths that occurred in 1896 are attributed to the effects of poisons and poisonous vapours. Of that number 619—403 males and 216 females—were due to accident or negligence, whilst 472—279 males and 193 females—were cases of suicide. Taking the accidental cases first, we find that narcotics, including opium, laudanum, morphine, and chlorodyne, were responsible for 117 deaths—55 males and 62 females. Carbolic acid proved fatal in 34 cases only—25 males and 9 females, whilst oxalic acid was the cause of death in two instances, strong mineral acids in twenty-one, arsenic in four, chloral in six, aconite in three, belladonna and atropine in nine, and strychnine and nux vomica in four instances. Sulphonal has two deaths credited to it, prussic acid and oil of almonds four, potassium cyanide two only, colchicum wine, weed killer, and vermin killer one each. Lead poisoning heads the list with 127 deaths, and chloroform proved fatal in 51 instances. Considerably more than one-fourth of the cases are quite outside consideration in connection with the regulation of the sale of poisons, as the deaths are ascribed in those instances to inhalation of smoke, coke fumes, coal gas, sewer gas, etc., or to the use of unripe fruit, poisonous fish, tinned salmon, ptomaines, alcohol, laburnum and wild-rose seeds, ice cream, phosphorus matches, and so forth. Finally, not more than one-fourth of the remaining cases were due to poisons scheduled in accordance with the Pharmacy Act, or about one-fifth only of the total number of deaths ascribed to the effects of poison taken by accident or through negligence.

The 472 suicidal cases are remarkable for the partiality shown for carbolic acid as a means of terminating existence. Altogether, 163 suicidal deaths were due to that cause—88 males and 75 females; narcotics accounted for 66 deaths, oxalic acid for 24, prussic acid and oil of almonds for 28, potassium cyanide for 19, strychnine and nux vomica for 24, arsenic for 5, mercuric salts for 3, salts of lemons for 4, cocaine for 1, aconite for 1, belladonna for 3, Easton's syrup for 1, vermin killer for 4, and weed killer for 1. The fact stands out prominently, therefore, that carbolic acid was responsible in 1896 for practically as many suicidal deaths as all the scheduled poisons put together, and it cannot be doubted that this is entirely due to the entire lack of restriction on its sale and the corresponding facility with which it can be obtained. To summarise this part of the report very briefly, it may be accepted that in one-third of the cases of suicidal poisoning the use of scheduled poisons was resorted to; another third, or rather more, can be ascribed to carbolic acid; whilst strong mineral acids, phosphorus, and other unscheduled substances account for the remainder. In fact, the whole of the evidence tends to show that, in regard to the risk of poisoning generally, whether by accident or design, the public interest is remarkably well served so far as scheduled poisons are concerned, and that where there is no restriction on the sale of poisonous substances the lack of the registered chemist's special training and consequent discretion is at once felt.

The exceptional position occupied by carbolic acid as a means of destroying life is clearly shown in the following table, which includes the figures for the last five years for which official reports are available:—

Group.	Poison.	1892	1893	1894	1895	1896
Accidents	Carbolic Acid	33	31	35	34	34
	Other Agents	481	566	553	564	585
	Total Deaths	514	597	588	598	619
Suicides	Carbolic Acid	73	117	167	224	163
	Other Agents	228	253	334	356	309
	Total Deaths	301	370	501	580	472

The figures speak for themselves, and it is unnecessary to do more than point out that whilst the proportion of accidental deaths caused by carbolic acid has diminished since 1892, the proportion of suicidal cases in which that corrosive poison has been resorted to has increased from less than one-fourth to more than one-third of the whole. Adding together the deaths by poisoning, whether due to accident, negligence, or suicide, the results work out as here shown—

Cause of Death.	1892.	1893.	1894.	1895.	1896.
Carbolic Acid	106	148	202	258	197
Other Agents	709	819	889	920	894
Total Deaths	815	967	1091	1178	1091

That is to say, the percentage of deaths by poison caused by carbolic acid alone has increased from 13 per cent. in 1892 to 18 per cent. in 1896. In 1895 the proportion rose to nearly 22 per cent., but for some reason or other the plague of deaths by poisoning has abated somewhat since that fatal year, an improvement having been manifested both as regards accidental cases and suicides. The grand total for 1896 was reduced to the same figure as for 1894, and considering the constant growth of the population, that shows a considerable improvement upon the latter year. But much room yet remains for improvement, and everything points to an extension of the present poison schedule as being likely to impose the most effectual check. Other means may be suggested, and attempts may be made to try them, but what past experience has proved effective is not likely to be improved upon in the direction indicated.

ANNOTATIONS.

THE *P.J.* SYNOPSIS OF THE B.P., 1898, extends its sphere of usefulness as time wears on, and it is encouraging to record the fact that the demand for it continues unabated. Mr. Parker, whose letter is published at page 523, expresses his gratitude for the assistance afforded him by the little work, by suggesting further useful additions, and though every improvement of the book involves further expense, it is proposed to make the suggested alterations without increasing the price of the Synopsis. Many pharmacists have been troubling themselves unduly about the time at which the new Pharmacopœia should come into operation, but many of them have quite overlooked the fact that the medical practitioner must be educated into a perception that it exists. Few persons would take the trouble to master the changes in such a book unless they were compelled to do so, and prescribers probably feel under less obligation in that respect than any other class. The pharmacist's obvious duty therefore is to lead medical men in the way they should go, and to that end he ought to place in the hands of every member of the medical profession with whom he is acquainted a copy of one of the now numerous synopses of the 1898 Pharmacopœia. By avoiding the introduction of all extraneous and irrelevant matter, the *Pharmaceutical Journal* Synopsis is better fitted for that purpose than any other summary, and readers who may be attracted by the comments of correspondents who explain how useful the little book has proved to them, are urged to go and do likewise, to the extent of purchasing one or more copies and utilising them to the best advantage.

PROFESSOR REMINGTON has been induced by the *American Druggist* to express a tentative opinion upon the new B.P., and presumably that opinion was based on the details concerning the work published in this and other journals, as the book had not yet reached America. He approves, naturally enough, of the adoption of the metric system by the compilers, but also, like most sensible pharmacists, regrets that the adoption is partial only, though he recognises that the plan actually adopted may prove the wiser course in the long run. The abolition of proof spirit and the greater diversity in the strengths of the official alcohols are regarded as tending in the direction of greater accuracy, and it is thought that the chemical tests will also be found to be more accurate than formerly. A closer acquaintance with the book, however, may possibly result in modification of the last-mentioned view; it ought to do so, at any rate, considering that the changes appear to have been so largely based on theoretical rather than practical knowledge.

CONCENTRATED PREPARATIONS, "which manufacturers have termed 'concentrated decoctions and infusions,'" do not commend themselves to the veteran American pharmacist, and whilst protesting against the perversion of the term "liquor" to denominate anything but an aqueous solution of a substance, Professor Remington urges the more serious objection that the introduction of concentrated preparations of the class mentioned tends to encourage the practice of diluting concentrated liquors furnished by manufacturing houses, which "must continue to be very variable in strength and quality," since each manufacturer is a law unto himself in the matter. A pharmacopœia, it is contended, should do nothing that may encourage a division of responsibility, and the dispenser ought to be expected to make all official preparations directly from the drug which fulfils the pharmacopœial requirements, by a process which clearly produces uniform proportions. "Uniformity is the keynote of a pharmacopœia. A practitioner can scarcely hope to get the best results unless he is sure that the preparations he orders are up to the standard, and that the standard sanctions no deviation." That is well said, and the principle involved in the remarks quoted may be commended to the consideration of those responsible for fixing the standard of what is desirable in British pharmacy, if they expect that standard to be respected by prescribers or dispensers.

THE TINCTURE PRESS is another thing that Professor Remington objects to the use of, in so far as regards the process of percolation at least. But if the marc is not to be expressed, how is the pharmacist to recover the residual alcohol? He cannot afford to throw it away, and to recover it by distillation is not feasible in small operations, whilst displacement by water is an operation that gives satisfaction in but few hands, and then only in selected cases. Due regard to economy must be observed, and the only mistake the British pharmacist makes in this matter is that he frequently fails to recover enough alcohol by expression, simply because he has not taken care to furnish his laboratory with a tincture press that is thoroughly efficient. Continental pharmacists are much wiser in that respect, and it is satisfactory to find that some German ideas in regard to tincture presses are gradually making way in this country.

DEFECTIVE WEIGHTS have brought trouble upon a Leicester chemist, and not without reason if one may judge from the fact that there was a deficiency of ten and a half drachms on weights representing a total of three pounds fourteen ounces. The defence raised was that no one on the premises knew the weights were deficient. Admitting that statement to be quite correct, it is not surprising to find that the magistrates failed to see that weights should be permitted to get into such an unsatisfactory condition. The remark made by defendant's representative to the effect that the offence was due to inadvertence, the weights having been cleaned with oxalic acid, makes matters rather worse than otherwise, for surely a chemist ought to know better than to clean brass weights with a strong acid. Cleanliness may be next to godliness, but, in the public interest, brightly-polished metal is of less importance than accurate weights, especially in a chemist's shop.

"MORE POISONING" is the heading of a paragraph in the *Globe*, the writer of which, after having occasion one day to comment upon the facilities offered for murder or suicide by the sale of "rat poison" and "vermin killer" containing arsenic, had the text of another sermonette furnished to him in a few hours by a case of poisoning in which a domestic servant had been killed by taking, from two tins of "rat poison and vermin killer," enough arsenic, according to the medical evidence, to kill sixty people. He remarks pathetically that though we have laws against the sale of poisons, yet here was a case of a servant at a club who had free access to at least enough poison to destroy half the members, and he appears somewhat purturbed at the thought that if the deceased, instead of taking her own life, had been afflicted with homicidal mania, she might have played havoc in a club with a supply of poison sufficient to kill sixty persons. The tradesman who supplied the poison to the club denied that he conducted a retail business, and the tins used were presumably only two out of a number supplied to the same institution. Thus, in spite of the law, observes the writer in the *Globe*, it still appears to be possible for menials to be placed in charge of poison sufficient to kill hundreds of persons. "This is obviously a condition of affairs which the law does not contemplate, and it is high time that the law should be more rigorously enforced or, if it does not cover such cases, that it should be extended. We have a right at least to expect that the law should be able to prevent any uneducated person who merely requires a poison for purposes of poisoning from obtaining it." Those remarks are quite in the right spirit, and the law certainly

ought to be amended if it does not already cover such cases. But though wholesale transactions are exempt from the penalties imposed by the Pharmacy Act, it is not necessarily a wholesale transaction when a club is supplied, and a little more light might with advantage be thrown upon the case referred to. The exemption, according to Section XVI. of the Pharmacy Act, 1868, applies only to the business of wholesale dealers, in supplying poisons "in the ordinary course of wholesale dealing." That, being interpreted, obviously means when the goods are supplied to a middleman, and not to a consumer. If a wholesale firm should supply a scheduled poison in any quantity direct to a consumer, that may create the mischief which the Act was intended to prevent, and would therefore be an offence within the meaning of the Act. The quantity sold has no bearing upon the matter, the sale being equally illegal whether an ounce or a stone is supplied, unless the provisions of the Act are fully complied with.

In the Earlier Note in the same newspaper it is pertinently pointed out that while in the case of some poisons the State adopts stringent precautions to prevent them getting into unsafe hands, there are others, not less deadly, which can be bought as readily as any article of food. It is also remarked as a striking fact that while of late there have been quite an exceptional number of suicides by poisoning, not one instance has come under the writer's notice of any scheduled drug being employed for the purpose. It seems quite unnecessary, therefore, for a person inclined to suicide or bent on murder to apply to a druggist for what is required; it can be obtained only too readily of almost any grocer. "Sometimes, as in a case just reported in Warwickshire, the deadly agent is called 'vermin killer'; in other instances 'rat poison' serves the same purpose. Arsenic and laudanum are also easily obtainable in considerable quantities without any inconvenient questions being asked (*sic*). The result is that silly girls and lads crossed in love are enabled to make away with their lives on the moment. If they were given time for reflection, some, if not all, would probably come to a more philosophic view, and decide that life was worth living after all." That time, it may be observed, is almost invariably forthcoming when a chemist is approached in the matter, and the fact that suicides of the sort referred to are becoming more frequent than ever—the evidence generally showing that the act was committed under sudden impulse, begotten of disappointment and despair—should suffice to point the moral that the registered chemist is the only person fitted to deal in poisons. It is quite true that the promiscuous sale of unscheduled poisons facilitates murder as well as suicide, for if a scheduled drug be used to get rid of a human being, there is a good chance of tracing home the crime to its author, but when neither name nor address need be given, and there is no restriction upon the sale of the article employed by the criminal, detection becomes exceedingly difficult, as the police have no clue to follow up.

The Deterioration of Paper has engaged the attention of a committee of the Society of Arts for some time past, and the report of that committee has recently been published. Actual disintegration is stated to be apparent in papers of all grades, being the result of chemical change in the fibres themselves. Discoloration is also said to affect all papers more or less, and the evidence obtained warrants the general conclusion that discoloration of ordinary cellulose papers (as distinguished from those containing mechanical wood-pulp), under usual conditions of storage, is proportional to the amount of resin they contain, or more generally to the resin and the conditions employed for fixing it in the ordinary process of engine sizing. The practical conclusions of the committee are that book paper should be sized with a minimum quantity of resin; that the presence of starch is objectionable; that care must be taken that paper should contain a minimum of chlorides; that 10 per cent. of total mineral constituents is the extreme limit for papers for publications of permanent value; and that a close and well-compacted sheet is especially necessary for printing papers. In conclusion, papers are classified according to composition, and it is recommended that for book papers required for publications of permanent value not less than 70 per cent. of cotton, flax, or hemp should be used, not more than 2 per cent. of resin, and not more than 10 per cent. of mineral matter.

The Röntgen Rays in Warfare have found a powerful advocate in Surgeon-Major Beevor, who maintains that it is now the duty of every civilised nation to supply its wounded in war with an X-ray apparatus, amongst other surgical aids, not only at base hospitals, but close at hand, wherever soldiers may be actually engaged in warfare and exposing themselves to injury in the performance of their hazardous duty. Amongst other instances of the service rendered by this new diagnostic method, he quoted, in a recent lecture, the case of a bullet embedded in the backbone, another in the hip, and that of an Indian soldier, who at Rawal Pindi was shot in the foot, pieces of the bullet finally lodging in the back of the heel. Another notable instance was that of General Woodhouse, who received bullet wounds in the leg and arm at Dargai. In every one of the instances enumerated, the bullets were localised by the aid of the rays, and then successfully removed, the men subsequently rejoining their comrades at the front. One great desideratum in the construction of all apparatus for military work is that they should be "get-at-able," thus enabling the operators to renovate the inevitable defects of wear and tear. Every portion of their apparatus should therefore be easy of access; the cell, condenser, connections, etc., should be packed in cases that can be opened and inspected at a moment's notice without the necessity of special instruments, and with a view to obtaining that desirable condition, the Army Medical Department has spared no expense or trouble, having, after due consideration, ordered the latest and most improved apparatus. For once, therefore, that Department would appear to have done its duty, and now it is to be hoped the apparatus will be placed under the control of specialists, and not left to the tender mercies of private soldiers promoted for that purpose, as in the case of compounders who are assumed—with insufficient reason, as we think—to be fit to dispense all medicines for Tommy Atkins.

In a Note on Botanical Nomenclature, by Professor J. U. Lloyd, the writer comments upon Professor Kraemer's preference for the common names of plants as being less confusing than scientific names. Professor Lloyd and his brother at one time strenuously advocated the use of scientific names only, having gone so far as to criticise the use of common names by physicians and pharmacists. But subsequent experience has made it necessary for them not only to acquiesce in the use of certain common names, but to advocate them publicly, and the scientific names of certain remedies were excluded years ago from lists issued by them, wherein all the botanical remedies used in medicine are named. Those names are now only referred to in notes. In this connection the *Euphorbias* and *Eupatoriums* are cited as examples, experience having shown that physicians and pharmacists alike have less trouble in distinguishing their common names than in carrying the botanical distinctions. But it is urged that there must be a discriminating selection of common names, for the use of some common names is to be deplored, since they in turn create confusion.

MEETINGS OF SCIENTIFIC SOCIETIES

CHEMICAL SOCIETY.

A meeting was held on Thursday, May 19, the President, Professor Dewar, F.R.S., in the chair. After the usual preliminaries the President, at the request of the Secretaries, Professor Dunstan and Dr. Wynne, proceeded to make a communication to the members assembled respecting the recent

Liquefaction of Hydrogen and Helium.

The full account need not be repeated, since it is substantially the same as that given on page 496 in our last week's issue. One point may, however, be mentioned touching the history of this subject. Both Wroblewski and Olszewski have determined various physical characters of hydrogen in the liquid condition. They may be tabulated as follows:—

	Wroblewski.	Olszewski.
Critical temperature	−240° C	−234° C
Boiling point	−250° C	−243° C
Critical pressure	13 atm.	20 atm.

—Referring to the actual work connected with the undertaking, Professor Dewar remarked that for five years the accumulation of solid air in the apparatus employed had proved to be perhaps the most serious obstacle. The difficulty of obtaining really pure hydrogen had contributed in no small degree to prolong the research and add to the incidental expenses. Numerous devices had been used, of which full particulars will form material for a subsequent paper.—In respect of the properties of liquid hydrogen, it was mentioned that the meniscus is even more marked than that of liquid air. The great difficulty at the present time lies in the fact that experimentation is hindered at every point, owing to the solidification of air around the vessel containing liquid hydrogen as soon as the vessel is exposed to the atmosphere. The lecturer has attempted to determine the boiling point and density of liquid hydrogen, but hitherto without success. The thermo-junction employed for the determination of the boiling point proved to be quite useless for the purpose; and the observed density, about 0·8, must not be taken as an accurate figure. A few strands of cotton-wool burn fiercely after they are dipped in liquid hydrogen; they also adhere firmly to the poles of a magnet, being fastened on by solid air, and not on account of any magnetic properties which they may possess. —Sir William Crookes rose to formally propose a vote of thanks to Professor Dewar for his recent success. He forebore to criticise, as he ventured to think that only one man present was in a position to do so, viz., the author of the paper.—Professor McLeod, in seconding the proposition, referred to the important position that hydrogen holds, from its very general employment as a standard to which other elements are referred. The late Sir Benjamin Brodie and Graham held the opinion that hydrogen would prove to be a metallic element. It will be an interesting problem in the future to determine whether this is the case. He would like to know whether the absence of deposit in liquid helium proved the absence of argon?—In reply, Professor Dewar said that the helium had been most carefully prepared from a sample of Bath gas. He admitted that it is most difficult to remove final traces of hydrogen. The Bath gas, minus the nitrogen, contains about 8 per cent. of helium.—The meeting then accorded to Professor Dewar a hearty vote of thanks for his distinguished and epoch-making services to science, whereby he had reflected honour upon the Society.—A paper by Mr. F. G. Edmed was read on

The Constitution of Oleic Acid and its Derivatives (Part I.).

From evidence based on the oxidation products of oleic acid, on treatment with chromic acid and certain other oxidising agents, the author considered that the constitution of oleic acid is represented by the formula—

$$CH_3(CH_2)_7CH=CH(CH_2)_7COOH.$$

The oxidation products obtained point to the conclusion that the double bond cannot occur at the end of the chain.—In the discussion that followed, this view received support from Dr. Tilden and Professor McLeod.—Mr. Hehner asked the author whether he was sure that the substance worked on really was oleic acid, and received a reply to the effect that every possible precaution had been taken to obtain the genuine article.—Short papers were then contributed on "The Action of Formaldehyde on Amines of the Naphthalene Series," by G. T. Morgan; and on "Stereo-isomeric Derivatives of Camphor," by T. M. Lowry, B.Sc.—The meeting then adjourned.

ROYAL INSTITUTION.

On Thursday, May 19, the Right Hon. Lord Rayleigh, M.A., D.C.L., LL.D., F.R.S., gave the second of a course of lectures on

Heat.

A simple heat engine was set in motion. This ingenious contrivance, devised by Mr. Griffiths, of Cambridge, consists of an empty flask in communication with a U-tube containing mercury. The tube connecting the flask and U-tube is kept in position by means of well-fitting rubber corks. A metal cap is placed over the flask, for the purpose of warding off cool currents of air, and the flask is heated by means of a bunsen burner. Owing to the waves of air which are set up in the flask and tube, the mercury vibrates continually in the U-tube with a perfectly regular motion. The graduation of thermometers next received attention, the chief points of the process being illustrated experimentally. The lecturer discussed the effects produced on the passage of water to steam and ice. A large glycerin tin containing boiling water was corked during ebullition. On cooling the tin by means of cold water the contraction of the steam set up a strain inside sufficient to cause the sides to collapse. It was shown, by means of an interesting piece of apparatus known as a water hammer, that if water strikes a glass vessel in a vacuum, a concussion ensues as audible and as pronounced in its effect as any produced by a hard, solid body. An ice machine, made by the Pulsometer Company, was exhibited and set in motion. In its construction use is made of the avidity with which strong sulphuric acid absorbs aqueous vapour. By a rocking movement the acid is maintained in a state of agitation, and in five minutes a quart of water was readily converted into ice. Reference was made to the fact that saline water, on cooling below the freezing point, yields pure ice, and not a mixture of ice and salt. This is true so long as the crystals produced have smooth surfaces, but it is evident that any interstices in the ice crystals must retain appreciable quantities of mother liquor. To demonstrate this point, ice produced from permanganate solution was shown possessing a distinct purplish tint. Faraday proved that this retention of interstitial moisture might be prevented by continually brushing the crystals during their formation.—Lord Rayleigh next drew attention to the fact that if a liquid expands on solidifying, the application of pressure raises its melting point. To prove this, he made use of an adaptation of Bottomley's experiment, which Professor Dewar had prepared for lantern demonstration. A block of ice is supported at its ends, and a piece of piano-wire, heavily weighted, suspended from it. The wire slowly melts its way through the block of ice, but immediately behind the wire the water passes to ice again. This phenomenon, known as regelation, is due to the fact that as soon as the wire has passed, the water produced is relieved from a high pressure, and thus is capable of being reconverted into ice. Professor Dewar has shown that the passage of the wire may be arrested by cooling the ice down to a very low temperature by the agency of other refrigerants. Passing to the effects of heat on the colours of various chemicals, the lecturer showed sheets of paper covered with crystals of the double iodides of mercury and copper, also of mercury and silver. The former were a brilliant scarlet, the latter of a primrose tint. On the application of heat they assumed respectively a darker red and an orange-brown colour. But, whilst the heat of boiling water is sufficient to act upon the compound of mercury and copper, it requires the heat of a strong electric current to change the colour of the mercury and silver salt. Joule's mechanical equivalent of heat next received attention, and Carnot's theories relating to heat engines were lightly touched upon. In this connection it was mentioned that non-reversible engines do less work than such as are reversible, consequently they are less useful from a thermodynamic point of view.

On Saturday, May 21, the first of a course of two lectures was given at the Royal Institution by J. Arthur Thomson, M.A., Lecturer on Biology at the School of Medicine, Edinburgh, on the

Biology of Spring.

In this lecture the botanical side of the question received the largest share of attention. The appreciation of the seasons in respect of their relation to living organisms may be traced back to ancient times. Poets of all ages have sung of the seasons. Among others may be recalled Homer, Horace, and, in modern times, Tennyson. And perhaps the late Poet-Laureate excelled them all in the skill with which he pictured the seasons. Among prose writers Richard Jeffries waxed eloquent upon this subject, and Shakespeare doubtless felt the effect of the seasons when he penned the lines :—

> And thus from hour to hour we ripe and ripe,
> And thus from hour to hour we rot and rot,
> And thereby hangs a tale.

It was in 1750, says Sachs in his 'Text-Book of Botany,' that a school of botanists grew up who studied phenology, or the biology of the seasons. They considered this subject, however, from too narrow a point of view, devoting their attention almost entirely to temperature and its effects on the life processes. But, as we shall see, other factors must be taken into consideration, in order to fully appreciate the relation which external changes in physical nature bear to internal physiological history. One may take it that the ratio of heat supply in summer is to that in winter as 63 : 37. This fact is of immense biological significance, for with warmer winds and increasing heat come a more intense light, the chorus of birds, abundance of flowers, and the quickening of the pulse in man. These are some of the countless signs that announce to us unmistakably the arrival of spring, the first of the seasons. Spring is the time of new beginnings, the time of growth and youth. With spring as an example it is therefore evident that life is punctuated by the seasons. Referring to what is known as the hypnotic state of seeds, the lecturerset himself to account for this quiescence, so general in nearly all plants, the seeds of the poplar being among the few exceptions. It cannot be that the ground into which a seed falls late in autumn is inhospitable. No doubt the seed suffers a reaction after a period of vigorous growth ; again, the firm, often hard and horny husk which protects the seed must be rotted away, and the store of reserve materials yet remains to be brought to an easily assimilable condition. The winter sleep of seeds no doubt gave rise to the mythological story of Demeter, who wandered far in search of her stolen child, and finally adopted another child, which she watched over and cared for, but did not nourish. The goddess Demeter was to the Greeks what Ceres was to the Romans, the deity who watched over the growth of grain and other plants.—The conditions of germination are the absorption of water by the porous area of seeds, viz., the hilum, which water is taken up by the protoplasm ; the rotting away by slow degrees of the husks, by the agency of bacteria ; and lastly the fermentative and digestive processes which transform insoluble starch and proteids into materials which can readily be assimilated. Vines shows us that every evening the starch formed in green leaves during the day is transformed into sugar and transported to other parts of the plant. Professor J. Reynolds Green has done much to prove by what agencies the complex series of digestive processes is carried on in seeds, and the relation which these changes bear to germination. It may be noticed that as soon as a seedling has used up all its reserve store of food it suffers a temporary check. There is a hiatus in its growth. This pause is comparable to the loss in weight which animals suffer a few days after birth. It is consequent on what may be termed the weaning of the seedling from its first form of nourishment, and disappears directly the young plant is able to adapt itself to the new conditions of life. The effect of light on the green leaf was next considered, in virtue of which vibrations in the ether fall upon the chlorophyll in the leaf, supplying that energy to the protoplasm which sets up and maintains the complex series of constructive and destructive processes connected intimately with the life and largely with the growth of the plant.—The lecturer then pointed out that the multiplication of small aquatic organisms is an essential condition of the general renewal or re-invigoration of higher forms of life. For example, the infusoria which are bred from the muddy sediment of ponds and streams furnish food for the Crustacea, which in their turn are devoured by fishes. Considering that in parts far removed from the sea, as is the case, for instance, in some parts of Germany, freshwater fish are held in great esteem by the inhabitants, we may construct a chain of living beings, starting with the tiny protozoon of the mud, and passing on from waterfleas to fishes and finally to man, in which each depends for its existence largely on the individual next below it in the scale. Though undoubtedly many of the minute organisms are harmful to man it must not be forgotten that he is largely indebted to organisms equally minute for his health, nay, for the possibility of his existence on the earth. Mr. Thomson went on to mention the question of the ascent of sap, which has caused much discussion from the time when it was first considered, probably in 1583, until recent times. It was treated of by Francis Darwin in 1896, and so late as 1897 received much attention from Marshall Ward, in his work on timber diseases. The question about which so much has been said is, How does sap ascend in the trunk ? A question of this kind cannot be understood, or fully answered, unless it is recognised from the first that one cause alone cannot account for the phenomenon. This life-process is most active in spring and least so in winter. It follows that the excessive transpiration of leaves creates a current of cell-sap. The upward stream is helped, too, by the fact that within the cells and vessels up which it passes the pressure is considerably lower than that of the atmosphere. Other factors which aid the upward current are the turgidity of the cells, the process of osmosis which goes on from cell to cell, capillarity, and surface tension. The effects of the ascent of sap next engaged the attention of the lecturer, who then passed on to consider the unpacking of buds in spring. The principle of economy which influences the arrangement of leaves in a bud largely affects the ultimate position of leaves on the adult stem. Sir George Ainy proved this by arranging a series of paper leaves on an indiarubber band, stretched to a considerable extent. On allowing the indiarubber to regain its normal condition the leaves were found to be arranged in the form of a bud. The unpacking of buds bears a close analogy with seeds. While one is a young branch, the other is a young plant. Both are representatives of the glories of the preceding summer, and are protected, the former by scale leaves, the latter by husks. Each undergoes a period of quiescence, and is packed within the smallest possible space. April is well termed "the month of opening" by Ruskin, in his 'Fors Clavigera.'—It is a matter of common knowledge that there is a regularity in the succession of flowers throughout the year, so much so that one would no more expect to see an aster bloom in springtime, or a wood hyacinth in late autumn, than one would look for rock roses in a bog, or marsh marigolds on sandy plains. A deep principle underlies this regular succession of flowers, viz., that the older and more primitive plants tend to flower in springtime. The reason for this is not far to seek, if we consider only a plant like the common fir tree. It is pollinated by the agency of winds, so that this process can go on as well in spring when insects are scarce, as later on in the year. This pollination of fir trees by the wind is not the only reason for their flowering early in the year. Here, again, we must not be content with a simple answer. They are trees, and are hardy, and come of an ancient stock. If we consider the floral procession we cannot fail to notice that "of the flowers that bloom in the spring" by far the greater number belong to the class of Monocotyledons, among which may be cited the snowdrops, daffodils, and crocuses. These are amongst the simplest types of flowers. As the year goes on complications arise, plants appear which are specialised on certain lines, *e.g.*, the primitive superior ovary tends to become inferior, the cohesion and adhesion of parts and whorls begin to appear, and the hypogynous stamens show a tendency to assume other positions. As an example of a highly differentiated type of flower the Orchidaceæ stand pre-eminent. They nearly all appear in summer. Again, at this season the buttercup and other flowers with free floral leaves gradually give place to flowers like the dead-nettle, with a noticeable union of parts. Indeed, the extreme is reached in late summer and early autumn, when the Composite family reaches the height of its glory. In this order we note the highest known type of flower, and these flowers with their inferior ovary, union of parts, and other well-known highly developed characters, will testify to the truth of the statement that flowers appear in the order of their complexity of development. In conclusion, the lecturer mentioned the spring migration of birds, and showed how this phenomenon is closely wrapped up with the evolution of climate. Time was when palms flourished in Britain and magnolias grew wild in Greenland. Birds then

made their home in northern lands. Then came the Ice Age, and as the cap of ice gradually extended along these northern regions it drove the birds before it. Doubtless as this terrible age passed away the birds flocked once more to the home of their ancestors, but the yearly approach of winter invariably compelled them to fly southward. In this connection it is of interest to note that the autumn flight of birds is often long delayed. The young birds take the lead in a leisurely sort of way, and dally long before they fly. Even then they do not strike at once for their destination, but take a course perhaps from east to west before they finally go south. The return of birds in spring, on the other hand, stands in marked contrast to their departure. No longer do the young birds take the initiative, for it is the older birds that lead the way in a mad rush, taking in their course the hypotenuse of the path along which the young birds had led them south in the preceding autumn.

ROYAL INSTITUTION.

On Tuesday next, May 31, Professor S. H. Butcher begins a course of two lectures at the Royal Institution on "Literary Criticism in Greece"; on Thursday, June 2, Dr. Edward E. Klein delivers the first of two lectures on "Modern Methods and their Achievements in Bacteriology"; and on Saturday, June 4, Dr. Richard Caton begins a course of two lectures on "The Temples and Ritual of Asklepios at Epidaurus and Athens" (with lantern illustrations). The Friday evening discourse on June 3 is by Professor W. M. Flinders Petrie, on "The Development of the Tomb in Egypt"; that on June 10 is by Lord Rayleigh, whose subject is "Some Experiments with the Telephone."

THE "THREE PRESIDENTS'" RECEPTION.

The Presidents of the Institute of Chemistry of Great Britain and Ireland, the Society of Chemical Industry, and the Society of Public Analysts held a reception at the galleries of the Royal Institute of Painters in Water Colours, on May 24th. The guests, who numbered about 1500, were received by Dr. and Mrs. Stevenson, Professor and Mrs. Frank Clowes, and Dr. and Mrs. Bernard Dyer. Among those who attended were Sir William MacCormac, President of the Royal College of Surgeons, Sir Hugh Owen, Sir Henry Roscoe, SirEdward Frankland, Sir John Turney, Sir Alexander Binnie, Mr. Walter Hills, President of the Pharmaceutical Society, Dr. J. H. Gladstone, Dr. W. J. Russell, Professor W. A. Tilden, Dr. T. E. Thorpe, Professor J. M. Thomson, Professor Ayrton, Professor Armstrong, Professor R. Meldola, Mr. David Howard, Treasurer of the Institute of Chemistry, Dr. Horace T. Brown, Mr. C. E. Groves, Mr. M. Carteighe, Mr. Otto Hehner, Mr. R. J. Friswell, Mr. C. J. Stewart, and Mr. Thomas Tyrer. Music was provided in one of the rooms by the Westminster Singers.

PLYMOUTH, DEVONPORT, STONEHOUSE AND DISTRICT CHEMISTS' ASSOCIATION.

A special general meeting was held on Monday, May 23, when Mr. Jas. Cocks occupied the chair, and was supported by a large number of members of both the Junior and Senior sections. The Chairman explained that the object of the meeting was to consider a new scheme of education as formulated by the Educational Committee, the text of the scheme and report of the Educational Commitee being embodied in the following circular :—

May 19, 1898.

Dear Sir, —You are earnestly requested to attend a special meeting of the Association, on Monday evening next (23rd), at 8.30, to discuss a matter of great importance, namely, the establishment of permanent classes for Minor examination students in Plymouth.

The great strides that have been made of late in education render it more necessary than ever that pharmaceutical apprentices should devote, during their apprenticeship, some considerable time to the study of pharmacy and its allied sciences, in order to face the Board of Examiners with confidence and fit themselves for a future useful career.

The days of a short cramming period at a London school are almost over, and there is every probability that, in the not very distant future, a curriculum of study will be enforced.

For some time past the Educational Committee of the Association have had the matter under consideration, and, after very careful deliberation, have arrived at a scheme of 3 years' study, as set forth on the other side, the classes to be held at the technical schools, and under their authority.

By taking advantage of the tuition thus afforded an apprentice may, in the last 3 years of his pupilage, thus fit himself for the ordeal of examination by the time his apprenticeship is finished.

Before these classes can be inaugurated with the consent of the Association, it is necessary that the matter receive the careful thought of all Association members (senior and junior), and the support of both sections. Your presence at the meeting on Monday next is therefore urged.

It need not be pointed out that the matter is of just as much importance to employers as to employed, since the town in which good opportunities are afforded for gaining the education requisite for a chemist is, and will be, the one sought after by parents and guardians of would-be pharmacists.

The botany classes and rambles, as held last summer, will be again continued this summer, commencing on Wednesday evening, the 25th inst., at 8 o'clock. As hitherto, Mr. Reade will be the preceptor. The fee is 2*s.* payable in advance to the undersigned.

Yours faithfully, John R. Johnson,

R.N. Hospital, Stonehouse. *Hon. Sec. Educational Committee.*

This circular had been sent to every member of the Association, and after the scheme had been fully discussed, it was unanimously decided to adopt it. Detailed particulars are given in the table below.

PROSPECTUS OF CLASSES PROPOSED.

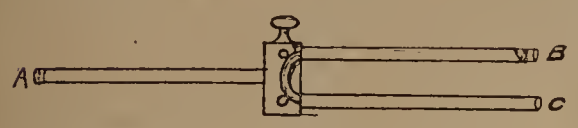
A Student will be recommended to spread his subjects over three years, in the following order.

	Subject.	Duration.	When Held.	Fee.	Remarks.
1st Year, inclusive fee, whole course, £1 18s. 6d.	Elementary Inorganic Chemistry	2 hours	Evening	5s.	Science and Art Class
	,, ,, ,, (Practical)	3 ,,	,,	10s.	Do.
	,, Botany	2 ,,	,,	5s.	Do.
	,, Physics	1 hour	,,	21s.	Special Class
2nd Year, inclusive fee, £3 10s. 0d.	Advanced Inorganic Chemistry	2 hours	Evening	5s.	Science and Art Class
	,, ,, ,, (Practical)	3 ,,	,,	10s.	Do.
	,, Botany	2 ,,	Afternoon	21s.	Do. 8 Students to join
	Theory of Pharmacy and Pharmacy Law ...	2 ,,	,,	42s.	Special Class 8 Students to join
3rd Year, inclusive fee, £4 10s. 0d.	Dispensing, etc., with Prescription Latin...	1 hour	Afternoon	21s.	Special Class 8 Students to join
	Organic and Pharmaceutical Chemistry ...	2½ hours	,,	63s.	Special Class 8 Students to join
	Materia Medica	2 ,,	Evening	12s. 6d.	Special Class

NOVEL APPLIANCES,
PHARMACEUTICAL AND CHEMICAL.

Müller's New Three-way Stopcock.

This ingenious device is made by C. Müller, 148, High Holborn, London, and will have many applications in gas analysis and in other ways. By means of it a gas may be passed from A to B, from A to C, or from B to C, or all three tubes may be shut off.

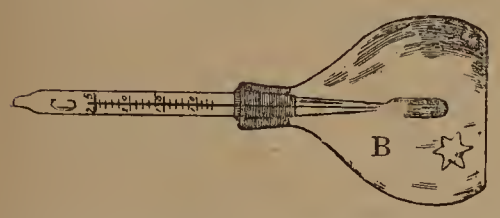


Manufacture of New Melting Pots.

An improvement in the manufacture of melting crucibles for chromium and similar metals is effected by coating the interior of the crucible with the oxide of the respective metal. This is done by melting a flux, such as borax, with the addition of the oxide of the desired metal until the oxide remains suspended in it. By agitating the mass during cooling a coating is formed in the interior of the crucible.—*Chem. Zeit.*, xxi., 604.

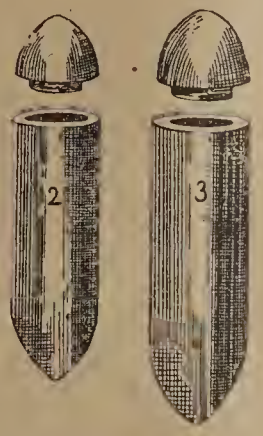
Improved Specific Gravity Bottle.

The specific gravity bottle here figured contains a simple and ingenious addition to ensure the thoroughly mixing of the contents, and therefore a uniform temperature throughout the bulk of the liquid. This is effected by means of a small glass grenade bulb B, which, on rotating the bottle, promotes the thorough stirring of the liquid. It is made by C. E. Müller, 148, High Holborn, London.



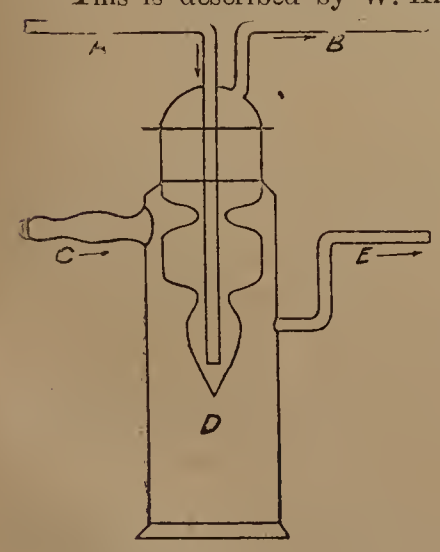
Gibb's Hollow Suppositories.

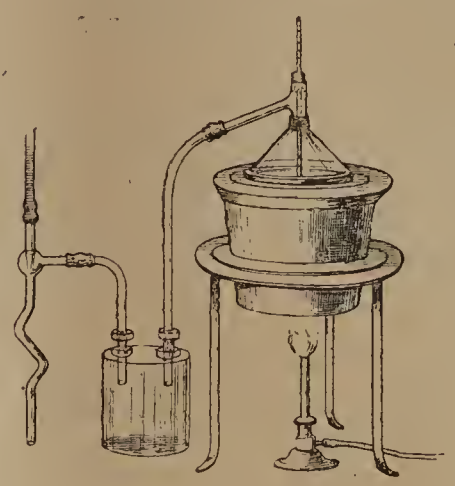
These suppositories are made in eight sizes, with self-sealing stoppers, and are composed entirely of pure cacao butter. The advantage they possess for accurate dosage of potent medicines will be obvious, and it may fairly be considered that they afford a means of aiding that reform in the pharmacy of suppositories which has lately been shown to be so much needed in this country. Messrs. Schieffelin and Co., of New York, are the agents for the supply of these suppositories.



A New Condensing Apparatus.

This is described by W. Klimont (*Zeitsch. f. angew. Chem.*, 1897, 11). The apparatus is used when working with very volatile fluids, where an ordinary condenser cannot well be applied, or would prove insufficient. As this latter is at present used the tubulated receiver which is immersed in a vessel of water, possesses the disadvantage that a part is not covered by water and that it is very difficult to regulate exactly the flow and reflux of the cooling liquid. Klimont's apparatus depicted here explains itself. It is of course an easy matter to connect several of these receivers with one another and to thus establish a series of condensers which may be if necessary wholly immersed in cold water. A. Inflow of the water. B. Outflow. C. Entrance of the vapour to be condensed. D. Condensation vessel. E. Exit of uncondensed vapours. This apparatus is made by Messrs. Rohrbeck's successor, Vienna.—*Pharm. Zeit.*, xlii., 468.





Small Vacuum Apparatus for Laboratories.

Haussmannd recommends the following:—A glass funnel is accurately fitted on to a flat cylindrical porcelain vessel with a broad smooth edge. As will be seen from the drawing, the apparatus can be readily connected with any available air-pump by means of a tube. The dimensions of the apparatus are such as to be easily inserted into every water bath, and will be found useful for many purposes of distillation under reduced pressure.

Zarge's Patent Mixing and Stirring Apparatus.

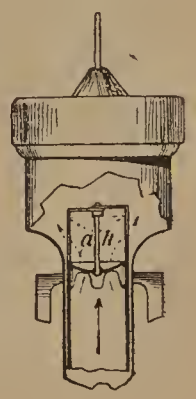
The drawing shows three flanges B, C, and D arranged transversely across cylinder A. The middle blade turns round the axis E, and in performing its two revolutions presses alternately against B and D, which move on axes F and G attached to the outer circumference; these are returned to their original position by spiral springs, and shoot back again when the revolving blade passes. The fluid in the cylinder is therefore driven from one compartment to the other, and churned in transit by the revolving blades.—*Chemiker Zeit.*, xxi., 545.

The Stethinoscope: A New Instrument for Auscultation.

This is a new form of sound receiver, which is constructed on the same principle as the microphone. It magnifies and renders more audible all sounds proceeding from the heart and lungs, and is fitted with an adjusting mill head, by means of which the volume of sound reaching the ear can be regulated. This delicate instrument would appear to hold the same position with regard to the old form of wooden stethoscope that the compound microscope holds to the pocket lens. Such aids as this to early diagnosis of grave affections of the thoracic organs must be invaluable to the medical practitioner. It can be attached to the binaural stethoscope, and is of small compass, so that it is easily portable. It is manufactured by Maw, Son, and Thompson.

Arrangement for Regulating the Mixing of Air and Gas in Bunsen's Burners.

To regulate the mixing of air and gas in the modified Bunsen burner represented in the accompanying illustration, in place of the opening and shutting disc described in the original patent, the parts (*aa*) are now more or less closely placed for ventilation, so that eventually they cover the air inlets only. The parts are readily adjustable, and a maximum of heat is easily obtained with a minimum gas consumption, whilst the annoyance of "lighting back" is avoided.—*Chem. Zeit.*, xxi., 604.



LEGAL INTELLIGENCE.

PROCEEDINGS UNDER THE PHARMACY ACTS.

Pharmaceutical Society *v.* Dormer.

At the County Court of Bedfordshire held at Luton, on Tuesday, May 24, before His Honour Sir A. G. Marten, the Council of the Pharmaceutical Society of Great Britain sued Ellen Dormer, of Waller Street, Luton, for a penalty of £5, incurred on February 28, in selling and keeping open shop for the retailing, dispensing or compounding of poison, to wit, oxalic acid, contrary to the provisions of the Pharmacy Act, 1868.

Mr. T. R. Grey, instructed by Messrs. Flux, Thompson and Flux, appeared for the Society.

Mr. Grey stated that the action was brought by the Pharmaceutical Society to recover a penalty of £5 for selling a certain scheduled poison, oxalic acid, on February 28, the defendant not being a registered chemist, as required by the Pharmacy Act, 1868. He pointed out that the Act was passed to prevent the danger likely to arise to the public through unqualified persons keeping open shop for the sale of poisons, such as are included in Schedule (A) of the Act. After quoting from the various sections of the Act, he dealt with Section 15, under which any person who sells or keeps open shop for the sale, dispensing or compounding of poisons, shall, for every such offence, be liable to pay a penalty or sum of £5. Section 17, which he only wished to refer to, made it necessary for even qualified chemists, who have a right under the Act to sell poison, to see that the name and address of the seller and the word "Poison," together with the name of the article, is on the packet or bottle containing the poison sold. In the case before the Court this had not been done. The Pharmaceutical Society had to see that the Act was not infringed, and in this case they had sent an agent to see if oxalic acid was being sold in Luton by unqualified people, and found that it was.

John Partridge said he received instructions from the Pharmaceutical Society to go to the defendant's shop in Waller Street, Luton. On February 28 he went to the shop. The name E. Dormer was over the window. He saw the defendant's son, William Henry Dormer, and asked for two pennyworth of oxalic acid. There was no name on the packet supplied, but the words "Oxalic Acid—Poison." He added in ink the date of purchase and the name of the defendant, and afterwards handed the packet to Mr. Eastes for analysis in precisely the same condition as he received it.

Ernest John Eastes, F.I.C., said he was an analyst, and on May 20 he received the packet (produced) from the previous witness. He analysed the contents, and found it to contain ¼ lb. of oxalic acid, one of the poisons mentioned in the Pharmacy Act.

Mr. Grey formally put in the Register of Chemists and Druggists, which, he pointed out, did not contain the name of the defendant.

His Honour: Was the shop an open shop?

Mr. Partridge, recalled: Yes, your Honour.

William Henry Dormer appeared for his mother, the defendant, who keeps an oil shop in Waller Street, Luton. He pleaded ignorance of the law relating to the sale of poisons, and said he had been an assistant in the town for over fourteen years, and knew that oxalic acid was sold generally in Luton by unqualified men.

Mr. Grey said he ought to call His Honour's attention to the fact that they had been under the impression that the man William Henry Dormer was the defendant in this case, but it appeared he only represented his mother, who was the real defendant. He wished to point out, however, that they were suing for the penalty for keeping open shop for retailing, dispensing, or compounding poisons, and it had been proved that the man had sold the poison in the shop.

His Honour: Do you admit serving the poison to the witness Partridge?

Mr. Dormer: Yes; and ask for the minimum penalty.

Mr. Grey, continuing, said the reason why the clause "Any person who shall sell or keep open shop, etc.," appears in the Act is to hit the real defendant in a case like the one before the Court. The penalty is a fixed amount according to the Act, and if His Honour found for the plaintiff Society the penalty would be £5.

His Honour: I give judgment for the amount claimed with costs, payable in fourteen days.

Pharmaceutical Society *v.* Thornton and Saunders.

At the same Court, Henry Thornton and Frederick Saunders, trading as Goldsmith and Co., and carrying on business as ironmongers in Luton, were sued by the Pharmaceutical Society for a similar offence on the same date as the previous case.

Mr. T. R. Grey said this was very similar to the last case, except that the sale was 1 lb. of oxalic acid.

Henry Thornton appeared for the defence, and represented his partner, Frederick Saunders.

John Partridge gave evidence as to the purchase of 1 lb. of oxalic acid at the defendants' shop in Market Hill, Luton, on February 28. He identified the packet and receipt produced as those received from defendants. After marking it with the date of purchase and the name and address of the sellers, he handed the packet to Mr. Eastes, analyst, in the same condition as received from the defendants' shop.

Mr. Thornton said he had no defence to make, except to say that oxalic acid was used in the straw trade, and had been sold in Luton by unqualified persons for the last forty or fifty years without a complaint until now. It was sold at every oil shop in the place, as it was used for manufacturing purposes in the only trade of the town. Since receiving the summons they had not sold oxalic acid in their shop.

Mr. E. J. Eastes having given evidence as to his analysis of the contents of the packet handed to him by the witness Partridge,

Mr. Grey formally put in the Register of Chemists and Druggists, which did not contain either of the defendants' names, or the firm's name, which could not be registered.

His Honour: I must give judgment for £5 with costs, payable in fourteen days.

Pharmaceutical Society *v.* J. and T. Sedden.

In the next case, the defendants J. and T. Sedden were sued by the Society for keeping open shop for the sale of poison contrary to the provisions of the Pharmacy Act, 1868, on February 28, 1898.

Mr. T. R. Grey said that this case should have come before His Honour, but the defendants, who kept the shop at 11, Waller Street, Luton, had on the previous day paid the penalty £5, and also 10*s.*; as, however, this was not paid within five clear days of the case coming before the Court, and as the costs would have to be divided between the three cases, he asked for an order for costs.

His Honour: I must order that the defendants pay costs and Counsel's fee.

EXTRACTS FROM CONSULAR REPORTS.

A Firm of Druggists in Germany has introduced a new line in Rio Grande do Sul, viz., white paraffinum molle in tins, of 10 grammes, for the pocket; dried medicinal herbs, in compressed packets of 1 kilo, are also sent from Germany. Fumigating pastilles have a large sale, but owing to the difference in price those of English manufacture are not so much in demand as the German article. Consul Bernal thinks tabloids should sell well, with directions in Portuguese, if the new import duties on foreign specialties, which came in force in January, 1898, should be again reduced. He also is of opinion that British drug firms might supply various articles of everyday use put up in popular form.

A Return of Scholarships in Great Britain, given for proficiency in modern languages, as compared with those given for other subjects, Consul W. Powell thinks would be very interesting, as he believes it would show such scholarships to be very much in the minority. He is of opinion that much of the commercial knowledge of Germany has been supplied by young Germans who have been employed as clerks in Great Britain, chiefly as foreign correspondents. British merchants and manufacturers allege as a reason for employing these young men, who come to England for the express purpose of learning such or such a business, and to return to the Fatherland with the practical knowledge thus learnt, that British clerks cannot be used as foreign correspondents, because not one in a thousand can correspond correctly in any foreign language, and frequently those that are proficient in languages are not the kind of men that employers care to have as clerks. The remedy for this must be obvious, and British youths intending to follow a commercial career would do well to take the lesson to heart and to profit by it.

LETTERS TO THE EDITOR.

The B.P. Synopsis.

Sir,—The *P. J.* Synopsis of the 1898 B.P. is the most admirable summary I have seen. But there is room for an important improvement which I think would greatly enhance its value, viz., 1. A marginal note "stronger" or "weaker" to each preparation altered in potency, together with figures showing relative strength of old and new preparations. 2. A brief summary as below, showing at a glance such fundamental alterations as a prescriber needs to bear in mind—

Notable Alterations in Potency.

STRONGER.	WEAKER.
Decoct. Granati Radicis (twice)	Aqua Chloroformi (half strength)
Lamellæ Cocainæ (4 times)	Ext. Bellad. Alcoholic (one-third)
Pil. Phosphori (twice)	Ext. Nucis Vomicæ (two-thirds)
Pil. Saponis Co. (slightly)	Ext. Opii Liq. (three-fourths)
Spirit. Cajuputi (5 times)	Ext. Physostig. (one-fourth)
Spirit. Cinnam. (5 times)	Inj. Apomorph. Hypoderm. (half)
Spirit. Juniper. (2½ times)	Inj. Morphin. Hypoderm. (half)
Spirit. Lavand. (5 times)	Suppos. Morphin. (half)
Spirit. Menth. Pip. (5 times)	Tinct. Aconiti (two-fifths)
Spirit. Myristicæ (5 times)	Tinct. Strophanth. (half)
Spirit. Rosmarini (5 times)	
Tinct. Belladonnæ (twice)	
Tinct. Chlorof. et Morph. (4 times in Morph.)	
Tinct. Nucis Vomicæ (twice)	
Tinct. Podophylli (twice)	
Tinct. Quassiæ (3 times)	

Notable Alterations in Nomenclature.

1885. OLD NAME.		1898. NEW NAME.
Ergotinum	=	Ext. Ergotæ
Inject. *Ergotini* Hypoderm.	=	Inject. *Ergotæ* Hypoderm.
Lin. Camph. *Co.*	=	Lin. Camph. *Ammon.*
Lin. Iodi	=	*Liquor* Iodi *Fortis*
Liq. Cocain. *Hydrochlor.*	=	*Inject.* Cocain. *Hypoderm.*
Pil. *Asafœtidæ* Co.	=	Pil. *Galbani* Co.
Tinct. Chlorof. et Morph.	=	Tinct. Chlorof. et Morph. *Co.*

By means of your summary I was prepared to dispense prescriptions by the new Pharmacopœia on the date of its issue, and with the addition to the summary of the notes suggested, any prescriber would in five minutes grasp the whole, and need not trouble further about the new B.P. than to carry this *multum in parvo* in his pocket.

Maida Vale, W., May 28, 1898. R. H. Parker.

*** The additions kindly suggested by Mr. Parker will be embodied in the new edition of the book now in preparation. [Ed., *P. J.*]

Sir,—Your little book on the 1898 pharmacopœial processes, etc., is of great use to students in comparing the new with the old formulæ, and it has been of special value to me in my classes in acquainting the students with the contents of the new volume before it was available. The inclusion of Mr. Bird's alcohol conversion tables will be found very serviceable to the general pharmacist in making their preparations, but I hope to see the table, printed in the Journal of May 21, introduced in your next edition, where he shows the conversion of 60 o. p. alcohol, often stocked by pharmacists, into present official strengths.

Liverpool School of Pharmacy, May 23, 1898. R. C. Cowley, Ph.C.

*** The extended alcohol table is too large to insert in the Synopsis, but copies can be obtained from the Publishers, 5, Serle Street, W.C., in the form of a large sheet on stout paper, suitable for pasting on a card and suspending in the laboratory, at threepence each, post free. [Ed. *P. J.*]

Sir,—The reprint of your B.P. notes, which I had not seen until now, is a marvellous production, considering the price, and must be extremely useful to all who are fortunate enough to possess a copy. It will be of very great service to me.

Brixton, S.W., May 21, 1898. Wm. Jones.

The Benevolent Fund.

Sir,—I am glad to see by the report of the Annual Meeting that Mr. Hampson has brought forward, more publicly than at the Council table, his desire to do away with the present objectionable system of election of annuitants upon our Benevolent Fund. It always has struck me as peculiarly objectionable in a Society such as the Pharmaceutical, composed of men of more or less refined feelings and sentiments, to require of such in the time of adversity, when perchance from causes too often beyond their control, poverty and distress have entered their doors, to come forward and publicly advertise their position in the face of friends and acquaintances with whom they have hitherto been in every respect on terms of equality; and to compel them to solicit from such the favour of a paltry vote towards obtaining a small annuity in order to keep the wolf from the door. A case comes to my mind, known to me personally, evidencing the repugnance with which a man of education and refinement regards the idea of appealing to his brethren for help under such circumstances. It occurred some twenty odd years ago, and is well known at 17, Bloomsbury Square, in which a member who had held a high official position in the Society was unexpectedly overtaken by loss of business, and seriously reduced in circumstances; but rather than even making known his altered position to our Secretary, left London, and was only by accident found by a fellow member and former colleague living in a single room upon the smallest possible pittance. Instances of similar cases could without difficulty be related, proving to demonstration the desirability of an alteration in our present mode of election. And when it is remembered, as Mr. Hampson says, every individual case is thoroughly investigated by the Benevolent Fund Committee, whose duty it is "to inquire into the most minute matters in connection with each applicant," I feel convinced that subscribers to the Fund, if properly approached, would willingly and with perfect confidence leave the final selection of annuitants to the discretion of the Council. Inasmuch as our President very justly observes, that unless he can see clear evidence that Mr. Hampson's views are supported by a very large majority of the subscribers to the Fund, he could not dare to take the proposed step, I would, as one of the oldest subscribers, venture to suggest that a letter should be addressed by the Council to every subscriber to the Fund, asking the expression of their consent or otherwise to the proposed alteration. The result of such an inquiry would, I feel convinced, at once set at rest any doubt upon the subject, and the alteration being adopted, henceforth no more heart-burnings and wounded feelings would be added to the already distressed sufferers.

Brighton, May 23, 1898. Edwin B. Vizer.

Dispensing Difficulties.

Sir,—May I be allowed to supplement my remarks of last week concerning the prescription for ointment given to "Aratus Sum" to dispense at the recent examination, viz.:—

℞ Glycerin. Borac. ..... ℥iv.
Liq Plumbi ..... ℥iv.
Ung. Zinci Benz. ..... ad ℥ij.
M. ft. ung.

All who replied seem to agree as to the time it takes to produce a satisfactory preparation. With a view to a more rapid process, I made several experiments, and came to the conclusion that if mucilage of gum acacia is mixed with the liquor plumbi, it forms a gelatinous mass, and may then be incorporated in any proportion with the ung. zinci benz. The above method takes less than half the time, yields an ointment that does not exhibit any tendency to separation of the water, and is altogether easier of manipulation.

Lewisham, S E., May 20, 1898. Graham Bott.

Sir,—How should the following be dispensed? The doctor could not be communicated with:—

℞ Potass. Bromid. ..... ℥iii.
Inf. Gent. Co. Conc. ..... ℥ii.
Aq. Menth. Pip. ..... ℥iv
Two tablespoonfuls for a dose when necessary

Is it a ℥iv. or a ℥vi. mixture, or as written? Opinions are divided on the subject here. Some say ℥iv., others ℥vi., as the dose then would be ℥ss. pot. brom. An opinion would oblige.

May 20, 1898. Dispenser (10/30).

*** A four-ounce mixture would appear to be intended. [Ed. *P. J.*]

Mr. Cross and the Pharmacy Bill.

Sir,—The enclosed letter to the Secretary of the Highland Agricultural Society is in reply to the letter of Mr. Cross, which appeared in the Journal of May 14. Our Association has deemed it fit to take the matter up, as Mr. Cross represents a Glasgow constituency. You may publish the letter in this week's Journal, if only to refute such base statements made by Mr. Cross.

558, Cathcart Road, Glasgow, May 23, 1898. D. Watson.

[ENCLOSURE.]

GLASGOW AND WEST OF SCOTLAND PHARMACEUTICAL ASSOCIATION.

558, Cathcart Road, Glasgow.

May 23, 1898.

To James Macdonald, Esq.,
Secretary Highland Agricultural Society,
3, George IV. Bridge, Edinburgh.

Sir,—My attention has been drawn to a communication from Mr. Alexander Cross, M.P., relative to the Pharmacy Acts Amendment Bill, presently before Parliament, which your Society had under discussion at the meeting held on 4th curr. The letter is such an extraordinary one, and contains so many statements, not only foreign to the Bill in question, but so contradictory to each other, that I desire to draw your attention to them.

Before doing so, however, I might just say that the Bill seeks for no further powers as regards the sale of poisons, but is purely and simply for the internal administration of the Pharmaceutical Society's affairs, and has the cordial support of the entire trade. We are quite aware as to why Mr. Cross opposes the Bill, and while he gives many reasons, he does not state that his opposition is a personal one, arising from the fact that an assistant to his firm was prosecuted two years ago for the illegal sale of a poisonous preparation manufactured and sold by his firm.

The committing of an offence against the law is bad enough, but when a Member of Parliament—in his public capacity as such—takes advantage of his position to redress a private wrong, it is high time such things were exposed.

As to the general question of the sale of poisons, it is much too large a question to be discussed in writing. Suffice it to say that the present restrictions regarding their sale were forced on the Pharmaceutical Society by the Legislature in 1863, and the illegal sale of such poisons is therefore punishable.

As to the statement that the object of the present Bill is for the purpose of securing a greater monopoly and larger profits in the sale of such articles as Mr. Cross refers to, no one knows better than himself that such a statement is contrary to fact.

Mr. Cross has had all the information it was possible to give placed before him. He knows precisely that the present Bill will not affect the sale of poisons one way or the other. He also knows that his proposed amendment is entirely foreign to the Bill; but because his firm are manufacturers of articles which the law holds can only be sold by registered chemists, he is up in arms, and poses as the champion of the agricultural interests and higher pharmaceutical education, when in reality it is his own interests he desires to serve.

Those statements made by Mr. Cross are grossly unjust to the whole body of chemists, and are put in a very subtle manner, evidently with the one object, viz., of defeating this Bill at all hazards. I beg, therefore, on behalf, and in the name of our Association, to submit this letter for your consideration.

D. Watson (Hon. Secretary).

The New B.P. Lozenges.

Sir,—May I offer a few remarks on the fruit lozenges of the new Pharmacopœia. It appears that some firms are making them smooth, whereas others are making them rough. I think they should be made smooth, as it is quite easy to produce them with a smooth surface. They do not contain a large proportion of fruit extract, whereas the fruit lozenges of the Throat Hospital Pharmacopœia, which are usually rough, consist mainly of fruit extract, and in making these it is necessary (and not a matter of choice) to prevent the paste sticking to the slab to use coarse sugar. If a lozenge can be made with a smooth surface, it appears to me that it is more convenient to the patient, while it is more likely to be of accurate strength. The rough sugar used in dusting fruit lozenges is far heavier and more bulky than starch powder (which is used with smooth lozenges), and by adhering to the scraps dilutes the same, so that the last lozenges cut are likely to be weaker than the first, unless precautions are taken and constant supervision exercised to see that the directions given are carried out by the workpeople. It is evident also that the stamping of the name on smooth lozenges is far more legible than on the rough. This also is an advantage. For these reasons it appears to me that the new B.P. fruit lozenge should be made smooth.

London, May 25, 1898. E. W. Warrick.

CORRECTIONS.

Liquefaction of Hydrogen.—On page 496, column 2, line 26, for "astatic" read "static."

Alcohol Conversion Table.—Mr. Bird asks us to note that the weight of 60 o.p. spirit required to produce 1000 C.c. of 70 p.c. alcohol should be 636 Gm., and not 640 Gm., as printed in the table at page 501 last week. The correction has been made in the reprinted table, which can now be obtained from the Publishers of the Journal, 5, Serle Street, W.C., at a cost of threepence per copy, post free. The specific gravity table in Mr. Bird's notes of last week is included in the sheet, and the latter is particularly suitable for use in pharmaceutical laboratories.

ANSWERS TO QUERIES.

Books for Students.—See reply to "Ill All" in last week's Journal. [*Reply to* Inquirer.—10/33.]

Effervescence in Lotion.—The cause of effervescence in the mixture is the liberation of boric acid by the action of glycerin on the borax, carbon dioxide being evolved. [*Reply to* Salol—10/17.]

Formaldehyde.—Definite information on the subject is still lacking. It is not safe for you to recommend the addition of any preservative to milk, as no such addition is justifiable from a legal point of view. [*Reply to* Ozone.—10/34.]

Alcohol Craving in Drunkards.—Unfortunately there is no reliable remedy such as you refer to, which "may be added to tea without the patient detecting it, and destroy the appetite for intoxicants." The morbid craving for alcohol is recognised now to be as much a disease as any other malady; as such, it should only be treated by a qualified medical practitioner. More is done by surroundings, "suggestion," and moral influence than by drugs in the treatment of such cases. Most so-called drink cures are frauds, and some contain alcohol, or powerful alkaloids, even more harmful than alcohol. [*Reply to* G. J. P.—10/1.]

Sodii Bicarb., Ammon. Carb. and Tinct. Nucis Vom.—The tincture of nux vomica contains the strychnine and brucine combined with a vegetable acid (igasuric acid), forming soluble salts. When alkaline hydroxides or carbonates are added the alkaloids are liberated, and if the amount present is in excess of the solubility of the alkaloid some of the latter will be precipitated. That, however, never occurs in practice with nux vomica. Taking the amount present at 20 minims of tincture per fluid ounce of mixture: since 1 fl. oz. of tincture contains one grain of alkaloids, 20 minims will contain 1/24 grain alkaloids. This quantity in 1 fl. oz. of mixture represents 1 part of alkaloids in 9500, and since the solubility of strychnine in water is 1 in 7000 there is never any danger of strychnine precipitation occurring. [*Reply to* Tyro.—10/18.]

Hydrargyri Iodidi Rubri.—It is impossible to state dogmatically whether the green, yellow, or red iodide should have been used. The dose in each pill, although slightly exceeding the maximum given in B.P., 1885, is a perfectly safe one for the red iodide, and much smaller than the quantity of that substance contained in the maximum official dose of liquor arsenii et hydrargyri iodidi. The only way to settle the matter would be to communicate with the prescriber, but a knowledge of collateral circumstances, such as age of patient and frequency of dose, might enable one to form a correct conclusion. By analogy with the chlorides, one might say that the mercur*ous* iodide should have been used, since hydrarg. chlorid. is always understood to mean calomel and not corrosive sublimate. [*Reply to* W.—10/19.]

OBITUARY.

King.—On May 15, William George King, Chemist and Druggist, Market Drayton. Aged 73.

Morley.—On May 15, Joseph Morley, Chemist and Druggist, Beverley (Yorks). Aged 76.

Ransom.—On May 15, William Ransom, Chemist and Druggist, Market Rasen. Aged 57.

Wylde.—On May 15, James Wylde, Chemist and Druggist, Stretford Road, Manchester. Aged 81.

Britton.—On May 19, William Brannam Britton, Chemist and Druggist, Barnstaple. Aged 36. Mr. Britton served his apprenticeship with Mr. W. Curtis, J.P., M.P.S., of Barnstaple, afterwards becoming his son-in-law, and carrying on the business. He was organist of Holy Trinity Church, Barnstaple, and also took an active interest in local athletics. His death is greatly regretted in the district, where he was highly respected.

Cellars.—On May 19, William Cellars, Chemist and Druggist, late of Edinburgh. Aged 25.

COMMUNICATIONS, LETTERS, etc., have been received from Messrs. Adamson, Bennett, Butterworth, Cocks, Dyson, Farr, Forshaw, Haigh, Hewlett, Ingham, Lyons, MacEwan, Measures, Morgan, Naylor, Nicholson, Osborne, Ramsay, Ransom, Snow, Stringer, Thursfield, Wilkinson.

Pharmacy and the Allied Sciences.

A REVIEW OF CURRENT WORK.

New Form of Wine Sophistication.

Since the white variety of certain wines commands a higher price than the red, H. Hugounenq states that these latter are sometimes artificially decolorised by means of animal charcoal and potassium permanganate. The sophistication is readily detected on incineration, but may be more quickly revealed by adding to 10 C.c. of the suspected sample 1 or 2 C.c. of caustic soda solution and 1 C.c. of hydrogen peroxide. A deep red-brown colour will be given by an artificially decolorised wine, a natural white wine merely becomes slightly darker in colour. The test will answer without the addition of peroxide, if the alkaline mixture be well stirred and left exposed to the air.—*Journ. de Pharm.* [6], vii., 321.

Alkaloidal Matter in Wine.

Having had occasion to examine a sample of wine for the possible presence of a toxic alkaloid, G. Guérin found it to give distinct traces of an apparently non-toxic base. Continuing his researches on all available varieties of wine he obtained distinct alkaloidal reactions from all. He concludes, therefore, that a trace of an alkaloid is a natural constituent of wine, and calls attention to the fact that J. Oser in 1868 isolated an alkaloid from among the fermentation products of sugar, to which the formula $C_{13}H_{24}N_4$ was attributed.—*Journ. de Pharm.* [6], vii., 323.

Acidity of Tuberculous Sputum.

A simple indication of the existence of tubercule is stated by De Bracker (*Journ. de Méd. de Paris*) to be the acidity of the sputum. A portion of fresh tuberculous sputum, agitated in a test tube with an equal volume of titrated alkaline solution of phenolphthalein, has sufficient acidity, due to the presence of formic acid, to discharge the colour. Fränkel's pneumoccus also generates acid, but the symptoms of pneumonia are sufficiently definite to render diagnosis easy to the practitioner. Pfeiffer's bacillus of influenza also gives an acid reaction, but less intense than that of the tubercule bacillus, and not sufficient to enable the sputum to decolorise an equal volume of alkaline phenolphthalein solution.—*Répertoire*, liv., 150.

Therapeutics of Coronillin.

Coronillin has been stated to be a useful substitute for digitalis, but the researches of Hugo Guth show that this glucoside is not so trustworthy as the older drug. He finds that the diuresis it occasions is not permanent, that it gives rise to diarrhœa, and although its action is not cumulative, certain patients have a marked idiosyncrasy against it. Moreover, it is doubtful if it exercises any direct action on the circulation.—*Therap. Monats.*, xii., 31.

Cholesterin of the Lower Cryptogams.

According to E. Gérard certain microbes and algæ contain a form of cholesterin, which, in general characters, closely agrees with the ergosterin of Tanret, with which it is probably identical, and differs widely from animal cholesterin and from the phytosterin of the higher plants. The body was isolated from cultures of *Staphylloccus albus* and from *Fucus crispus*. This cholesterin dissolves entirely in strong sulphuric acid, giving a blood-red colour. The solution, shaken with chloroform, leaves the latter uncoloured. The sulphuric acid solution diluted with water gives a greenish precipitate, not white, like that obtained from animal cholesterin; with a solution of the new body in carbon tetrachloride concentrated sulphuric acid gives a deep red colour, and the tetrachloride assumes a bright green tint. Both this cholesterin and ergosterin are decomposed and become coloured on exposure to the air.—*Journ. de Pharm.* [6], vii., 375.

Cousso Honey as an Anthelmintic.

The Emperor Menelik is reported by Theodorow to have a garden planted with koso plants, which is stocked with beehives. After the flowering season some of the honey is taken from the hives. A teaspoonful of it dissolved in water is said to be an excellent remedy for tapeworm, and free from any objectionable effects.—*Lancet.*

Angelica Oil.

According to H. Raeusel, the volatile oil distilled from fresh roots is lower in specific gravity, and more strongly dextrogyrate than that obtained from dried roots. The figures for oil of fresh root being, sp. gr. 0·860 at 16° C.; rotation, +36·5. Dried root oil, sp. gr. 0·882 at 21° C.; rotation, +26. Terpeneless angelica oil has a sp. gr. of 0·9597, and a rotation of +5·21.—*Pharm. Woch.*, xv., 45.

Mouth Washes and Eczema.

Neisser reports several cases of obstinate eczema of the lips which at first defied all treatment. In the end it was found that after the use of certain mouth waters and tooth powders containing oil of peppermint and oil of cloves had been discontinued, a rapid improvement and even complete healing ensued. The worst effects are said to be produced by the use of odol, which has the following composition: Salol, 3·5; alcohol, 90·0; distilled water, 4·0; saccharin, 0·2; ol menth. pip., ol. anisi, ol. fœniculi, ol. caryophylli, or ol. cinnamomi to flavour.—*Therap. Monatsch.*, xii., 79.

Remedy for Chrysanthemum Rust.

R. W. Hodder states that this new disease, which has only appeared within the last twelve months, may be eradicated by the following treatment. Half a pound of whale oil soap is boiled in a gallon of water; to the boiling solution a gallon of petroleum is added, and 2 ounces of ammonium carbonate; the mixture is then heated to boiling with constant stirring until thoroughly emulsified. One part of this emulsion with 15 parts of water are used to syringe the plants, both the upper and under sides of the leaves being well sprayed with the solution. When treated in this way the spots soon dry up. In addition to killing the rust it is a good insecticide, and will clear off any insects with which the plants may be infested. Where the fungus makes its appearance in a collection of plants, the whole should be treated by this method, or the rust will constantly appear.—*Garden*, liii., 247.

Detection of Added Starch in Cocoa.

Posetto states that pure cocoas only give a transient blue coloration, not lasting in any case twelve minutes, with the reagent described below, while the same adulterated with starch give a very marked and persistent reaction. The test is stated to be sufficiently delicate to reveal the presence of 1 per cent. of added chesnut meal. The reagent consists of iodine, 5; potassium iodide, 10; water, 100. Two grammes of the cocoa are boiled for two minutes with 20 C.c. of water in a test tube. The decoction is cooled, 20 C.c. more water and 0·5 C.c. of the reagent added without shaking. An intense persistent blue coloration indicates the presence of added starch.—*Giornale di Farm. di Chim.*, through *Pharm. Centralh.*, xxxix., 155.

THOMAS HENRY, APOTHECARY, AND THE ORIGIN OF ARTIFICIAL MINERAL WATERS.

BY WILLIAM KIRKBY, PH.C.

Dr. Schunck, in his presidential address before the annual meeting of the Society of Chemical Industry last year, stated that "to Dr. William Henry is sometimes given the credit of the invention of aërated waters. There is some doubt about this, but if correct, he must be numbered among the benefactors of mankind as having added largely to its innocent gustatory pleasures."

I am not aware that Dr. William Henry, son of Thomas Henry, "has been credited with the invention of artificially aërated water as a beverage." It is, however, on record that Thomas Henry, the father, was the inventor of artificial mineral waters, as appears from the following extract from Dr. Angus Smith's 'A Century of Science in Manchester' (1883, p. 127) :—

Whilst without going deeply into the history of artificial mineral waters and aërated drinks, we are inclined to believe that the elder Henry [Thomas Henry—born Oct. 26 (old style), 1734; his son William Henry—born 1774] was the true inventor, or evidently considered that he was the first in the field. Dr. Henry separated from his partner Mr. Thompson, taking for himself the magensia and leaving the aërated waters to the latter.

In order to ascertain to what extent we are really indebted to Thomas Henry in this matter, it may be well to briefly review his work in connection therewith.

The interest which he took in the questions dealing with fixed air (carbonic acid gas) and the impregnation of water with it, must have been very great if we may judge from the pertinent notes appended to the text of his translation of Lavoisier's 'Physical and Chemical Essays.' That he edited and translated this work, which treated so fully of the history of carbonic acid gas and the endeavours to make artificial mineral waters, and in so doing exhibited such a thorough acquaintance with the whole of the subject, quite precludes the idea that he ever claimed to be the inventor of artificially aërated waters. He was quite familiar with the work of Venel, Priestley and others. Concerning the first of these, who was professor of chemistry in the University of Montpellier, he has a foot-note in which he claims for Dr. Brownrigg the honour of being the first to establish the identity of the gas in natural mineral waters with Boyle's "factitious air" and choke damp. This note is worthy of quotation in full :—

Mr. Rouelle . . . and Mr. Lavoisier in his account of Mr. Venel's experiments, page 33, have attributed the first discovery of the natural impregnation of water to this ingenious professor. I should think myself inexcusable, therefore, if I did not take this opportunity of doing justice to the merits of our very worthy and learned countryman Dr. Brownrigg, and this cannot be done more effectually than by transcribing a passage from Sir John Pringle's elegant "Discourse on the Different Kinds of Air," delivered before the Royal Society, November 30, 1773: "I shall only observe that the memoir containing the account of Mr. Venel's experiments was not read before the Royal Academy of Sciences till the year 1750, and that he has supposed the air contained in waters which have been called 'acidulous' to be common atmospheric air."—T. H.

Thus the fuller discovery of this principle we owe to Dr. Brownrigg, of Whitehaven, who about thirty years ago [1743] began clearly to unfold this mystery. But those curious papers were not then inserted in the 'Transactions,' as the too modest author had requested a delay till he should be able to make them more worthy of that honour. In that communication he remarks "that a more intimate acquaintance with those nitrous airs in mines called *damps* might lead to the discovery of that principle of mineral waters known by the name of the *spirit*; that the mephitic exhalations termed the *choak-damp* he had found to be a fluid permanently elastic, and from various experiments he had reason to conclude that it entered the composition of the waters of Pyrmont, Spa, and others, imparting to them that pungent taste from which they are denominated *acidulæ* and likewise that volatile principle on which their virtues chiefly depend." "In order to ascertain a fact of so much consequence, Dr. Brownrigg took the opportunity when at Spa several years, to make some experiments for this purpose, when he had the satisfaction to find those waters pregnant with the *artificial* or *factitious air* of Mr. Boyle, the same with that of the suffocating *grotto* near Naples, and the same with the *choak-damp* of our coal mines; for as much as this air instantly extinguished flame and the life of those animals he inclosed in it."—(Lavoisier's 'Physical and Chemical Essays.' Translated by Thomas Henry, 1776).

In 1767 and 1768 Priestley was experimenting upon the artificial impregnation of water with fixed air, and in 1772 he returned to the subject in the hope of being able to devise a drink which should be a prophylactic against the scurvy in seamen. Priestley's apparatus was simplicity itself, and was very soon improved upon by Nooth, Parker, and Magellan (Mag'alhaens). It was with a view to improving upon the glass machines in use that Henry designed the apparatus described in a pamphlet entitled: "Account of a method of preserving Water at Sea from Putrefaction and of restoring to the water its original pleasantness and purity, to which is added a mode of impregnating water in large quantities with fixed air for medicinal uses, on Board Ships, and in Hospitals, and likewise a process for the preparation of Artificial Yeast, by Thomas Henry, F.R.S., and member of the Medical Society of London. Warrington. Printed by W. Eyres for J. Johnson, No. 72, St. Paul's Churchyard, London. MDCCLXXXI." As this pamphlet appears to be rare, it may be well to quote the whole of the portion dealing with the impregnation of water with fixed air. It affords indubitable proof that Henry only claimed for his apparatus that it made it possible to prepare aërated water on a larger scale than herctofore.

HENRY'S AERATED WATER APPARATUS.

THE METHOD OF IMPREGNATING WATER IN LARGE QUANTITIES WITH FIXED AIR, SO AS TO GIVE IT THE PROPERTIES OF MINERAL WATER FOR THE USE OF THE SICK ON BOARD OF SHIPS AND IN HOSPITALS.

Dr. Priestley some years ago communicated to the Lords of the Admiralty a method of impregnating water with fixed air obtained from an effervescing mixture of chalk and vitriolic acid, and of making an artificial Pyrmont water. This operation has since been considerably facilitated by the invention of Dr. Nooth's glass machine, with Mr. Parker's and Mr. Magellan's improvements. That machine, though admirably contrived for the preparation of such quantities of artificial mineral water as may be necessary in private families, would be too small for the sickly crew of a large ship. But it appears to me that a mode may be adopted by which the process may be performed on a much larger scale.

The advantages which would proceed from an easily practicable method of supplying the sick men in long voyages with such water must be obvious to every medical practitioner. The mineral waters of Pyrmont and Seltzer may, by these means, be closely imitated, and the artificial water will be beneficial in all cases in which the natural is found useful. By this process also may Mr. Bewley's mephitic julep be prepared—than which the materia medica, perhaps, does not afford a more efficacious or more grateful medicine in putrid fevers, scurvy, dysentery, bilious vomitings, hectic, etc.

THE PROCESS.

Cut off the two extremities of a calf's or pig's bladder (f.) (fig. 5), and having previously moistened them, into one end insert the top of the tubular stopper (c) round the neck of which it is to be closely fastened with strong thread. Into the upper end introduce the part (g) of the long bent tube (h) and tie them round in the same manner. The pipe (h) must be passed through a hole, formed by a hot iron borer, in a large cork adapted to the orifice (i) in the cask (BB), to which it must be cemented; and the length of the pipe from this point must be such as to reach within a few inches of the bottom of the cask (BB), which is to be completely filled with fresh water, or such as has been recovered from lime.

To a quantity of mild calcareous earth and water, as directed in the preceding process, placed in the air vessel (C, fig. 5), add a small portion of strong vitriolic acid, and by the time most of the common air may be supposed to be expelled by the fixed air, arising from the mild calcareous earth, add a larger quantity of acid, and putting the tubulated stopper (e) in its place, the bladder (f) will become inflated. Press it gently till its sides collapse; and then introducing the pipe (hh) with its cork, into the orifice (i) of the cask (BB), again press the air forward, as it distends the bladder, into the water cask, where, bubbling up through the

water, it will rise to the surface, and by its pressure, force the water to ascend into the funnel (k) which is to be cemented into the head of the cask at (l). In proportion as the water becomes impregnated with fixed air, that in the funnel will return into its place; but if, at any time, the latter should rise so high as to be in danger of overflowing, a quantity of air may be let out of the water cask by means of the small plug at (m). And this is necessary to be done occasionally, to discharge the residuum of fixed air, which is not soluble in water.

The water may be tasted from time to time by drawing off a small quantity at a cock fixed into the cask, and when it has obtained a sufficiently pungent taste, the process may be finished. This will take several hours, but in this case little attendance will be required.* If the operation be required to be performed more expeditiously, it may be quickened by agitating the water cask. To do this, the tubular stopper (e) must be withdrawn from the air vessel, and supported, together with the bladder, by an assistant, while the cask (BB) is shaken. During this time another tubular stopper must be put into the air vessel, and it may be immersed into a quantity of lime-water to prevent waste. When the agitation has been continued for some minutes, in proportion to the falling of the water in the funnel, replace the stopper attached to the bladder (f) in the air vessel when taken out of the lime-water, and proceed as before, repeating the agitation occasionally.

During the process, additional quantities of vitriolic acid may be introduced into the air vessel through the opening at (d), which is to be, at all other times, carefully secured with its stopper.

Perhaps the most convenient size for the cask, intended for the purpose of impregnating the water with fixed air, would be about ten or twelve gallons. Should the scurvy or other putrid diseases prevail, or should putrid provisions or other septic causes render the crews more than usually liable to such diseases, and occasion a larger consumption of this water to be necessary, the cask may be proportionately larger, or a greater number of small casks may be employed.

It is interesting to notice Henry's use of the bladder as a primitive kind of pump. The first suggestion, however, for the use of mechanical means for increasing the pressure of the gas seems to have come from Priestley, who wrote, "I do not doubt . . . . but that by the help of a condensing engine, water might be much more highly impregnated with the virtues of the Pyrmont Spring, and it would not be difficult to contrive a method of doing it."†

In 1785 Thomas Henry communicated to the Manchester Literary and Philosophical Society a paper by Dr. Haygarth upon the impregnation of liquids with fixed air, in which is described an ingenious apparatus, the essential feature consisting of a pair of household fire-bellows for increasing the pressure of the gas.

Beyond Dr. Angus Smith's reference to Henry's association with the commercial manufacture of mineral water I have not met with any written or printed record. Early in this century there was a Thompstone engaged in this trade, and the firm is in existence to-day under another name, but when and for how long the partnership between Henry and Thompson existed, when it was terminated, and where the waters were made I have not succeeded in ascertaining. Mr. Ogden (Messrs. T. and W. Henry) informs me that the present building in which the celebrated magnesia is made was erected in 1810, and there are no vestiges of mineral water manufacture about the premises, neither do the business archives contain any records of transactions in goods of this class.

Thomas Henry's interest in fixed air extended beyond artificial mineral waters. In the pamphlet already referred to he describes a yeast made by impregnating with fixed air a mixture of flour and water thickened by boiling, and then mixing it with flour and warm water and "setting to rise" before baking. He thus anticipated the production of aërated bread by about half a century. In 1785 he described a process for the aëration of beers and wines which had become vapid. The apparatus consisted of the lower globe of Nooth's machine with the neck closed by a perforated stopper; this was charged with chalk, water, and the necessary acid, and lowered into the cask containing the beer; the pressure of generated gas overcame that of the superincumbent liquid by which it absorbed until the point of saturation was reached.

It is clear, I think, that it is to Thomas Henry, apothecary and chemist, of King Street, Manchester, and not to his son William, that the credit is due of being a pioneer in the manufacture of artificially aërated waters. It is worth noting that Henry's pamphlet was published in 1781, that is, eight years before the establishment of the Geneva factory, and about twenty years before the establishment of English houses for the regular supply of these waters.

*The operator must be attentive that the top of the cask is air-tight. If some water be poured upon it, any defects may be detected by the air bubbling through the water, and the faulty place must be secured with luting.

† 'Experiments and Observations on Different Kinds of Air,' by Joseph Priestley, LL.D., F.R.S. 1790. Vol. I.

THE PRACTICE OF PHARMACY IN RUSSIA.*

BY PROSPER H. MARSDEN.

In casting around for a paper likely to be of interest to your Association, much difficulty is experienced in finding a subject which has not been previously very ably dealt with.

The subject of pharmacy in Russia does not appear to have been touched upon here, and I venture, therefore, to hope that a few, more or less disconnected, notes upon the practice of medicine and pharmacy in the extensive dominions of the Great White Tsar may be thought worthy of your consideration for a few minutes this evening. I propose to divide my paper into an historical survey of pharmacy, some account of its regulations, and to show you examples of labels, wrappers, and other things in common use amongst our Russian *confrères*. In the earliest recorded days of the vast country which is now Russia, the healing art was in the hands of wizards, and wolf-men, sorcerers, and seers, who were at once physicians, surgeons, prophets, and historians who transmitted the traditions of their race from generation to generation.

Of the Scythians, who inhabited the country at the period of which I am speaking, very little is known. At the famous Hermitage Museum in St. Petersburg there is a valuable collection of relics of the Scythian days. One of the most remarkable examples of these, showing the artistic talent displayed at that date, is a vase of electrum, most probably of Greek manufacture, of repousée work. It depicts a Scythian battlefield; on one side we see a chieftain consulting a wolf-man, another of these surgeons examining a man's jaw for loose teeth or broken bones, and a third bandaging a limb much as it is done at the present time.†

This vase is supposed to date from 400 to 350 B.C., that is to say, from about the time when Socrates was drinking the fatal hemlock, the time of Plato, of the Athenian Demosthenes, and of Philip of Macedon. It was discovered in the Royal tomb at Kul-obi, which had been broken into whilst getting stones to build the Barrack ats Kertch, and is the oldest record of the healing art in the Empire.

Very little is known of medicine between this time and some twelve hundred years later, when Rurik, the Swedish Viking, and his two brothers, settled in Novgorod in 862.‡ About this time Christianity was introduced into Russia from Byzantium, and with Christianity came the first knowledge of the arts and of medicine. The famous monastery of Kieff was the earliest seat of learning, and its monks soon became noted for their successful treatment of disease. The wizards and wolf-men disappeared and medical practice was confined to the monks till the eleventh century, when certain Armenians appear to have set up in opposition to them. During the next two hundred and fifty years the Tatars conquered the country, putting very many of its inhabitants to death, but sparing the monks on account of their value as medicine men.

Towards the end of the fifteenth century many foreigners had found their way into the country, and amongst them physicians whose lives do not appear to have been exactly happy. We read that in 1490 Ivan, the Tsar's eldest son, fell ill of gout in his feet. One of the courtiers had brought into the country a Jewish physician, who was called Master Leo, the Jews being, as is well known, the great practisers of physic in those times. The unhappy man was induced to undertake the cure of the young

* Read before the Liverpool Chemists' Association.

† Morfill: 'Russia, The Story of the Nations Series,' p. 15.

‡ Morfill: op. cit., p. 19.

prince, and to stake his head upon its certainty. His treatment, however, was unsuccessful; the prince, after acute suffering, expired at the age of thirty-two. According to an account given of the therapeutics adopted by the Jew, cauterisation played an important part. Master Leo, however, in six weeks was publicly executed, "on the Bolvano, the other side of the river Moskva."*

Another abrupt departure of an eminent practitioner after the manner of the time in Russia is shown in the fate of a German named Anthony, whose surname has not come down to us. This worthy man had been attending a Tatar prince at Court, with the unfortunate result that the prince expired, and the unfortunate Anthony was handed over to the angry relatives. The fate of the poor man is set forth in the chronicle as follows:—

"A German pl ysician, Anthony, came to the Grand Duke; the Grand Duke treated him with much honour. He practised upon Prince Karakach, the son of Daniel, but with such results that he killed him by giving him a deadly mess of herbs. Whereupon the Grand Duke gave him up to the son of Karakach. He put him to the torture and wished to let him go on his paying a ransom. This the Grand Duke would not permit; . . . . . accordingly they took him to the river Moskva, under the bridge in winter, and cut him to pieces with a knife like a sheep."†

The first English medical man to practise in Russia was a Dr. Ralph Standish,‡ who sailed in 1557 to the country with the famous traveller Anthony Jenkinson, arriving at Astrakhan in 1558. A very interesting account of Jenkinson's ideas of the country and of his voyage down the Volga is in existence. He returned to Moscow in 1563. Some eight years later Moscow was burnt by the Tatars, and the Tsar, Ivan the Terrible, was forced to take refuge at the Troitsa monastery, some sixty miles away. This Tsar is worthy of mention as being most anxious to trade with this country, and as being compared with our Henry VIII. He killed his son in a fit of rage by striking him on the head with an iron staff,§ repudiated his wife, shutting her up in a convent, although, in spite of the degraded condition of the country, he was unable to send her to the scaffold as did our king. The account of the Tsar's death by the Englishman Horsey, who was at that time Ambassador to the Russian capital, is of some interest as concerning the earliest English mention of pharmacy in Russia. After speaking of the depressed state of the Tsar, stricken with remorse at his sins, chief of which are mentioned above, Ivan is reported to wish that he may be carried to his Treasury. Horsey then describes the closing scene:

"Brought forth, setts him down on his bead; calls Rodovone Baerken (*sic*), a gentleman whome he favoured, to bring the chess board. He setts his men [Horsey, always on the look-out for portents, here adds in a note "All savinge the kinge, which by no means he could not make stand in his place with the rest upon the plain board"], his chief favorett and Boris Fedorowich Goddonove (Godunov) and others about him. The Emperor in his loose gown, shirtt, and lynnen hose, faints and falls backward. Great outcrie, and sturr; one sends for Aqua vita, another to the oppatheka (apothecary's shop, *apteka*) for marigold and rose water and to call his gostlie father and the phizicions. In the mean he was strangled and stark dead."‖

So died the Tsar who is known as the Russian Nero, who, when he built the lovely Church of St. Basil (a photo. of which I have brought down to show you) to commemorate the taking of Kazan, put out the eyes of the architect lest he might one day build a rival to it.

Horsey gives a graphic account also of the death of Dimitri, the son of Ivan the Terrible. He says: "One night I comended my soull to God above other, thinckinge verilly the tyme of my end was com. One rapt at my gate at midnight: I was well furnished with pistolls and weapons, I and my servants, some fifteen, went with these weapons to the gate. "O my good friend Jerom innobled lett me speak with you.' I saw by moonshine the Emperis (dowager's) brother Alphonassy (Afanase) Nagorie. 'The Charowich Demetrius is dead. His throate was cutt about the sixth hower by the deackes; some one of his pagis confessed upon the racke by Boris his settinge one; and the Empcris poysoned and upon pointe of death, her hcar and nails and skin falls of; haelp and geave some good thinge for the passion of Christ his sake.' I ran up, fetching a littel bottele of pure sallett oyell (that littel vial of balsom, which the Qucen gave me), and a box of Venice treacle. 'Here is what I have, I praie God it may do her good'!"* It was during the reign of Ivan the Terrible that the Ministry of Medicine was inaugurated, and under the ægis of this Government institution the first *apteka* or pharmacy was opened in 1581.† This apteka was at first merely a central store for the distribution of medicine to the Court.

It was an Englishman who opened the first pharmacy in Russia, and little is known of him beyond the name—James Frencham. Owing, doubtless, to the oppressive treatment he received at the hands of the Russians, Frencham, soon after founding the first apteka, appears to have left Moscow and returned to his own country. An extensive correspondence took place between the Tsar and our Queen Elizabeth, in consequence of which Frencham was induced to return to Russia some twenty years later, together with his wife and family and a collection of drugs, a list of which, containing the names of no less than 164 drugs and preparations, is still extant.

In the Ministry of Medicine, to which the apteka was attached, there were several classes—the physicians, surgeons, aptekars or apothecaries connected with the Court apteka, and under them alchemists, distillers, pupils, and collectors of herbs; also oculists, barbers, blood-letters, bone-setters, and—undertakers. The income of the Ministry was derived from a Government grant. The old apteka was for the use of the Court alone, and very soon a new one was opened which sold drugs and preparations to the army and to private individuals. It also had to care for the public health by preventing the spread of infectious diseases. The medicaments for the personal use of the Tsar were kept in a room locked and sealed by the Secretary of the Ministry, the drugs themselves being in sealed bottles and boxes. Should His Majesty require medicine the physician's prescription was submitted to the Ministry, who copied it into their books. It was then presented as an official paper to the Tsar, who gave the order for its preparation. It was taken to the Apteka, and prepared only by the most trusted dispensers. Now, when all was ready, it was tasted by a whole series of official personages, first by the prescribing physician, secondly by the President of the Ministry, and lastly by the high Court official, who actually took it into the august presence.

Many stories are current concerning these tasters; for instance, we are told that the body physician to the Tsar Alexis, the father of Peter the Great, had to swallow the whole bottle of a mixture intended for the Tsaritza, as it had caused severe vomiting in the last taster, a high Court lady, who had taken the potion to her Majesty.

Not only did the aptekas provide medicines, but in the earlier days they furnished such items as ten pounds of good amber to the Patriarch of Moscow for the preparation of the Chrism, and in

* Morfill: op. cit., pp. 58-9.
† Morfill: op. cit., p 59.
‡ *Lancet*, August 7, 1897, p. 347.
§ Morfill: op. cit, p. 80.
‖ Morfill: op. cit., p. 81.

* Morfill: op. cit., p. 91.
† The *Lancet*, *loc. cit.*

later times they provided aniseed and other aromatic substances for the preparation of the strong spirituous liqueurs or vodkas for which Russia is celebrated, and even varnish and paints for the Imperial yacht.

In those days polypharmacy was rife in Russia, as in the other countries of Europe. In the medicine chest which accompanied Alexis in one of his journeys to the famous Troitsa Monastery, some sixty miles from Moscow, amongst the oils, elixirs, essences, syrups, salts, powders, and plasters we find a "syrup of colt's hoof," a "spirit of worms," "spirit of ants," and a "balsam of unicorn horns." Anyone who has dipped into the literature of medicine of this date will remember the fabulous price set upon unicorn's horn. In 1655 three of these valuable articles of materia medica were offered to the apteka in Moscow for 10,000 roubles (say £6000 nowadays); ultimately the vendor was offered 5300 roubles. Another piece of a horn, weighing ¼ oz., was sold for twenty sable skins. The horn was probably that of the rhinoceros, and it was taken in a state of powder as a specific for fevers, pestilence, and snake-bites, and it was said to be a certain prophylactic in smallpox dysentery, and the plague. Benzoar stones were also in great request. Nearly all the drugs used in Russia at this time came from abroad, Germany, Holland, and England, chiefly from the last, the newly opened port of Archangel being the great market for English drugs. Later on efforts were made to collect simples in Russia and Siberia, botanical expeditions were undertaken to distant parts of the Empire, and a class of herb collectors sprang up.

Foreign medical men coming into the country brought a large stock of drugs and preparations with them. Amongst the famous physicians who visited the Muscovite Court in the seventeenth century was Dr. Arthur Dee in 1621. Dr. Dee may be remembered as body physician to James I. and Charles I., and whose reputation as a seer and physician travelled from the house which is now Chetham College in Manchester to the ends of the world. Dee is well described by William Harrison Ainsworth in 'Guy Fawkes.'

One feels inclined to linger over the mystic polypharmacy of this age, but the subject has been already well done by at least one of our members, and it hardly comes within the scope of my paper. We will therefore pass on to the time of the great Peter, who did so much to raise Russia to its present high position. Peter conceived the excellent idea of sending his countrymen to foreign Universities to study their teaching and methods, much as he himself came to Deptford to study shipbuilding. So much success attended this movement that in 1706 the first hospital and school of medicine were opened in Russia under the direction of a Dutchman, Dr. Nicolaus Bidloo, Peter's own body physician. Accommodation was provided for fifty students in this school, and the subjects of anatomy and apothecaries' science were taught, the latter including botany, pharmacognosy, pharmacy, and pharmacology, and the London Pharmacopœia appears to have been used.

Catherine II. built a large number of hospitals, conspicuous amongst which was the great Foundling Hospital of Moscow, still existing.

During the eighteenth century, Universities were inaugurated throughout the Empire, and in the present century there have been four University statutes, placing the curricula and examinations of medical men and pharmaceutists upon a sound basis.

Russia, so very much behind Western countries in some respects, has the most stringent pharmaceutical regulations of any country in the world.

A candidate desirous to learn "the art and mystery of the apothecary" must be fairly well educated. Boys are accepted from the fifth class in the Government School or Gymnasium; occasionally they are accepted from the fourth (in these schools there are eight classes, the eighth being the highest). He will now be about seventeen or eighteen years of age, and will serve three years, no premium being received, and a salary is paid at once of about ten or eighteen roubles per month for the first year, rising about two roubles each year as a general thing. This is an average estimate, but of course the salary is dependent upon the character of the apteka. The apprentice always lives in and is allowed off duty on alternate Sundays, and a few hours on one evening of each week. In the old days the pupils were called "disciples"; they had no salary, but were fed and clothed, and at the end of their time received a complete outfit and a present of some one hundred roubles. This is still generally given, either at the option of the employer, or it may be specially provided for in the indentures. During the three years the apprentice will study the theoretical part of his work, and at the end of the time passes the assistant's examination. After another three years served as an assistant in a pharmacy, which must not be in a village, he may enter for the qualifying examination of Provizor. This is generally taken about the age of twenty-five or so, and before entering for the examination he must put in a two and a-half years' course at a University, this being usually done during the assistantship. One would think that with this lengthy course of study the apteka would be allowed his freedom from military service; such, however, is not the case, but if he has taken the qualifying examination before being called upon for military service the period of such service is shortened.

The opening of a new apteka is attended with some difficulties. The aptekar must show the local authorities that the population has increased to a certain extent to justify the opening of a new apteka. This is a rule which is pretty general in Continental countries, and prevents the overcrowding of towns with shops of one kind which is so noticeable in England. This limiting the number of aptekas has led to much speculation, which the Medical Department has recently been looking into.* This department, which is under the Ministry of the Interior, looks after the welfare of pharmacy, prevents overcrowding (the town of Yaroslav, once the capital of Russia, has four pharmacies and 30,000 inhabitants), examines periodically the registers of prescriptions, and fixes a maximum tariff of prices for drugs.†

For the highest rank in pharmacy, that of Magister, the candidate is required to have been three years a Provizor, to have passed four years in a University, and to defend a dissertation with at least six theses. The magister of pharmacy take equal rank with M.D. in civil and military practice.

In 1888 women were allowed to enter pharmacy after passing the four lower classes of the Gymnasium. After passing through their apprenticeship, female candidates will be allowed to go on to the assistant and provizor examinations. They are not allowed to receive their instruction in a public apteka, but must obtain it privately, and an aptekar taking female apprentices and assistants may not employ male assistants.

In 1888 there were 2518 public aptekas in the Russian Empire, dispensing an average of nearly 5000 prescriptions each annually.‡

The vast apteka of K. J. Ferrein in Moscow may be taken as an ideal Russian pharmacy. There are dispensed here annually 300,000 prescriptions, at a price to customers of about 2*s.* each. Some 300 men are employed, of whom 123 are qualified. Twenty men are employed in the sale room, and 28 provizors in the dispensary.

* *Novoe Vremja*, November 23, 1897 (O.S.).
† *Chemist and Druggist*, August 18, 1888.
‡ *Chemist and Druggist*, August 25, 1888, Sept. 8, 1888.

Poisonous drugs are handed to the compounder and the weights checked by one of two aptekars specially appointed.*

It may not be out of place to give some account of the careful way in which the business is carried on in the average aptcka. You take your prescription and hand it to the assistant in the sale room; he hands it to a provizor, who reads it through and says how long it will require to make up. A receipt is given to you with a number, and a request to return in a quarter, half, or one hour, generally the latter. At the appointed time you return, present receipt, and obtain your medicine, the prescription for which is copied upon the reverse of one of the curious fan-stick-shaped labels you see upon the table. The original is retained by the apteka. A view of Ferrein's place is upon the table, from which you will notice the usual Continental style of pharmacy, three sides of a square table, and a wide space behind of some four feet. The bottles are labelled in Latin, and the poisons are kept in special locked cupboards with glass doors. Things go easily, as behoves in a Government—and that a Russian Government—institution.

Night duty is taken by assistants in turn. On the mat inside the apteka door sleeps the night porter, and beside him a dog. You ring bell, he lets you in, and rouses the man on duty, who dispenses your medicine. I may say here, *en passant*, that the Russian servant, when not actually working, sleeps. The people as a whole are very illiterate, very few of the poorer people being able to read or write. As an example of the crass stupidity of the Russian *mujik* or peasant class, I am told that during the recent cholera epidemic medical students were excused half a year's time to help cure the patients; in some parts of Russia there was not a single doctor for a district as large as England. One of these men coming to a village saw a patient, and wishing to prescribe for the case asked the mujik for pen and paper. Neither was to be had in the village, and the woman was dying. The doctor being a man of some resource had the door of the *izba* (hut) taken off, and with a piece of chalk wrote his prescription upon it. The peasant harnessed his *telega* (cart), and took this most original prescription to the nearest apteka—thirty miles away.†

Another story goes that a doctor gave a bottle of medicine to a mujik, whose wife was at death's door, telling the man to "shake her" (bottle being feminine in Russian) before administering. Later on the doctor called to see his patient; poor woman dead. Asked did she have the medicine? No! Why not? Well—she died. It transpired upon inquiry that the mujik, a powerful fellow, called in an equally able-bodied friend, and they gave the poor patient such a shaking that she died soon after.‡

I have upon the table types of the labels in common use in Russia; they are of some interest, being quite unlike the adhesive labels in use in most countries.

On sheets 1, 2, and 3 are labels for mixtures, lotions, etc. Upon the front is written the number of the prescription, time of receipt, dispensing, and when required, the directions to the patient, the prescriber's name, the date, and the price. The ubiquitous eagle or a picture of the dignified-looking apteka finishes this side of the fan-stick label. On the reverse is copied the prescription, and the provizor on duty for the day, who is personally responsible for the correct compounding of the prescription, adds his signature or rubber stamp.

This label is fixed upon the bottle by means of an adhesive label bearing the words "For internal use," "For external use," as the case may be, or it may be tied on with the bottle cap (Hunt's bottle caps are much used in Russia), and the string sealed upon the narrow end of the fan-stick label.

Powders, cachets, etc., put up in boxes have the labels shut in with the lid, and wrapped round the box. The papers are smaller than those in general use here, and have the name of the aptekar upon the back. It is a common practice to mark prescriptions containing dangerous poisons: "Not renewed without the doctor's signature."

Sheet 5 brings us to the painful fact that even in a country so highly advanced in pharmacy as Russia there exist cutting chemists. Sheet 5 has upon it the announcement that S. Goldberg has taken over the apteka of the late R. Keller from the chemico-pharmaceutical laboratory of which at such and such a place (in the centre of Moscow), he sends out foreign patent medicines, disinfectants, etc., at prices of drug stores. Whether Mr. Goldberg has his window ornamented by brobdignagian frogs harnessed to triumphal cars bearing throat lozenges of great size, or mannikins made to roll their eyes and point to notices of headache powders associated with a flower opening its petals in the early morning, I know not. It is certain, however, that even in Russia stores exist.

There is also a Price Current of a Moscow house upon the table, from which you will see that the chemist in Russia keeps a large range of general goods besides his drugs.

I have now gone over the chief points in the rise of pharmacy in Russia and its conditions. In the Russian Empire there are 6932 pharmaceutists, of whom 3131 are provizors, 2527 are apteka assistants, 1215 are apprentices, and only 59 are magisters.

The conditions of life in an apteka are harder and more abnormal than in this country. Every worker is engaged ninety to ninety-six hours per week. If we add to this sleep at eight hours per diem the Russian pharmaceutist has for recreation and self-improvement sixteen hours per week.* A signed letter from a first-class Moscow paper, from which the above is quoted, and which is not likely to magnify the case, declares that for two hundred years nothing has been done to improve the condition of the aptekar. With his eight or ten years' study he does not appear to be better off than his *confrère* in England, except as regards social status.

I could go on to speak about the hospitals of Russia, but I feel sure that what I have read to-night has been enough for one evening. These institutions are, as a rule, very large and well furnished, and to anyone particularly interested I would recommend the perusal of the *Lancet* special supplement for August 7, 1897, on the occasion of the meeting of the International Medical Congress in Moscow, to which I am indebted for much of the above information.

I thank you for giving me your attention during the reading of this paper, and in conclusion I wish to express my best thanks to my brother, who has been for many years resident in Moscow, and through whose help I have been able to show you the labels upon the table, and to obtain much reliable information upon the subject of Russian pharmacy.

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* *Chemist and Druggist*, July 29, 1893.
† V. E. Marsden: let., January 17, 1897.
‡ V. E. Marsden,: let., January 17, 1897.

DETERMINATION OF ALKALINE BICARBONATES IN THE PRESENCE OF CARBONATES.—Lunge (*Zeits. fur ang. chem.*) heats the mixture to 260-270° C. in a small tube communicating with a gasometric apparatus, and measures the volume of CO_2 liberated. An ordinary alkalimetric determination of the residue then follows, from which the amount of neutral carbonate originally present is found by deducting the quantity of bicarbonate equivalent to the CO_2 evolved.—*Annales de Chim. Analyt.*, iii., 18.

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* *Russian Gazette*, Moscow, October 20, November 1, 1897.

SOME NOTES ON CRYSTALLOGRAPHY.

(*Continued from last vol., p.* 305.)

FORMS OF TARTARIC ACID.—Racemic acid has no action on a ray of polarised light, being composed of dextro- and lævo-rotatory tartaric acids in equal proportions. It is prepared by treating dibromsuccinic acid with silver hydroxide—

$$\begin{matrix}CHBrCOOH\\|\\CHBrCOOH\end{matrix} \quad \begin{matrix}AgOH\\+\\AgOH\end{matrix} \quad = \quad \begin{matrix}CH(OH)COOH\\|\\CH(OH)COOH\end{matrix} \quad + \quad 2AgBr.$$

If blue mould, *Penicillium glaucum*, be placed in a solution of racemic acid, this fungus lives upon the dextro acid, and lævo-rotatory tartaric acid is left.

The fourth variety, mesotartaric acid, also has no action upon a ray of polarised light. It is prepared by heating dextro acid to 175° C., and cannot be separated into its two varieties.

The arrangement of the molecules in these acids may be assumed to be represented in the following diagrams.

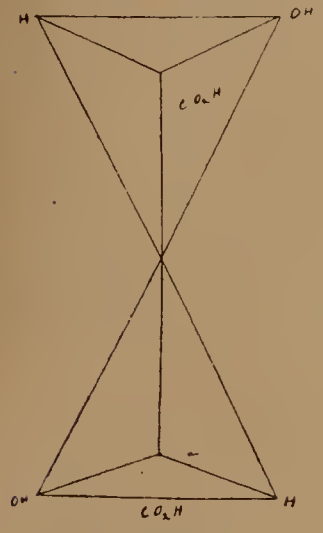

Fig. 2.—Dextro-rotatory Tartaric Acid.

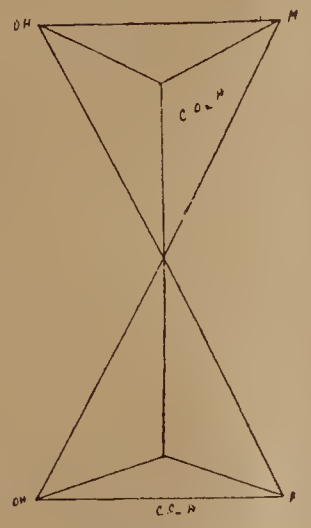

Fig. 3.—Meso-tartaric Acid.

SYSTEMS OF CRYSTALLOGRAPHY.—If a crystal of simple form be examined, it can be seen that imaginary lines passing through the centre may be drawn from end to end, from one angle to the one exactly opposite, and from side to side, and that upon these lines the molecules of which the crystal is formed are placed. These lines, the axes, are not always imaginary, however, for some crystals possess remarkable optical properties, and upon the

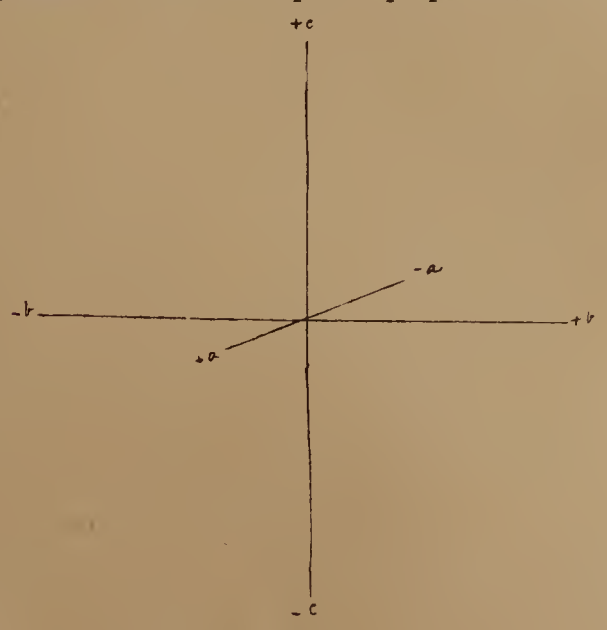

Fig. 4.

relative length, position, and angles that these axes incline to, the form of the crystal depends.

When the crystallographic axes are of unequal length it is usual to designate the one which stands vertically by the letter *c*, the one running from right to left *b*, and the one which runs from from front to back *a*.

The two extremities of each axis are distinguished by the + or − sign, as shown in Fig. 4.

If all three axes are of equal length they are all represented by *a*, if two are of equal length they are designated by *b*, and if the third is of the same length, by *c*.

If the axial intersections are not rectangular, they are designated

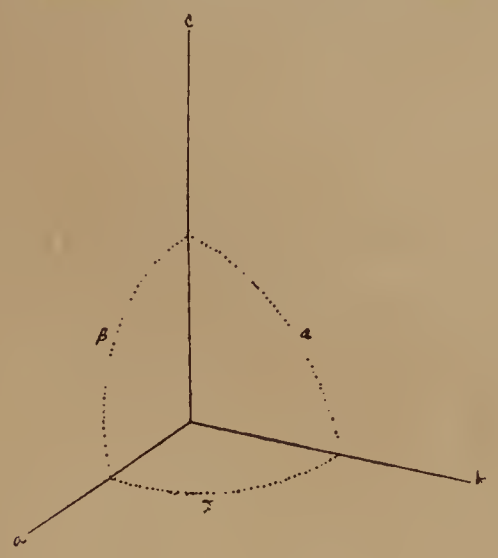

Fig. 5.

by the Greek letters α, β, and γ as follows:—$b \wedge c = \alpha$; $a \wedge c = \beta$; and $a \wedge b = \gamma$, as in Fig. 5.

The planes in which two of the crystallographic axes lie are called axial or diametral planes. They are co-ordinate planes of analytical geometry, and divide the space within the crystal into eight sectants called octants, or in one system where four axes are used into twelve sectants called dodecants.

PARAMETERS.—The values of the intercepts of any crystal plane on the axes are called the parameters of the plane.

An intercept is that portion of a line which lies between the two

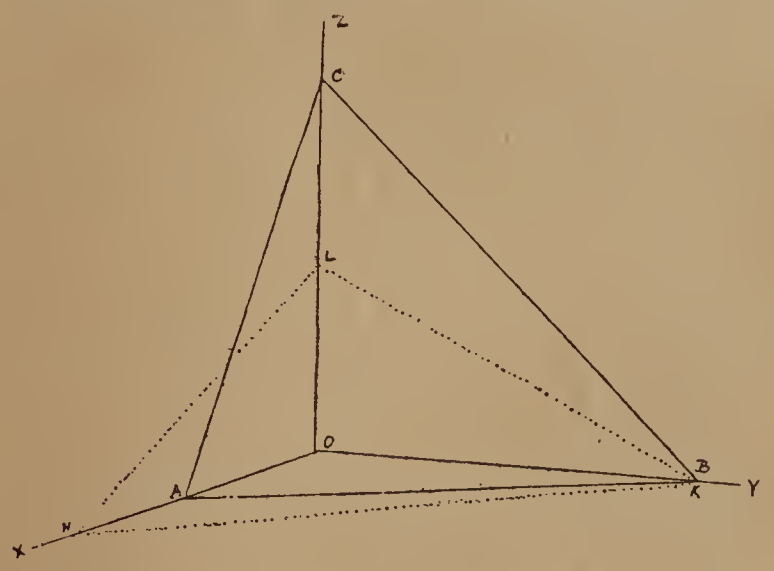

Fig. 6.

points at which it is intersected by other two lines, by a curve, by two planes, or by a surface.

The parameters are expressed in terms of certain axial lengths which are assumed as unity.

Suppose that ABC is a plane which intercepts the axes X, Y, Z at their unit lengths. The position of any other plane, HKL is determined if we know the values OH, OK, and OL in

terms of OA, OB, and OC. In this case $\frac{OH}{OA}=2$, $\frac{OK}{OB}=1$, $\frac{OL}{OC}=\frac{1}{2}$. These quotients are the parameters of the plane HKL.

If we denote the axes X, Y, Z by a, b and c the most general symbol for any plane becomes $na : pb : mc$, where n, p, and m are rational quantities and the parameters of the plane (see Fig. 6).

The values of the various angles, together with geometical methods adopted for their representation, will not be dealt with here, for to obtain a proper conception of the peculiar relationship requires a fairly advanced knowledge of mathematics.

The geometric forms are based upon the development with reference to certain imaginary planes, called the planes of symmetry. These are planes capable of dividing bodies into two halves, related to each other in the same way as an object is to its reflection in a mirror.

(To be continued.)

DETECTION OF SEAL OIL IN MEDICINAL COD-LIVER OIL.

BY EDWIN DOWZARD.

It is a well-known fact that cod-liver oil is liable to be adulterated with not only the liver oil of other fish than those belonging to the *Gadus* family, but also with fish oils (such as Japan fish oil) and refined seal oil, the presence of which is extremely difficult to prove. According to Kremel, the colour reaction with nitric acid gives reliable results, but seal oil is the most difficult to detect, as it gives practically no reaction. By means of Amagat and Jean's oleorefractometer, however, there is reason to believe that the presence of seal oil can be detected with certainty, as shown by the figures given below :—

Cod-Liver Oil.			Pale Seal Oil.
English.	Norwegian.	Newfoundland.	
+44	+45·0	+44·5	+32·0
	+43·5	+44·0	+32·0
	+44 0	+45 0	+32 5
	+43 5	+44·0	
	+45 0	+44·5	
	+44·0	+44·0	
		+44 5	

Of the fourteen samples of cod-liver oil, only two had a number of +43·5, and, as the purity of these oils was open to question, they need not be taken into account. The three samples of seal oil examined were all obtained from different sources, and show a remarkably constant figure.

+44 may then be taken as the minimum; and +45 as the maximum for pure cod-liver oil.

Taking +44·5 as the average, the following table gives the numbers obtained with mixtures of the two oils :—

Cod-liver Oil.	Seal Oil.	Refractometer figure at 22° C.
100	0	+ 44·5
90	10	+ 43·25
80	20	+ 42·0
70	30	+ 40·75
60	40	+ 39 5
50	50	+ 38·25
40	60	+ 37·0
30	70	+ 35·75
20	80	+ 34·5
10	90	+ 33·25
0	100	+ 32·0

As pure cod-liver oil varies between such narrow limits, the determination of the refractometer number appears to be of some value. It is absolutely necessary that the oil should be first agitated with alcohol (sp. gr. ·800), the mixture heated to 30° C., then allowed to separate, and the oil finally dried at 110° C. Until more pure samples of cod-liver oil have been examined, it will perhaps be well to take +43·5 as the minimum figure.

COMPRESSED TABLETS AND TABLET TRITURATES.

BY FRANK EDEL.

Among the modern fads of medicine none seem to have taken so deep a hold on the profession as tablets; the pharmacist may argue against it, but it seems to be a waste of time as far as preventing their use is concerned.

It is true, and the fact cannot have escaped the attention of thinking men, that many combinations are offered in tablet form, which, to say the least, are not capable of exhibiting the best results of the drugs, which, in fact, are not adapted for use in that shape, and the pharmacist can easily convince any thinking physician that such tablets are not to be recommended; but with the tablet nuisance generally he can do nothing more than to prepare to meet it. A prominent pharmacist said to the writer some time ago, that in prescribing tablets, the physician was working directly against himself, for it was no uncommon thing for people to come into his store and ask for 10 cents' worth of this or that kind of tablet, which having previously been prescribed for them, and noting the name, they now had come to the pharmacist direct, instead of getting a prescription from the doctor.

The pharmacist must be able to supply these goods, if he would hold his trade, and if the trade is sufficient, he should place himself in such a position that he can produce these goods as wanted. Not only does this give him the advantage of being able to produce goods of his own make, but it also places him in position to furnish on short notice any special combination that may be required by the physician. Of course, if the demand is limited, and will not warrant the pharmacist in the outlay for implements with which to produce these preparations, then it is best for him to depend on the manufacturer; but the cost is not large, and there is nothing about the manufacture of tablets that should deter any intelligent pharmacist from undertaking to make them himself.

Let us consider the tablets as we find them; first, as moulded, or tablet triturates, and, second, as compressed tablets.

In order to place the pharmacist in position to produce his own tablet triturates, he should first supply himself with at least two, preferably three, tablet moulds or plates, viz., a ½ grain, a 1½ grain mould, and a 2 grain mould; or the 1½ grain mould may be omitted, and in its place a 1 grain mould be purchased. The smaller mould is for making hypodermic tablets, and the smaller forms of tablet triturates, while the other moulds will do for almost any tablet of this kind that is likely to be called for. When larger ones are called for, they can be prepared as compressed tablets.

The vehicle almost universally used in making hypodermic tablets is pure powdered cane-sugar, which should be as finely powdered as it is possible to obtain. Formerly some used dried sodium sulphate, but this, while still recommended in some pharmaceutical works, is objectionable because it is not readily soluble when placed in water, takes up a proportion of water of crystallisation, and forms a hard, slowly soluble mass. Sugar, however, is readily soluble and answers the purpose admirably. For making other tablets, it is usual to make the vehicle of sugar of milk or, in case the mass is not adhesive enough, with a mixture of milk-sugar and a small proportion of cane-sugar. In case there is a considerable amount of solid extract in the mass, it is best to use a proportion of starch; mix well, and then add the proper amount of milk-sugar or cane-sugar. Where considerable amounts of tinctures are used, it will be found best to use an equivalent quantity of fluid extract, and where this even would be excessive, to reduce cautiously the volume, by evaporation, and then add starch and proceed as above.

Let us suppose that we want to make a hundred tablets of sulphate of morphine, ¼ grain, for hypodermic use. We select our one-half grain plate, and having weighed out five grains of sulphate of morphine we rub it with a small portion of powdered sugar; then we place our plate on a piece of smooth glass or a pill tile, moisten the mass with alcohol, and with a spatula we fill as many holes in the plate as we can, using all the material; next we moisten some powdered sugar with alcohol and take enough of this to fill perfectly twenty holes (the aim being to get experimentally the total weight of twenty tablets), then smooth the surface by rubbing with the spatula, and place the plate on the ejecting plate and eject the tablets. Let stand on the ejectors for a few minutes and when sufficiently dry, remove from the plates and place them in some clean place until thoroughly dry. When dry, weigh them; the weight being the weight of twenty tablets, and deducting the amount of morphine used, we get the weight of sugar that is necessary to make the

tablets. Of this we make a note for future refercnce. In this way we can calculate the formula for any tablet we may wish to make.

A little experience with this work will do a great deal more for the pharmacist in this class of work than anything else, and enable him to make these preparations rapidly and in every way equal to the work done by larger manufacturers.

To make compressed tablets, the first requisite is a tablet machine, and of these there are quite a number on the market. While I have not tried all of them, I will say this much, that with those I have tried I have had no trouble in doing satisfactory work. They range in price all the way from eight dollars up to two hundred dollars for the large power machines. While the ten and fifteen dollar machines do nice work, they do not work automatically, and are consequently not so rapid in their work as those that are automatic in their feeding and ejecting. The cheapest good, entirely automatic, machine is sold for twenty-five dollars.

In making compressed tablets, beginners make the mistake of thinking that it is necessary to have the powder slightly moist, and to this, more than anything else, can be attributed the trouble encountered in the preparation of tablets by compression. The materials to be made into tablets should be in as fine powder as possible, then thoroughly mixed and moistened, and granulated by passing through a No. 16 or 20 sieve and dried. Some preparations will compress nicely and form tablets without any preparatory treatment, but the great majority require special treatment before compression. Such chemicals in granulated form, as potassium iodide, potassium bromide, ammonium chloride, etc., can be compressed as they are; quinine bisulphate requires only the addition of a suitable lubricant, when it can be compressed, and for this reason it is usually preferred to the sulphate; it also has the advantage of being more soluble. The sulphate of quinine, in common with the great majority of other preparations, requires the addition of some adhesive agent before it can be satisfactorily compressed.

The adhesives used are usually powdered acacia, powdered sugar, and sometimes glucose, the latter, however, being seldom used, as it tends to make too hard a tablet. Sometimes trouble will be found in that the tablets stick to the moulds, to guard against which it is often necessary to use lubricants. The lubricants commonly used are powdered talcum, not to exceed 2 per cent., powdered boric acid, and a 2-per-cent. solution of white petrolatum in ether. Some have recommended the liquid vaseline in ether, but I have not been pleased with that. It should be the aim to use as little adhesive as possible in order to secure satisfactory adhesion in the finished tablet, but where the substance itself is insoluble, as in the case of salol, it is best, in my opinion, to use a considerable quantity of sugar, as this, being soluble and dissolving out, will help to disintegrate the tablet. For tablets such as those made of charcoal it is necessary to use 3 per cent. of acacia and 5 per cent. of sugar, and with the addition of these adhesives in the quantities named almost any powder can be compressed; but it will not be found necessary in the great majority of instances to use this amount of adhesive. In making tablets containing solid extracts, the extracts themselves often will furnish sufficient adhesiveness, and in this case starch will be found excellent to take up the excess of moisture.

In making tablets it will be found best—although not absolutely necessary when working with a small machine and with a limited number of tablets—to granulate carefully the powders after thoroughly mixing them. This, in a majority of cases, is done by moistening with water and passing through a No. 16 or 20 sieve and then allowing to dry. If this is carefully done, it will often not be found necessary to lubricate the granulated powder before compression.

Where chemical action is likely to be set up in consequence of the solubility of the chemicals in water, it is best to employ some moistening liquid that will not exert a solvent action. In such cases alcohol is generally used, and where this even might be objectionable it is customary to granulate them separately and then carefully mix the several granulated powders. This I generally do by placing them in a dry wide-mouth bottle and agitating them thoroughly.

In making tablets of calomel and sodium bicarbonate I use sugar as a vehicle and adhesive, and granulate the calomel with a portion of the sugar and dry. Then I granulate the soda with the remaining sugar and dry. Lastly, I mix the two as above, and, if necessary to lubricate, use a small quantity of powdered talcum, carefully sprinkling it into the bottle containing the powder and agitating until mixed.

The foregoing procedure can be used in making effervescent tablets of citrate of lithium, of lemonade tablets, and other tablets of a similar nature; but generally I prefer to dry the powders thoroughly before mixing; then granulate by moistening with alcohol, and dry. As a rule, tablets made in this way will require no lubricant.

To lubricate a granulated powder, it will be found most convenient to use the solution of petrolatum by means of an atomiser and spray the powder, then allow the ether to evaporate, when the powder is ready for compression. Powdered boric acid is to be used with such tablets only as are intended to yield perfect solutions, as in hypodermic tablets made by compression.

Some tablets can be made by simply moistening the powder with water, granulating, and drying. Of this kind are tablets of compound licorice powder and tablets of Dover's powder. Tablets containing extract of licorice require no adhesive.

No trouble should be experienced in putting the various medicaments into tablet form, if the pharmacist will but use judgment in the selection of adhesives and care in granulating his powder, and see to it that the granulated powder is dry before beginning to compress. A friend who for several years has been selling a great many tablets of a special kind, lately determined to make them himself, and has bought a power machine. Since then he has turned out about four hundred thousand tablets, and recently informed me that he had had no trouble in doing the work, since he had taken the precaution to have his powder dry before compression.—*Western Druggist.*

DENTAL NOTES.

Deodorant Tooth Powder.

Menthol, 10 centigrammes; β-naphthol, 5 centigrammes; saccharin, 25 milligrammes; cretæ precipitat., 50 grammes; sap. med., 50 centigrammes; ol. rosæ, *q.s.*

Violet Tooth Powder.

β-naphthol, 5 centigrammes; saccharin, 25 milligrammes; sap. med., 1 gramme; calcium carbon precipitat., 50 grammes; ionone and ol. cananga, 1 or 2 drops of each.—*Pharm. Zeitsch. f. Russl.*, xxxvi., 696.

Iodine Tincture for Dental Work.

Iodine crystals are dissolved in absolute alcohol until completely saturated. A mixture is then made of a third of this solution, a third of aconite tincture, and a third of chloroform.—*Zahnt. Reform*, xvii., 451.

Lac for Cavities.

Dissolve copal resin in equal parts of alcohol and chloroform, and add an equal volume of hydronaphthol. The result is a thin adhesive lac of highly antiseptic, but non-irritating properties.—*Zahn. Rundsch.*, vii., 4091, after *American Weekly.*

To Stop Bleeding.

Wicks recommends the following application as a hæmostatic. Resin, powdered, 4; carbolic acid, 95 per cent., 3; chloroform, 2. Make a cone of wadding, saturate one end with the solution, and press firmly into the wound. The tampon can be removed after a few hours.—*Zahntech. Reform*, xvii., 452.

Gold Solder.

According to Dr. Beebee (*Dental Comos*), dental solder may be obtained by melting fine copper, 53 parts; fine silver, 25 parts; and pins, 12 parts. By the addition of fine gold, any desired carat may be obtained. If very high carat solder is wanted, the author uses less alloy, and substitutes more fine silver.—*Zahnt. Reform*, xvii., 451.

Gilding.

Dissolve in a litre of distilled water, crystallised sodium pyrophosphate, 80 grammes; hydrocyanic acid, 12 per cent., 8 grammes; and crystallised chloride of gold, 2 grammes, in the order named. Heat to boiling. The article to be gilded is suspended in this bath with a copper wire after being carefully cleaned.—*Zahnt. Reform*, xvii., 449, after *Zeit. f. ang. Microscopy.*

Metric Weights and Measures.

Equivalents of Metric and Imperial Weights and Measures for Use in Trade.

BY an Order in Council, dated May 19, 1898, the following new table of metric equivalents is substituted for the table in Part I. of the Third Schedule to the Weights and Measures Act, 1878.*

METRIC TO IMPERIAL.

LINEAR MEASURE:

1 Millimetre (Mm.) (1/1000th M.)	=	0·03937 Inch.
1 Centimetre (1/100th M.)	=	0·3937 ,,
1 Decimetre (1/10th M.)	=	3·937 Inches.
1 Metre (M.)	=	**39·370113 Inches. 3·280843 Feet. 1·0936143 Yards.**
1 Decametre (10 M.)	=	10·936 Yards.
1 Hectometre (100 M.)	=	109·36 ,,
1 Kilometre (1000 M.)	=	0·62137 Mile.

SQUARE MEASURE:

1 Square Centimetre	=	0·15500 Square Inch.
1 Square Decimetre (100 Square Centimetres)	=	15·500 Square Inches.
1 Square Metre (100 Square Decimetres)	=	10·7639 Square Feet. 1·1960 Square Yards.
1 Are (100 Sq. Metres)	=	119·60 ,, ,,
1 Hectare (100 Ares or 10,000 Sq. Metres)	=	2·4711 Acres.

CUBIC MEASURE:

1 Cubic Centimetre	=	0·0610 Cubic Inch.
1 Cubic Decimetre (C.d.) (1000 Cubic Centimetres)	=	61·024 Cubic Inches.
1 Cubic Metre (1000 Cubic Decimetres)	=	35·3148 Cubic Feet. 1·307954 Cubic Yards.

MEASURE OF CAPACITY:

1 Centilitre (1/100th Litre)	=	0·070 Gill.
1 Decilitre (1/10th Litre)	=	0·176 Pint.
1 Litre	=	**1·75980 Pints.**
1 Dekalitre (10 Litres)	=	2·200 Gallons.
1 Hectolitre (100 Litres)	=	2·75 Bushels.

WEIGHT:

Avoirdupois.

1 Milligram (1/1000th Grm.)	=	0·015 Grain.
1 Centigram (1/100th Grm.)	=	0·154 ,,
1 Decigram (1/10 Grm.)	=	1·543 Grains.
1 Gramme (1 Grm.)	=	15·432 ,,
1 Dekagram (10 Grm.)	=	5·644 Drams.
1 Hectogram (100 Grm.)	=	3·527 Oz.
1 Kilogram (1000 Grm.)	=	**2·2046223 Lbs. or 15432·3564 Grains.**
1 Myriagram (10 Kilog.)	=	22·046 Lbs.
1 Quintal (100 Kilog.)	=	1·968 Cwt.
1 Tonne (1000 Kilog.)	=	0·9842 Ton.

Troy.

1 Gramme (1 Grm.)	=	0·03215 Oz. Troy. 15·432 Grains.

Apothecaries.

1 Gramme (1 Grm.)	=	0·2572 Drachm. 0·7716 Scruple. 15·432 Grains.

* The new equivalents are practically identical with those adopted in the book of equivalents published at the Pharmaceutical Journal Office, 5, Serle Street, W.C., and advertised in the current issue of the Journal.—[ED. *P. J.*]

IMPERIAL TO METRIC.

LINEAR MEASURE:

1 Inch	=	25·400 Millimetres.
1 Foot (12 Inches)	=	0·30480 Metre.
1 Yard (3 Feet)	=	**0·914399 Metre.**
1 Fathom (6 Feet)	=	1·8288 Metres.
1 Pole (5½ Yards)	=	5·0292 ,,
1 Chain (22 Yards)	=	20·1168 ,,
1 Furlong (220 Yards)	=	201·168 ,,
1 Mile (8 Furlongs)	=	1·6093 Kilometres.

SQUARE MEASURE:

1 Square Inch	=	6·4516 Sq. Centimetres.
1 Square Foot (144 Square Inches)	=	9·2903 Sq. Decimetres.
1 Square Yard (9 Square Feet)	=	0·836126 Square Metre.
1 Perch (30¼ Square Yards)	=	25·293 Square Metres.
1 Rood (40 Perches)	=	10·117 Ares.
1 Acre (4840 Square Yards)	=	0·40468 Hectare.
1 Square Mile (640 Acres)	=	259·00 Hectares.

CUBIC MEASURE:

1 Cubic Inch	=	16·387 Cubic Centimetres.
1 Cubic Foot (1728 Cubic Inches)	=	0·028317 Cubic Metre.
1 Cubic Yard (27 Cubic Feet)	=	0·764553 Cubic Metre.

MEASURES OF CAPACITY:

1 Gill	=	1·42 Decilitres.
1 Pint (4 Gills)	=	0·568 Litre.
1 Quart (2 Pints)	=	1·136 Litres.
1 Gallon (4 Quarts)	=	**4·5459631 Litres.**
1 Peck (2 Gallons)	=	9·092 Litres.
1 Bushel (8 Gallons)	=	3·637 Dekalitres.
1 Quarter (8 Bushels)	=	2·909 Hectolitres.

APOTHECARIES MEASURE:

1 Minim	=	0·059 Millilitre.
1 Fluid Scruple	=	1·184 Millilitres.
1 Fluid Drachm (60 Minims)	=	3·552 ,,
1 Fluid Ounce (8 Drachms)	=	2·84123 Centilitres.
1 Pint	=	0·568 Litre
1 Gallon (8 Pints or 160 Fluid Ounces)	=	**4·5459631 Litres**

AVOIRDUPOIS WEIGHT:

1 Grain	=	0 0648 Gramme.
1 Dram	=	1·772 Grammes.
1 Ounce (16 Drams)	=	28·350 ,,
1 Pound (16 Ozs. or 7000 Grains)	=	**0·45359243 Kilogram**
1 Stone (14 Lbs.)	=	6·350 Kilograms.
1 Quarter (28 Lbs.)	=	12·70 ,,
1 Hundredweight (Cwt.) (112 Lbs.)	=	50·80 ,, 0·5080 Quintal.
1 Ton (20 Cwt.)	=	1·0160 Tonnes or 1016 Kilograms.

TROY WEIGHT:

1 Grain	=	0·0648 Gramme.
1 Pennyweight (24 Grains)	=	1·5552 Grammes.
1 Troy Ounce (20 Pennyweights)	=	31·1035 ,,

APOTHECARIES WEIGHT:

1 Grain	=	0·0648 Gramme.
1 Scruple (20 Grains)	=	1·296 Grammes.
1 Drachm (3 Scruples)	=	3·888 ,,
1 Ounce (8 Drachms)	=	31·1035 ,,

NOTE.—Approximately 1 Litre equals 1000 Cubic Centimetres, and 1 Millilitre equals 1·00016 Cubic Centimetres.

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TITLES AS TRADE-MARKS IN AMERICA.

A RECENT decision of the United States Court of Appeals, in a case involving the question of the value of titles used as trade-marks, is regarded as being of such great importance to the drug trade that it has been styled a "revolutionary" and an "epoch-making" decision. The point actually decided is comparatively a minor one, the Court holding that the proprietors of an article which has been patented in the United States, cannot subsequently protect the name of that article by securing its registration as a trade-mark after the expiration of the patent. But few American proprietary preparations are patented, as their proprietors prefer to depend upon the registration of their titles as trade-marks; German synthetic remedies, on the other hand, are usually protected both by patents and trade-marks. The great importance of the decision, however, as pointed out by the *Western Druggist*, resides in the general principles laid down by the Court as governing the case; those principles "bear directly upon the question of trade-marked titles and patents, separately and jointly, and therefore upon the legal status of practically all pharmacal preparations, domestic and foreign, in the American market."

The preparation, which had been patented, and concerning which the dispute arose, was named "Castoria." The title was not registered as a trade-mark, and after the patent expired in 1885 other persons than the original inventor began to apply the same name to a preparation made by them. A suit was therefore brought to restrain them from so doing, the plaintiff claiming the exclusive right to the use of the word "Castoria." In the judge's decision, however, it was stated that the patent gave no right to any particular name, but simply to the exclusive manufacture and sale of the preparation. All such rights expired in 1885, and from that time forth any party has had a right to manufacture and sell that particular compound, and also a right to manufacture and sell it under the name by which it has become generally known to the public, and if to that public the article has become generally known only by a single name "that name must be considered as descriptive of the thing manufactured" and not of the manufacturer. It is true, said the judge, that during the life of a patent the name of the thing may also be indicative of the manufacturer, because the thing can then be manufactured only by the single person, but "when the right to manufacture and sell becomes universal the right to the use of the name by which the thing is known becomes equally universal. It matters not that the inventor coined the word by which the thing has become known. It is enough that the public has accepted that word as the name of the thing, for thereby the word has become incorporated as a noun into the English language and the common property of all."

Commenting on this decision, the *Western Druggist* observes that since most American proprietary medicines are without patent protection, and since the right to manufacture and sell similar preparations is therefore "universal," it may be held to follow, in the words of the decision, that the right to the use of the names by which proprietary preparations are known must be equally universal. It is contended that any name given to an article must, of necessity, in accordance with this decision of the Court of Appeals, be a descriptive name, and hence cannot be appropriated as a trade-mark. If that be so, the public will be free to appropriate all single titles of unpatented products in the market, and those of all patented products when their patents expire. "To make them good will require the addition of some distinctive word or mark, or of some substitute descriptive title, as 'Listerine-*Lambert*,' or 'Phenacetin-*Bayer*,' or '*Papine*, a purified opium,' the trade-mark being in the italicised words," whilst the employment of the descriptive word or words not so indicated will be free to all. And though it is acknowledged that the general recognition and enforcement of this principle may be productive of great hardship in many cases, and of opportunities for wholesale fraud by unscrupulous dealers, it is suggested that those misfortunes can only be the result of carelessness by the manufacturers in failing to devise valid trade-marks, or of a faulty interpretation of trade-mark law by the Courts in the past.

Moreover, observes our Transatlantic contemporary, though the name given to an article, whether "coined" or not, may be open to general use, inasmuch as it must be used in such a manner "as not to deprive others of their rights or to deceive the public," the manufacturer will not be left altogether defenceless in the matter, for whilst he may be prevented appropriating as a trade-mark the only name by which an article can be designated or described in the ordinary course of business, he has an unassailable right to adopt as his peculiar mark any symbol, device or non-descriptive word by which his products may be readily identified. This view is undoubtedly in manifest accord with "the interests of legitimate medicine and pharmacy," as well as of the general public, and it may be rendered incumbent on American manufacturers, in their own interests, to take prompt steps to have their trade-marks revised in harmony with the principles set forth in the "Castoria" case. Whether the same principles are likely to commend themselves to British judges remains to be seen, but it would be interesting to see the point raised in our Courts whether exclusive rights can be maintained in a "coined" word which, in the course of time, becomes so descriptive of a particular thing as to form part of the English language. It is in this way, of course, that our language continually increases, and general acceptance of the American principle would obviate many difficulties. And, in any case, manufacturers ought to be able to ear-mark their preparations without infringing the liberty of the subject.

ANNOTATIONS.

THE FORFARSHIRE AND DISTRICT CHEMISTS' ASSOCIATION has taken a wise step in sending to each medical practitioner in the district a copy of a circular, in which it is stated that the Executive Committee of the Association, having had under consideration the alterations in the British Pharmacopœia, considers it advisable, in view of the numerous changes and important alterations in the strengths and doses of some official preparations, that some time should be allowed to elapse in order that everyone concerned may have an opportunity of becoming fully acquainted with the new volume. It is proposed, therefore, that until September 1 the members of the Association shall continue to dispense prescriptions according to the Pharmacopœia of 1885, unless prescribers prefer to order the new preparations, in which case it will only be necessary to indicate that fact on the prescriptions, as the chemists are quite prepared to supply those preparations. Appended to the circular is a list of the altered doses of potent medicines, and an offer is also made to send a pamphlet giving full particulars of all changes if any medical practitioner should desire it. This is an example well worthy of being followed, the more especially if the *P. J.* 'Synopsis of the British Pharmacopœia (1898) Processes and Formulæ' be supplied for the purpose.

THE SEVENTH EDITION OF THAT SYNOPSIS, which is now ready, embodies very extensive and important additions, based on the suggestions by Mr. R. H. Parker, published in last week's Journal. The main idea kept in view in preparing this edition has been that of enabling medical practitioners to grasp the significance of the alterations effected by the revisers of the Pharmacopœia, without unduly encroaching upon their time. To the busy medical man who has been in practice some years it is more or less immaterial what is now official in the Pharmacopœia; he knows what medicaments are capable of producing certain effects, and all that concerns him is that he may be able to depend upon his patients receiving and taking what he actually intends. If, therefore, the strengths of preparations frequently prescribed by him have been altered, it is important that he should have his attention directed to the fact, and that, it is thought, may with advantage be done by local chemists or their association. The Synopsis, in its latest revised form, offers the readiest means of imparting the desired information, for whilst the first page is now devoted to a concise summary of the alterations of chief importance in the potency or nomenclature of official preparations, full particulars of all alterations in processes and formulæ are given in the following pages, and the chief features of the alterations are emphasised by brief notes in italics at the end of the respective paragraphs. Though the cost of making the additions to the Synopsis is considerable, the price of the little book is retained at the same nominal figure (4*d.* per copy) as formerly; but with the idea of securing greater permanency, a few copies have been specially bound in limp cloth, with gilt letters, and can be supplied by the publishers of the Journal, at one shilling each.

THE UNQUALIFIED ASSISTANT QUESTION continues to exercise the minds of the medical profession, and at the meeting of the General Medical Council last week a petition was received from some three hundred and forty registered practitioners, residing in various districts, desiring that special examinations should be held during the present year for unqualified assistants who have gone through a complete medical curriculum, and are over forty years of age. The Mayor of Wisbech has also forwarded a petition, signed by more than three thousand persons, praying that a certain individual may be reinstated in his position as an unqualified assistant; many medical practitioners are urging the difficulty experienced in obtaining the services of a sufficient number of qualified assistants; and unqualified assistants themselves are appealing to be allowed to continue to earn a livelihood in the same manner as formerly. One such individual, who has acted as an assistant for twenty-two years to leading practitioners in Wales, desires permission, in order that he may support "a wife and family," to commence business "as a chemist." The idea of the General Medical Council granting such permission is novel, to say the least, and the petitioner reveals a considerable amount of ignorance in assuming that he will be able to afford such luxuries if he re-commences life as a chemist and druggist. But why, in any case, should it apparently be taken for granted that medical failures are fitted to become pharmacists?

THE MEANS ADOPTED by the General Medical Council for persuading reluctant practitioners to part with their unqualified assistants appear to be indirect rather than direct. For the present, at all events, it seems unlikely that anyone will be charged with infamous conduct in a professional respect, on the ground that he employs an unqualified assistant; but the conduct of such assistants is being sharply looked after, and the least excuse serves for accusing the employer of acting as cover. In two such cases that were investigated last week, the defendants escaped the usual penalties by undertaking to remove the cause of offence. In another case which should cause chemists to reflect, a medical practitioner has had his name erased from the Register because of infamous conduct in a professional respect in connection with certain quack remedies which are extensively advertised. The particulars of the complaint in this case were (1) that the defendant had associated himself with, and was a party to, the sale, dissemination, and advertisement of those quack remedies; (2) that he acted as consulting physician at the place where such quack remedies were administered and sold, and permitted his name and qualifications to be advertised as those of the consulting physician at that place. Many registered chemists appear to think it is a part of their business to stock and assist the sale of such quack remedies, but though no disciplinary powers can be invoked in their case, encouragement of such questionable business verges closely upon, if it be not actually, "infamous conduct in a professional respect."

ENVIOUS THOUGHTS ARE AROUSED in the pharmaceutical mind when one reflects upon the power possessed by the governing body of the medical profession to erase from the 'Medical Register' the names of erring brothers. On Thursday, last week, one registered man, who was judged guilty of infamous conduct in a professional respect, had his name erased because he had, under cover of his name and qualifications, permitted and enabled an unqualified person to attend on and administer medical relief and treatment to patients, to give medical certificates, and generally to carry on a medical practice as if he were a duly qualified and registered practitioner. Such conduct may not unfitly be compared with that of registered chemists and druggists who hire themselves out to joint-stock companies consisting of unregistered persons, and so enable the latter to carry on business in unfair competition with duly qualified and registered chemists and druggists. But, alas, no such remedy is at hand in pharmacy as in the sister profession of

medicine. The only means that suggests itself for remedying this greatest evil in present-day pharmacy is for all registered chemists in business to agree among themselves never on any considcration to find employment for, or have any business transactions with, men who have at any time been in the service of joint-stock companies the shareholders in which are not registered chemists Such a remedy might be considered drastic, but there is little doubt that it would prove effective.

The British Pharmaceutical Conference will assemble at Belfast in a few weeks, and in connection with the visit, a ladies' committee has been organised by Mrs. J. C. C. Payne to look after the lady visitors. Mrs. S. Clotworthy has been appointed "Chairwoman," and Miss Watson, Hon. Secretary. A meeting of this Committee was held at 3, Clarendon Place, Belfast, on Tuesday, 31st ult., at 12 o'clock, when there was a good attendance of members. Arrangements were made to look after the lady delegates during the sittings of the Conference, whilst abstruse scientific subjects are being discussed that will not be interesting to them, and to take them to visit different places of interest in the city. Arrangements for the Conversazione on August 9, and for the ladies' drawing-room party on the 10th were fully made. The chemists' wives and sisters of Belfast are evidently prepared to give their English, Scottish and Welsh sisters a hearty welcome to Ulster, and to make their visit interesting.

The Conference Blue List for the year is now published, and bears marks of thorough revision. The omissions are very numerous, many antiquities having been removed, whilst several new subjects for research are suggested, including *Euphorbia pilulifera*, solution of hamamelis, *Papaver rhœas*, senna fruits, syrup of glucose, mucilage, green extracts, preparations of pepsin, and terebene. Most of these have obviously been suggested by alterations in the British Pharmacopœia, and it may be taken for granted that the publication of that work will result in the provision of enough subjects of papers for the Conference to serve for some time to come.

The Nottingham and Notts Chemists' Association has had a most successful year, the financial statement showing a satisfactory balance to the good, whilst the Annual Report affords ample proof of the value of the local arrangements for pharmaceutical education. Classes have been held at University College, Nottingham, in chemistry (theoretical and practical), materia medica, physics, and organic chemistry. The chemistry class has been attended by 39 students—the highest number on record. That in materia medica was joined by 16 students, which is also the highest number that has ever taken up that subject in the town. Two students attending the classes have passed the Minor examination. The membership of the Association is now 50, and there are 41 associates. After the report had been considered and adopted at the annual meeting, held last week, Mr. Gill introduced a discussion on the Pharmacy Acts Amendment Bill and the amendment proposed by Mr. J. H. Yoxall, M.P., a resolution being unanimously adopted declaring that Mr. Yoxall's amendment would perpetuate an anomaly, and suggesting that a deputation should wait upon Mr. Yoxall and lay the views of the Association on the subject before him. The following officers were elected: President, Mr. R. Fitzhugh; Vice-President, Mr. E. Gascoyne; Treasurer, Mr. J. Wilford; Hon. Secretary, Mr. A. Eberlin; the balloting for the Council resulting in the election of the following: Messrs. C. A. Bolton, R. Beverley, A. Beilby, W. Gill, T. Mason, A. Middleton, J. T. Rayson, F. R. Sergeant, J. C. Spencer, and T. Wilson.

Mr. W. S. Glyn-Jones, of the P.A.T.A., has of late had the misfortune to appear in another capacity than that of organiser of a trade protection association, for as a retail chemist he has been called upon to answer a charge of adulterating lime water. According to the press accounts, the lime water was alleged to be deficient in lime to the extent of 85 per cent., or adulterated with 85 per cent. of water, but what that means is not clear. On testing the preparation himself, Mr. Glyn-Jones found it contained the full percentage of lime, and he defended himself before the magistrate with conspicuous ability. In fact, he raised one objection with regard to the analyst's certificate which so far prevailed on the magistrate that he adjourned the case to consider the point at leisure. Ultimately, however, the analyst prevailed, and Mr. Glyn-Jones was mulcted in a fine of ten shillings and costs.

Lord Playfair, whose death occurred on Sunday last, entered upon the serious business of life as a pupil in the establishment of Messrs. Frazer and Green, chemists, Glasgow, and for the past scventeen years he has been an Honorary Member of the Pharmaceutical Society. Applied science, education, and politics shared his attention as a man of the world, and he attained the varied distinctions of Privy Councillor, G.C.B., LL.D., and F.R.S. After studying chemistry at St. Andrews, Glasgow, London, and Giessen, in 1843 he became Professor of Chemistry at the Royal Institution, Manchester, and Sir Robert Peel appointcd him on the Commission to inquire into the sanitary condition of large towns. In 1851 he was appointed special commissioner in charge of the Department of Juries at that year's Exhibition, and five years later he became Professor of Chemistry at Edinburgh University. In Parliament he represented the Universities of Edinburgh and St. Andrews in the Radical interest for seventeen years, and the Southern Division of Leeds from 1885 to 1892, when he was made a peer. During his Parliamentary career he was Postmaster-General, Chairman of Ways and Means, and Vice-President of the Council, and after his elevation he continued to sit upon important Commissions. Throughout life he was a voluminous writer on educational, technical, and economic subjects.

"The Species, the Sex, and the Individual" was the title of an interesting paper dealing with the evolution of animal structure, recently read before the Linnean Society by Mr. J. T. Cunningham, M.A. The main points of his argument were as follow:—Selection assumes the occurrence of variations; the variations must be either similarly indefinite and promiscuous in all cases, or different in different cases—that is, in different species, differcnt sexes, different stages of life. If they are different in different cases, then selection is a very unimportant matter; for the chief questions are evidently what are the differences and what makes them different? It is suggested that to deny that the variations have always been different in different cases is to deny the most evident facts, and though such denial may be possible when considering only the difference between species, it is impossible when studying the differences between the sexes in the same species, and between different stages in the same individual. In all cases the variations correspond to differences in habits and mode of life, and are in many cases of the same kind as the changes known to be produced in the individual by special stimulation, or special activity of organs. That is true of many and probably of all cases of adaptation, and it would appear that adaptation is not produced indirectly by selection from indefinite variations, but directly by the influence of stimulation in modifying the growth of the parts or organs of the body.

REVIEWS AND NOTICES OF BOOKS.

THE FLORA OF BERKSHIRE. By GEORGE CLARIDGE DRUCE, Hon. M.A. Oxon. Pp. 644. Price 16*s*. Oxford: Clarendon Press.

In this volume of some 840 pages Mr. Druce has brought together in a very attractive manner an immense amount of interesting information concerning the Royal county. The flora itself, which occupies 624 pages, is a most valuable record, every page of which must have cost the author a great deal of hard work in field, library, and museum. Over 1200 plants are noted as having been recorded for Berkshire, of which 893 are natives. In addition to these a number of species are mentioned which have been found in neighbouring counties, but not in Berks. —Mr. Druce's opinions on botanical nomenclature—the result of personal investigation—are well known, and have been freely expressed in botanical journals, and in the present work he has consistently carried them out. The earliest names for the families, genera, and species that he has been able to find after the date 1753 are adopted, and the date and reference given for each. This is so far an advantage, since if they are incorrect or if any name has been overlooked much labour is saved for the next investigator. But the prejudice that exists in the minds of many botanists against altering the exact spelling of the name originally given should receive its deathblow in the anomaly that presents itself when this rule is consistently followed out, as in the genus *Potamogeton*, some of the species thus becoming masculine and others neuter, *e.g.*, *Potamogeton polygonifolius* and *Potamogeton coloratum*.

The remarks given concerning varieties, forms, and hybrids under the species to which they belong should be of considerable use to all observers of our native plants, since they receive, as a rule, but little attention in systematic works on British botany, although the records of their occurrence may ultimately throw considerable light on the limits of species. It is not always safe to give synonyms for these, unless authentic specimens have been compared, and in many cases it would have been better to have given no name but to have simply described them as forms with numerals or letters attached. But as a storehouse of valuable information concerning the plants themselves, there can be no question that the Berkshire flora will find appreciativo readers. In addition to the botanical and popular names and Berkshire localities of each species, the author has taken a great deal of trouble in collecting and describing the botanical history, synonyms, duration, time of flowering, habitat, etc., whilst his comments on the occurrence of varieties and local peculiarities of structure and habit are exceedingly interesting, their value being greatly enhanced by the fact that most of them are the result of personal observation. The various abbreviations used, and the system of arrangement, etc., adopted in this work, are fully explained in "The Plan of the Flora," which is supplemented by lists of herbaria, books of reference, etc., consulted by the author, and quoted in the work. The Flora proper is followed by a comprehensive summary in which the author compares the flora of Berks with those of neighbouring counties, and of the remainder of Great Britain.

One of the most pleasing features of the book is the generous manner in which the author expresses his thanks to all who have in any way contributed to the accomplishment of his great undertaking. After making ample allowance, however, for any outside assistance he may have received, the work bears striking testimony to his untiring energy and perseverance. An accomplished botanist, a keen observer, a persevering and accurate investigator, possessed of considerable artistic taste, and a great facility of expression, he has succeeded in putting into this book a great deal of information which botanists as well as many who are not botanical students will find of considerable interest. The first ten pages of the introduction are taken up with a concise and interesting description of the "Topography," "Elevation of Surface," and "Woods and Forests," including some valuable agricultural statistics and over 100 altitudes. The meteorological records are dealt with in a carefully compiled article containing statistics of average rainfall, temperature, etc., calculated from observation extending over many years. In the twenty pages devoted to geology the various geological formations which come to the surface in Berks are indicated, the description of each formation being supplemented by a list of the more interesting plants found growing on it. The "River Drainage of Berks" and the "Floral Districts" are very ably described, and a charming account is given of the districts referred to. The remainder of the introduction is taken up with biographical sketches of those botanists who have contributed to the records of the county flora, starting with Turner, A.D. 1512, and continuing to present-day workers. This portion of the work, although possibly deemed by the author to be necessary to its completeness, is perhaps a little superfluous, as one does not usually look in a 'Flora' for other information than that relating to plants. The book contains an excellent map, on which the botanical districts are very clearly marked, and Mr. Druce is to be congratulated on having produced a 'Flora' that not only affords pleasant reading, but contains a large amount of useful information concerning plants.

DIE HEILPFLANZE DER VERSCHIEDENEN VÖLKER UND ZEITEN. By the late DR. GEORG DRAGENDORFF. Stuttgart, 1898.

Further parts of this cyclopædic work have now appeared. Part 2 includes some of the apetalous orders, and some of the Thalamifloræ and Calycifloræ orders. Part 3 contains only one apetalous order, viz., Euphorbiaceæ, which is placed between Olacineæ and Callitrichaceæ, the nearest large families being Burseraceæ on the one hand and Anacardiaceæ on the other. The fourth part contains the remainder of the Calycifloræ orders, and most of the Corollifloræ except the Compositæ. The arrangement is, however, so different to that followed by British botanists that without giving an actual list of the natural orders it is difficult to indicate how far the work has proceeded, and until the work is completed and the index published it must necessarily be difficult to find any plant sought for. It is to be regretted that a table of the natural orders in the sequence adopted was not given in the first part. The chief value of the work is in the number of bibliographical references given. Occasionally a botanical inaccuracy may be noticed, as where *Aloexylon agallochum* is given as a Leguminous plant and considered to be the source of aloes wood, which is now known to be derived from *Aquilaria* and *Gonostylus*. It is satisfactory to learn that the talented author practically completed the work before his death, so that it will form a monument of his industry and extensive research.

DELICATE REACTION FOR ALKALINITY OF WATER.—A 1 per cent. solution of toluylene red, $C_{15}H_7N_4Cl$, is, according to A. Cavalli (*Il Selmi*), one of the most delicate reagents for showing the presence of alkalinity in water. Two or three drops of this solution added to 50 C.c. of water give an intense yellow coloration if the water is distinctly alkaline. If the alkalinity be slight, the colour is orange or pale red. This reagent will detect 1 part per million of alkaline carbonate, and is far more delicate than the indicators generally used.—*Annal. de Chim. Analyt.*, xxii., 23.

ROYAL INSTITUTION OF GREAT BRITAIN.

LECTURES ON HEAT.

At the Royal Institution, Albemarle Street, on Thursday, May 26, the last of a course of lectures was given by the Right Hon. Lord Rayleigh, M.A., D.C.L., LL.D., F.R.S., on

Heat.

Lord Rayleigh first considered the condensation and deposition of aqueous vapour, and the various conditions under which these phenomena take place. To illustrate the effect of alteration of pressure on the condensation of vapour, an experiment was shown in which a glass cylinder, containing air moderately charged with aqueous vapour, was suddenly deprived of some of the contained air by means of a pump. The result was the formation of a cloud of condensed vapour. The effect of temperature next received attention, and various methods described by which one may measure the dew-point, *i.e.*, the temperature at which vapour begins to be deposited. Referring to the presence of motes in the atmosphere, and their ability to favour the formation of fog, Lord Rayleigh remarked that the necessity for motes in forming fogs has a limit, since if air, previously filtered from motes by passing it through cotton-wool, be expanded suddenly, as just described, a fog forms as readily as if motes were present. Some water was poured into a red-hot silver dish in order to illustrate the spheroidal state that the liquid assumes under such conditions. This non-evaporation of water at first sight seems surprising, but is easily accounted for by the fact that a layer of steam coming between the vessel and the bulk of the water acts as an insulator of heat, and so retards the evaporation of the mass. On cooling the dish, however, a point is reached at which this insulator disappears, when the mass of water rapidly passes into steam with almost explosive force. That the layer of steam actually is an insulator was shown by immersing one wire belonging to a strong battery in the liquid and attaching the other wire to the silver dish. So long as the water maintained the spheroidal state no current passed, but the moment the water commenced to evaporate, the needle of a galvanometer, with which the wires were in communication, was greatly deflected. The phenomena that attend change of physical state in matter next received attention; supersaturated solutions containing different proportions of sodium acetate were treated with minute solid particles of the same salt, and it was seen that the rates of re-crystallisation were related to the degree of supersaturation of the solutions. Passing again to the subject of heat engines, the lecturer pointed out that even in the best of modern steam engines it is not possible to convert more than one-fifth of the heat from the boiler into mechanical work. This loss is due to the conduction of heat by the walls of the cylinder; the condensation of the first steam produced, which cools the steam with which it comes in contact, and other causes. Many devices have been suggested and tried to raise the present efficiency of engines, among which were mentioned the use of jacketed cylinders, and the employment of superheated steam, which does not deposit moisture at the moment of cooling. Even under these conditions the highest known efficiency is 0·2, or one-fifth of the total heat produced in the boiler. Joule's law, therefore, breaks down in practice, and it is difficult to know in what direction we must look in order to obtain a higher efficiency for steam engines. With gas and oil engines the figure is raised to 0·25, owing mainly to the fact that the heat is developed in the interior of the cylinder. Ice machines were then dealt with, and wider applications of the theory of the dissipation of heat were briefly discussed, especially those of a chemical or quasi-chemical nature. It was shown, *e.g.*, that the boiling point of a saline solution is higher than that of the pure solvent. Van t'Hoff's investigations on osmotic pressure were referred to, emphasis being laid on one of the main conclusions, that the pressure exerted by a dilute solution of a substance is the same as if the same amount of substance were present as a gas, occupying the same volume at the same temperature. Lord Rayleigh concluded with a few remarks concerning the distillation of mixtures, a subject which he first investigated in 1891, and to which he has lately been paying considerable attention. As an example he gave figures obtained by distilling mixtures of alcohol and water in different proportions and noting the relative proportions of these liquids in the distillate. We give these results in tabular form :—

Proportions Taken.		Distillate Obtained.
Water per cent.	Alcohol per cent.	Alcohol per cent. (approx.
90	10	50 (under)
80	20	65
70	30	70 (over)
60	40	75 (under)
50	50	75 (over)
40	60	80
30	70	80 (over)
20	80	90
10	90	93
	100	100

This subject is still under investigation, and we may look shortly for more exact figures than the above, as well as for similar particulars concerning the distillation of weak acids, dilute ammonia, and other mixed liquids.

PHARMACEUTICAL TRANSACTIONS.

NORTHERN BRANCH CHEMISTS AND DRUGGISTS' SOCIETY OF IRELAND.

The Committee of the above Society met on Friday, May 27, in the offices, Garfield Chambers, Belfast, Mr. W. Lyttle, Vice-President, in the chair. On the motion of Mr. Rankin (Hon. Secretary), the following members were appointed as a Law and Parliamentary Committee :—Messrs. S. Gibson, W. Lyttle, J. Brown, J. H. Shaw, Sir James Hazlett, M.P., and Mr. J. Trackleton. The following druggists were admitted members of the Society :—Messrs. J. S. Bulmer, Bangor; J. B. Gorman, Bangor; J. Nevin, Belfast; and J. Long, Belfast.

British Pharmaceutical Conference.

Mr. Rankin reported that arrangements in connection with the approaching Conference were now in an advanced state, and when completed would, he felt sure, give entire satisfaction to all parties. A Ladies' Committee, with Mrs. Clotworthy as chairwoman and Miss L. Watson, Knock, as hon. secretary, had been appointed, and during the sitting of the Conference this Committee would look after the comfort and enjoyment of their sisters. The Lady Mayoress had also kindly promised to give a garden party in the Exhibition Hall, Botanic Gardens, and this would be followed by two concerts the same evening, one for the ladies and the other a smoking one for the gentlemen. A trip had also been organised to Garron Tower by way of Larne, and returning *viâ* Ballymena. Taking the arrangements so far as had been decided upon, he (Mr. Rankin) had no doubt but that they would be such as would make the Conference a most enjoyable and successful one.

The P.A.T.A.

Mr. Brown called attention to the fact that Homocea was being advertised and sold at 10½*d.*, which he understood was under the minimum price. He suggested action should be taken by bringing the matter under the notice of the P.A.T.A., with the view of getting the protected price adhered to.—The Chairman said he had no doubt Mr. Rankin, their Hon. Secretary, who was also local secretary for the P.A.T.A., would see if anything could be done.—Mr. Rankin said he would be pleased to do so in this or any other case to which his attention might be drawn.—Arrangements were made for joining in an excursion on July 12, and the Committee adjourned.

EDINBURGH DISTRICT CHEMISTS' TRADE ASSOCIATION.

The sixth annual meeting of the Association was held in the Pharmaceutical Society's House, 36, York Place, Edinburgh, on Friday, May 27, 1898, at 8.30 p.m., Mr. John Bowman, President, in the chair. The minutes of last meeting were read and approved. The Chairman said they had lost one of their members, Mr. James Watt, junior, of Haddington, by death since last meeting, and it was agreed that the Secretary should send a letter of sympathy to his widow and father.—The Hon. Secretary (Mr. C. F. Henry) read the

Annual Report and Financial Statement.

The membership was now sixty-four, as compared to sixty-five

last year. The Committee felt that the membership should be larger, and especially recommended that an effort should be made to get as members a considerable number of new men who had recently started business. The Prize Scheme for assistants and apprentices suggested last year had been carried out very successfully, and seventeen competitors had sent in papers. The negotiations with wholesale firms as to discounts on proprietaries had not yet been settled, but it was expected that the wishes of the Association would be conceded. The Association had also communicated with the Revenue authorities in reference to mineral oil in methylated spirit, and a reply had been received which would involve further action. In regard to the question of jury service, the Association were in communication with the Council of the Pharmaceutical Society, by whom the question had been remitted to the Law and Parliamentary Committee. The Hon. Secretary remarked, in submitting the report, that the Association had recently been referred to as a model association and a force to reckon with.—On the motion of Mr. McLAREN, seconded by Mr. LUNAN, the report was adopted.—The financial statement, showing a balance of £45 15*s.* 1*d.*, was adopted on the motion of Mr. BURLEY, seconded by Mr. McDOUGALL.—The HON. SECRETARY read the following reply from the Inland Revenue anent

Mineralised Methylated Spirit.

"Somerset House, London, W.C.,
"May 10, 1898.

"Sir,—I have laid your letter of 23rd ultimo before the Board of Inland Revenue, who have given their careful consideration to your representations with regard to the addition of petroleum or mineral naphtha to methylated spirit. In reply, the Board direct me to acquaint you that they are unable to accede to your suggestion that they should allow methylated spirit free from mineral naphtha to be sold by retail; but they will be prepared to consider applications from photographers, polish, varnish and collodion makers, bookbinders, and others who can satisfy them that they have a legitimate use for unmineralised methylated spirit for permission to obtain the supply they require from methylators in quantities of not less than five bulk gallons at any one time.

"I am, Sir,
"Your obedient servant,
"(Signed) J. P. BYRNE,
"Assistant Secretary."

—The CHAIRMAN said this reply left the matter pretty much where it was.—The SECRETARY said the proposal to give permission to obtain five gallon quantities was nothing new. That was well known and was being acted upon by the classes referred to at the present time.—Mr. RUTHERFORD HILL said the letter took no note of the point that methylated spirit was now so unusable for many domestic purposes, such as cleaning plate and windows, etc., owing to the odour of mineral naphtha, that many had given up using it, and were now compelled to purchase duty-paid spirit for this purpose. It was not practicable for these parties to obtain five gallon quantities from a methylator. The fact was that the presence of mineral naphtha unfitted the methylated spirit for a great many of the purposes for which it was formerly legitimately in common use, and practically quite defeated the very purpose of the Legislature in allowing a duty-free spirit to be used. The Board of Inland Revenue indicated no reason for retaining the mineral naphtha. It was very generally alleged by persons who had good opportunities of knowing that mineral naphtha had no effect whatever in rendering the methylated spirit undrinkable. Under these circumstances, he thought the Association would not be acting unreasonably in respectfully asking the Board of Inland Revenue what reasons weighed with them in deciding to retain the mineral naphtha.—Mr. McGLASHAN said what was stated by Mr. Hill was quite true. The present position was very much this: They held licences for retailing methylated spirit, but the action of the Board of Inland Revenue had resulted in the stoppage of a very large part of the trade they used to carry on under the licence, because people had ceased to use the mineralised spirit for many of the common purposes for which methylated spirit was legitimately used prior to the new regulations. And for many other purposes for which retailers used to supply methylated spirit the public were now compelled to purchase quantities of five gallons, not from the persons who used to have this trade, but from the authorised methylators, who are all large wholesale dealers. He thought there was something wrong in granting them licences to retail methylated spirit, and then by this mineral oil regulation practically to a very large extent withdrawing the sale and forcing it into the hands of the wholesale dealers. That was a view of the case which, he thought, they would be justified in bringing under the notice of the Board of Inland Revenue. It was ultimately agreed that the Secretary should communicate with the Board on the lines indicated by Messrs. Hill and McGlashan.—The SECRETARY also read letters from the Wholesale Chemists' Joint Committee anent £5 orders for proprietaries, and from the Council of the Pharmaceutical Society anent jury service, as indicated in the annual report.—The following new members were proposed for election:—Archibald Currie, George Hall, George Hall, jun., John Henderson, and James Robb.—The report of the special committee on the papers submitted by competitors in reply to the following questions was read. It appeared that seventeen assistants and apprentices competed, and a high average of marks was attained, only five having less than 60 per cent. The first prize was gained by James Lennox (Duncan, Flockhart and Co.), 139, Princes Street, with 86 per cent. of marks, and the second prize by G. H. C. Rowland (J. C. Pottage), 117, Princes Street.

Examination Questions.

1.—What does the law require in regard to the storage and sale of Benzol?

2.—What are the regulations as to the retail sale of Methylated Spirit?

3.—State particularly what constitutes a medicated wine of Ginger, Coca, Pepsin or Quinine, such as may be sold without a licence?

4.—You receive two orders for Arsenic from two farmers, one for seven pounds and the other for twelve pounds. How would you execute these?

5.—What regulations govern the use of stills by chemists?

6.—What is your opinion of the liability, or otherwise, to Medicine Stamp Duty of the following label? Further, if you consider it "liable," in what respects is it so, and if you think it "not liable," what alteration would make it "liable"?

—The CHAIRMAN then handed to the first prizeman a cheque for £2 2*s.*, and to the second prizeman a cheque for £1 1*s.*—It was intimated that the annual excursion to St. Fillans, on Loch Earn, would leave Caledonian Station, Princes Street, on Thursday, June 9, at 8.30 a.m., reaching Comrie at 10.30 a.m., and St. Fillans at 11.15 a.m. The return journey would be from St. Fillans at 6.15 p.m, Comrie at 7.10 p.m., and reaching Edinburgh at 9.10 p.m. A number of Glasgow pharmacists are to travel to Comrie from Buchanan Street, Glasgow, by train at 8.40 a.m., and pharmacists from Dundee and Perth will join the party at Comrie at 10.30 a.m. The office-bearers for next year were then elected as follow:—President, Mr. David McLaren; Vice-President, Mr. George Lunan; Honorary Secretary and Treasurer, Mr. Claude F. Henry, 1, Brandon Terrace, Edinburgh; and as members of Committee, Messrs. Boa, Bowman, Burley, Forret, Hendry, McDougall, D. MacGlashan, J. McGlashan, Macpherson, Stephenson, Swan, and Wylie. The meeting closed with a vote of thanks to the office-bearers, and especially to the Chairman, Mr. Bowman, who retires after two years' service as President.

TOXICOLOGICAL DETECTION OF CHLOROFORM.—Seyda treats the viscera to be examined with tartaric acid and distils in a current of steam. The chloroform generally passes over in the first 20 C.c. of distillate. This is diluted to 50 C.c., and a fifth part taken warmed to 80 C. Two C.c. of solution of resorcin and 1 C.c. of 25 per cent. solution of soda are added, when a rose coloration will appear in ten minutes if chloroform be present, and will persist for twelve hours. The amount of chloroform may be approximately determined colorimetrically by matching the tint with a solution of 1·4 gramme of chloral hydrate, equivalent to 1 gramme of chloroform, in a litre of water.—*Pharm. Centralh.*, xxxviii., 552.

LEGAL INTELLIGENCE.

PROCEEDINGS UNDER THE PHARMACY ACTS.

PHARMACEUTICAL SOCIETY *v.* FENNELL.

On Wednesday, May 26, at the Southwark County Court, before His Honour Judge Addison, the Council of the Pharmaceutical Society of Great Britain sued Gilbert Fennell for a penalty of £5 for selling poison contrary to the provisions of the Pharmacy Act, 1868.

Mr. T. R. Grey, instructed by Messrs. Flux, Thompson, and Flux, appeared for the Council. The defendant appeared in person.

Mr. Grey stated that the defendant was an assistant in the employ of Arthur Oldcorn, trading as Francis Hicks and Co., chemists and druggists, of 179, Westminster Bridge Road. Messrs. Hicks and Co. also had a shop in Piccadilly Circus, but it was at the first-named place that the defendant was employed. The offence in respect of which the penalty was sued for was the sale by the defendant of a pennyworth of oxalic acid, he being an unqualified person, and as such not entitled to make the sale. The learned counsel then drew attention to the sections of the Pharmacy Act, 31 and 32 Victoria, cap. 121, which created the offence and imposed the penalty for an illegal sale of scheduled poisons by an unqualified person. It was laid down that the penalty was to be a fixed amount, viz., £5 for each offence, and to be sued for in the County Court.

His Honour: If a qualified man has two shops he must have a qualified man in both of them. There is no doubt of that.

Mr. Grey said it was owing to the way the shop was being carried on that the Society had sent someone to make the purchase in question.

His Honour: If anybody could say "I am responsible for the shop, and the person who is acting there is under me," the Act would be a dead letter. It is intended to impose a personal obligation, and to provide that the person who makes up or sells poisons should know what he is about. If the master is not in when a poison is inquired for, the assistant, if unqualified, should say so, and refuse to sell the poison. Has not some question been raised as to the quantity necessary to constitute a poison?

Mr. Grey replied that there was one case where 1/10th of a grain of morphine was contained in a proprietary medicine. The defendant contended in that case that his article was a patent medicine, and claimed to come under the exemption in Section 16. It was shown that no patent had been taken out for it. It was contended that because it had a Government stamp on it the defendant was entitled to call it a patent medicine, but the Judges did not agree with this view.

His Honour said he did not suppose that now-a-days a patent would be granted for a medicine containing poison.

Mr. Grey said he was sorry to say such a patent could be obtained.

His Honour said the granting of patents for proprietary nostrums was, in his opinion, very wrong. It was a species of quackery that the law of England alone allowed, and ought not to be tolerated in an enlightened community. To his mind also the way in which people were allowed to employ hieroglyphics in prescriptions was wrong and ought not to be allowed in a civilised country. With regard to proprietary medicines, anybody could compound them; it was merely the name of the proprietor that was protected.

Mr. Grey said no doubt that was so, but then the ingredients were not known.

His Honour said that was a great mistake; he had seen in a medical journal the ingredients of all these proprietary medicines disclosed. Was there any question as to the authority of the Society to sue in the present case?

Mr. Grey put in the Minute of the Council authorising the proceedings.

Mr. John Partridge formally proved the purchase of one pennyworth of oxalic acid from the defendant, and afterwards handing the packet to Mr. Eastes for analysis. There was no other person in the shop with defendant when the purchase was made.

Mr. Ernest John Eastes, F.I.C., deposed to having received the packet from the last witness, which on analysis he found to contain 190 grains of practically pure oxalic acid in crystals. This was a very dangerous quantity, as little as 60 grains having been known to destroy life.

Mr. Grey then put in the Register of the Pharmaceutical Society, in which the defendant's name did not appear, and this closed the plaintiffs' case.

Mr. Gilbert Fennell, the defendant, said he did not recollect the occasion of the purchase in question, but contended that he was entitled to sell a poison over the counter if his master was present on the premises.

His Honour said the presence of the defendant's master did not entitle him to make the sale independent of him. The fact that the master was on the premises was no excuse, for if it were so it would be a very easy way of evading the Act. The master might give a poison to an errand boy to be handed over to a customer, and there were a variety of ways in which a master might be said to have made the sale, but that could not be said merely because the master was on the premises. The case was not only hopelessly without defence, but the vague defence set up by the defendant showed how serious the offence was, because he did not remember anything about the transaction, which meant that it was such a commonplace thing in his mind, when a person came in and asked for a pennyworth of this deadly poison, to give it him as a matter of course that it did not dwell in his recollection. If it were his function to impose the amount of the penalty he should say that this was a case in which the full penalty ought to be imposed; but as he had no such power, and was bound by the Act of Parliament, within which this case came, he would impose a penalty of £5 with costs.

The defendant declared his inability to pay the penalty and costs.

His Honour said the costs were dealt with in the Statute and followed as a matter of course. Of course, if the Society liked to deal leniently with the defendant in that respect, it was entirely a matter for them.

Mr. Grey said he would draw the attention of the Society to what His Honour had said.

His Honour said he did not wish to say anything in the matter. It was quite right that a public body which had to enforce the law in these cases should perform its duties. He had nothing before him except the fact that there had been a most flagrant violation of the law. Was it clear that if the master was shown to be cognisant of what the assistant was doing, that he could not himself be sued?

Mr. Grey said if it could be proved up to the hilt that a qualified man employed an unqualified assistant to sell poisons for him, possibly judgment could be obtained against the qualified man.

His Honour said if it were systematically done, he thought he should find some way of making the master liable.

A certificate was given for the attendance of counsel.

THE SALE OF FOODS AND DRUGS ACT.

A YEAR'S ADULTERATION STATISTICS AT BIRMINGHAM.

The medical officer for the city of Birmingham (Dr. Alfred Hill) states, in his recently issued annual report to the Health Committee, that more drugs were examined during the twelve months than in either of the two previous years. The percentage of adulteration, though lower than in any recent year, is still much higher than in London or in England and Wales as a whole. Dr. Hill thinks the reason is that at Birmingham the drugs most likely to be defective are taken in preference to articles which experience has shown are less liable to be adulterated. More attention than usual has been given to the examination of the accuracy with which medicines are dispensed in the city. In all, sixty samples have been analysed. In three cases simple Pharmacopœia preparations were ordered, viz., camphor liniment, iodine liniment, and carbonate of iron pills; the other prescriptions had to be specially prepared by the pharmacist. Fourteen of the sixty samples—or twenty-three per cent.—differed so much from what was ordered by the prescription that they were certified as adulterated. Fifty-two of the samples were obtained from persons qualified under the Pharmacy Act, and of these eleven were condemned. Of the remaining eight samples taken from unqualified vendors, three were condemned. Of seven samples of iodide of potassium and cinchona mixture, four were of the correct composition, or nearly so. One contained seventy-five per cent. of the amount of iodide of potassium ordered and was also deficient in cinchona; another contained only 85 per cent. of the proper amount of iodide of potassium, and a third had an excess of 10 per cent. of this drug, One of six mixtures containing butyl-chloral hydrate, glycerin, and incture of cardamoms was somewhat deficient in strength

but owing to the absence of an adequate official standard of purity of the active ingredient, Dr. Hill says he could not call it adulterated. Four of the samples were purple in colour and two were brown, the difference in appearance being due to the B.P. allowing butyl-chloral hydrate to be neutral or slightly acid in reaction, to the presence of tincture of cardamoms, and to ordinary water being used. The Pharmacopœia requires, as Dr. Hill points out, that "in dispensing prescriptions aqua should be understood to mean distilled water." Three or four magnesia mixtures contained from 462 to 485 grains of sulphate of magnesia to the 8 oz. mixture ordered, but one contained only 441 instead of 480 grains. This was probably due to the dispenser erroneously supplying an avoirdupois ounce of 437·5 grains instead of an apothecaries ounce of 480 grains. The vendor in this instance was cautioned, as was also the chemist who supplied a quinine mixture containing an excess of 18 per cent. of sulphate of quinine. Three other samples contained a slight excess. One of four samples of sodium bromide mixture contained only 160 grains of sodium bromide, while the prescription ordered 180 grains, and the vendor was cautioned. The other three samples contained 168 to 178 grains, but as the B.P. allows a slightly damp salt to be used they passed as genuine. Four of the fifteen samples of camphor liniment contained only half to three-quarters of the camphor that should be present, another was slightly low in camphor, and the remainder were satisfactory. One of the defective samples had not been prepared with olive oil as required by the B.P. Each of four samples of iodine liniment contained about the correct quantity of iodine, but one was deficient of 16 per cent. of the iodide of potassium ordered by the B.P., and the vendor was cautioned. Three of five samples of carbonate of iron pills were correctly dispensed, but one contained only 25 per cent. of the carbonate of iron that should have been present—a deficiency which was not due to deterioration by oxidation. The remaining sample consisted of iron, or Blaud's pills instead of carbonate of iron pills, and although the two preparations are similar in nature, Dr. Hill is of opinion that the substitution of one for the other cannot be justified. One sample of iron and quinine pills contained an excess of 80 per cent. of sulphate of iron. This may have been due to the dried salt having been used in error. Twelve samples of glycerin were analysed, and in four minute traces of arsenic were found, probably owing to slight impurities in the chemicals used in their manufacture, but the quantity present was too small to be considered adulteration. Two samples contained glucose or starch syrup, a form of adulteration which Dr. Hill has not found in any of the fifty samples examined in past years. Four of the six samples of spirit of nitrous ether yielded, under standard conditions, from five to seven volumes of nitric oxide gas, but two were seriously deficient, yielding only three and a half volumes and one volume respectively. As spirit of nitrous ether is a drug liable to deterioration, Dr. Hill advises that the stock should be kept in a cool, dark cellar, and not obtained in large quantities, and that the shop bottle should not contain more than can be sold in a short period. All the samples of tincture of rhubarb procured during the last two years have been genuine, the average amount of solid ingredients being 0·96 ounce per pint. Three of five samples of beeswax were genuine, another was nearly so, containing a small quantity of stearic acid, but the other, in respect of which the vendor was fined, was adulterated with at least 25 per cent. of paraffin wax, and at least 10 per cent. of resin. Five samples of cream of tartar all contained traces of lead, but not enough to be called adulteration. Three samples of extract of malt were not altogether satisfactory in quality, but as there is no standard for the preparation given in the B.P., Dr. Hill was unable to call them adulterated.

DETERMINATION OF OXYGEN IN WATER.—A simple apparatus has been devised by A. Florence for the determination of oxygen in water. It consists of a large round-bottomed flask, connected by an indiarubber cork with a small graduated burette, to which a mercury reservoir is fitted by a side tube. The flask is filled with the water to be examined, then connected with the burette, which has been filled with mercury, and emptied, so as to form a vacuum. The tap between the flask and the burette having been opened, the water is warmed until all gas has been evolved; the gas obtained is then examined in the usual manner by absorption with potash, then with pyrogallol, which are passed into the burette by the cup at the top.—*Répertoire*, 1897, 385, through *Pharm. Centralh.*, xxxix., 28.

MEDICAL JOTTINGS.

THE GENERAL MEDICAL COUNCIL opened its usual May session last week. Sir William Turner, the President, occupied the chair. Mr. C. S. Tomes, F.R.S., F.R.C.S. Eng., L.D.S., the Crown member appointed for five years in succession to the late Sir Richard Quain, was introduced by Mr. Bryant, and took his seat. The President then delivered his opening address. He announced that he had received a letter from Miss Quain, asking the Council to accept from her sisters and herself a marble bust of her late father in memory of his long association with the Council. The President then welcomed the new member, Mr. C. S. Tomes, whom he described as "distinguished in scientific research, an eminent dental practitioner, and a Fellow of the Royal College of Surgeons of England." He next alluded to the Midwives Registration Bill, which, if it passed its second reading, had little chance of becoming law, except the promoters of the Bill were prepared to amend it in Committee so as to meet the suggestions of the General Medical Council. After a reference to the action of the Council in regard to unqualified assistants, which had evoked numerous letters from both employers and assistants, the President narrated the circumstances of his action in regard to withholding from Mr. Horsley, a member of the Council, certain documents which he desired to inspect for the purposes of the work of the Council. Counsel's opinion had been taken, and it was to the effect that the Council's papers are the property of the corporate body and not of its individual members, and that the papers referred to cannot be produced for inspection without leave being first granted by the Council or the Executive Committee.

MR. HORSLEY AFTERWARDS ASKED LEAVE to call the attention of the Council to what he stigmatised as an infringement of the rights and privileges of individual members, and contended that the President had no power to direct that documents should be withheld from the inspection of members, and that counsel's opinion now quoted was totally at variance with that given by Mr. Farrer, their solicitor, in 1882. Sir C. Nixon proposed to move that Mr. Horsley should be granted the use of the Council's documents for the purpose of carrying on an investigation in connection with the legal expenses of the Council, but the President ruled that it was not the time to receive such a motion. Dr. MacAlister then moved that, having heard the President's statement, the Council expresses its complete satisfaction therewith and passes to the next business. This motion was seconded by Dr. Pettigrew, and after some discussion was carried without dissent. Mr. Horsley subsequently moved that a special committee be appointed to inquire into the conduct of the legal business of the Council, he contended that the present method was extravagant and that a committee such as he asked for and on which he hoped to serve could report as to what steps might be taken to diminish the expenditure in which their present precedure apparently involved them. On a division the motion was rejected by 18 votes to 9. Mr. Horsley was more successful in his next motion, which was to the effect that a letter by the late President addressed to the Privy Council on the subject of Reciprocity of Medical Practice in relation to Foreign Countries should be rescinded. The Council did not adopt this motion in its entirety, but an amendment to the effect that the memorandum on reciprocity be not reprinted was carried by a large majority.

ON THE INITIATIVE of Dr. Glover, regulations were framed under which the documents of the Council shall be accessible to members; these were drawn up with the double object of securing the safety of the documents and making them available for the use of members in any reasonable way and for any reasonable purpose, whilst ensuring that care should be taken that all information gained from them relating to penal cases should be regarded as confidential.

SOME PENAL CASES were next taken, and the Council then proceeded to the consideration of petitions and communications relative to unqualified assistants. Amongst them was a petition forwarded by the Mayor of Wisbech, signed by 3449 persons, asking that a former unqualified assistant should be reinstated in his position. Another was from a gentleman who had acted as an assistant for twenty-two years to leading practitioners in Wales, desiring permission, in order that he may support a wife and family, to commence business as a chemist or be allowed to pass an

easy final examination. These were all referred to a special Committee for report thereon to the Council.

The Council then proceeded to the consideration of charges against Mr. George Hamilton Wyse, Lic. Apoth. Hall, Dublin, Lic. R. Coll. Phys., Edin., Lic. R. Coll. Surg., Edin., of 51, Talbot Street, Southport, on the complaints of the Medical Defence Union and the Wigan Medical Guild, in regard to covering unqualified assistants, and he was judged to have been guilty of infamous conduct in a professional respect, and the Registrar was directed to erase his name from the Medical Register.

This was followed by the consideration of the case against Mr. Joseph Hamilton Hart, Lic. R. Coll. Phys., Edin., Lic. R. Coll. Surg. Edin., Lic. Fac. Surg. Glasg., of Morley, near Leeds, who was summoned to appear to answer the charge "That he, as a registered medical practitioner, had been guilty of infamous conduct in a professional respect in connection with certain quack remedies, which were styled and extensively advertised as "Munyon's Homœopathic Remedies." The particulars of the complaint against him were :—(1) That he associated himself with and was a party to the sale and dissemination and advertisement of these quack medicines. (2) That he acted as consulting physician at the place where such quack remedies were administered and sold, and permitted his name and qualifications to be advertised as those of the consulting physician at such place. Dr. H. Woods, President of the Incorporated Medical Practitioners' Association, supported the charge, and tendered Mr. R. R. M. Madden, the secretary, as a witness. Counsel having been heard on behalf of Mr. Hart, who gave evidence on his own behalf, the Council deliberated on the case *in camera*, and decided that Mr. Hart had been guilty of infamous conduct in a professional respect, and directed the Registrar to erase his name from the Medical Register.

At the instance of Mr. Tomes the following resolution which had previously been arrived at *in camera* regarding a deputation to the Board of Trade upon the amendment of the Companies Act, was placed upon the minutes :—"That the President, Mr. Tomes and Mr. Horsley be a Committee to take such steps as they deem most effective to induce the Government to insert a clause in the Companies Act Amendment Bill now before Parliament, with the object of preventing the registration of companies to carry on medical, surgical and dental practice.

On Tuesday last, the concluding day of the session, the following motion was made by the President and agreed to unanimously :—"That the best thanks of the Council be given to the Pharmacopœia Committee for the laborious duties which they have discharged during the last five years, and which have resulted in the production of a work which they have every reason to believe will be satisfactory to the profession."—"That the thanks of the Council be further tendered to the members of the Pharmacopœia Committee of the Pharmaceutical Society for their valuable assistance in relation to the pharmacy of the British Pharmacopœia, 1898 ; to the Referees in chemistry, botany, and pharmacology for their ready help in the solution of difficult technical questions ; to the Secretary, Dr. Tirard, for his assiduous and able services to the Pharmacopœia Committee, and through that Committee to the Council ; and, lastly, to the Editor, Dr. Attfield, for all he has done to make the Pharmacopœia complete and accurate."

Determination of Oil in Emulsions.—Three hundred parts of the oil and gum emulsion, or emulsion obtained by means of seeds, should be evaporated with 50 parts of white kaolin and 50 parts of rough sand. Towards the end of the operation add 50 parts of dried sodium sulphate and evaporate the mixture to dryness with occasional stirring. The substance is then powdered and extracted with ether in the extraction apparatus. The ether is evaporated and the oily residue weighed. Emulsions of oil prepared with yolk of egg are simply warmed to 100° C. for some time. The albuminoids of the yolk of egg are thus coagulated, the turbid fluid is then readily shaken out with ether. It must be remembered, however, that the components of yolk of egg, which are soluble in ether, fat, and lecithine, are also removed, and they must be deducted from the calculation.—*Pharm. Ztg.*, xlii., 15, after *Journ. d. Pharm. Els. Loth.*, 321.

LETTERS TO THE EDITOR.

The Benevolent Fund.

Sir,—I hope the suggestions of both Mr. Hampson and Mr. Vizer *re* the Benevolent Fund may receive the hearty support of all subscribers. There need be no fear of the Council failing to act with the most rigid honesty to all who apply for help from the Fund. The present system of soliciting votes is open to great abuse, and favours those candidates who can bring the greatest influence to work.

Sale, June 1, 1898. Allen Smith.

Dispensing Difficulties.

Sir,—Mr. Graham Bott in his letter of May 20, respecting the dispensing of the ointment given at the recent Minor Examinations, mentions "all who replied seem to agree as to the time it takes to produce a satisfactory preparation." I am not agreed on this point, having rubbed down on a slab a fourth part of the amount specified (which I forwarded as a sample) in less than a quarter of an hour, at first attempt, by the method stated.

Knowle, Birmingham, May 28, 1898. R. Kathleen Spencer.

The New B.P.

Sir,—Might I suggest as a practical means of avoiding differences in dispensing new prescriptions written since the issuing of the 1898 Pharmacopœia, that the chemist who first dispenses it should put either at the side of his business stamp, or against any special ingredient in the prescription, a mem. notifying according to which Pharmacopœia it has been dispensed. The figures 85 or 98 would be understood by the trade without causing any observation by the patient.

May 26, 1898. Pharmacist (134/12).

The Liquefaction of Hydrogen.

Sir,—It is not my intention to enter into the discussion of the liquefaction of hydrogen. It has, however, interested me sufficiently to make me look up my notes of Professor Dunstan's lectures, when he was Lecturer at the Society's School. I find, under date October 16, 1895, the following :—"Liquefaction of H. a very late (recent) discovery, 1895. By the method of putting pressure on H. when cooled to a very low temperature, Polish chemist cooled air to – 232° C., about the lowest yet recorded. H. (was) cooled to this, and putting about 20 atmospheric pressures H. was reduced to a mobile liquid." The name of the Polish chemist I was afterwards given as Olszewski. The note is also interesting, I think, as showing that the Society's students are kept fairly abreast of the times.

Ealing, May 31, 1898. A. E. Gair.

*** Several years ago it was stated that Pictet had condensed hydrogen to a "steel-blue liquid," later that Wroblewski had obtained it in the form of a "grey foam-like mass," and later still that Olszewski had compressed it into a "colourless transparent liquid." But statements are not always to be accepted as proofs, and even up-to-date lecturers may err in accepting them as such. [Ed., *P. J.*]

Alcohol-Conversion Rules.

Sir,—Although some excellent alcohol-conversion tables have recently appeared in the columns of the Journal, no generally applicable rules for diluting strong alcohol have yet been given. I give below, therefore, a set of rules condensed from various sources which give all the information the practical pharmacist is likely to need.

Rules for making alcohol of any required lower percentage, from alcohol of any given higher percentage.

I. *By Volume.*

Let the volume percentage of the stronger alcohol be V.

,, ,, ,, ,, weaker ,, ,, v.

Rule.—Mix v volumes of the stronger alcohol with sufficient water to produce V volumes of product. Allow the mixture to cool to 60° F., then make up any deficiency with water.

Example.—An alcohol of 30 per cent. by volume is to be made from alcohol of 90 per cent. by volume. Take 30 volumes of the 90 per cent. alcohol and dilute with water to 90 volumes.

II. *By Weight.*

Let the weight percentage of the stronger alcohol be W.

,, ,, ,, ,, weaker ,, ,, w.

Rule.—Mix w parts by weight of the stronger alcohol with sufficient water to produce W parts by weight of product.

Example.—An alcohol of 50 per cent. by weight is to be made from alcohol of 90 per cent. by weight. Take 50 parts by weight of the 90 per cent. alcohol, and add enough water to produce 90 parts by weight.

Rule for making any required quantity of alcohol, of any percentage by volume, from any stronger alcohol.

Rule.—As the percentage of the alcohol given is to that of the alcohol required, so is the quantity desired to the quantity of strong alcohol to be taken; to this quantity of strong alcohol must be added sufficient water to make up the required quantity.

Example.—It is desired to make 80 fluid ounces of 75 per cent. alcohol from that of 90 per cent. As 90 : 75 :: 80 : 66⅔. That is, 66⅔ fluid ounces of 90 per cent. alcohol are to be diluted to 80 fluid ounces with distilled water. This rule makes no allowance for any subsequent contraction, and a mixture after being made should be allowed to cool to 60° F., when the volume must be finally adjusted by the addition of water.

Rule for converting percentage of alcohol by volume into percentage of alcohol by weight.

Rule.—Divide ·79367 by the specific gravity, and multiply the quotient by the percentage by volume. Thus, alcohol of 57·3 per cent. by volume has a sp. gr. of ·920, and ·79367 ÷ ·920 × 57·3 = 49·5, the percentage by weight.

Rule for converting percentage of alcohol by weight into percentage of alcohol by volume.

Rule.—Multiply the percentage by weight by the specific gravity and divide by ·79367. Thus, alcohol of 49·5 per cent. by weight has a sp. gr. of ·920, and 49·5 × ·920 ÷ ·79367 = 57 3, the percentage by volume.

Rule for converting percentage of alcohol by volume into percentage of proof spirit.

Rule.—Multiply the percentage of alcohol by volume by 1·7525. Thus, rectified spirit B.P. 90 per cent. by volume = 157·725 per cent. of proof spirit (equivalent to nearly 58° over proof) (90 × 1·7525 = 157·725). Conversely, percentage proof spirit may be converted into percentage of alcohol by volume by dividing the former by 1·7525.

Note.—It will be remembered that the legal temperature for voluming alcohol is fixed at 51° F., the spirit not being valued according to the percentage of alcohol it contains, but according to the amount of proof spirit. This last is defined by the Act 58, George III., as being such as shall weigh exactly 12/13ths of an equal measure of distilled water.

London, May 23, 1898. E. W. LUCAS.

ANSWERS TO QUERIES.

NEW B.P.—The book is published by Spottiswoode and Co., Gracechurch Street, London, E.C., price 10*s.* 6*d.* It can be got through any bookseller. [*Reply to* A. H. P.—11/7.]

TEXT-BOOK OF BOTANY.—Dr. Porter's translation of the text-book of botany, by Strasburger, Noll, Schenck, and Schimper, is, we understand, published by Macmillan and Co, Limited, but we are unable to say anything about the book as yet, not having seen it. [*Reply to* Student.—134/45.]

B.P. AQUÆ.—1. The use of medicated waters prepared by trituration with calcium phosphate is permitted "in India and other tropical countries," but in Hampstead you are supposed to distil the preparations. 2. Why not use the article that is ordered? The commercial powder ought, of course, to be purified before use. [*Reply to* T. G. W.—11/1.]

TO LOOSEN FAST STOPPERS.—The best way to loosen these is to allow a thin stream of hot water to run over the neck of the bottle, for instance, from the kitchen boiler, or an exhaust steam pipe, rapidly and gently tapping the bottle meanwhile. In this way we have removed the most refractory stoppers. Another plan is to make two loops of thick string round the neck, and having fastened each end of the string securely, move the bottle briskly up and down so that the neck becomes hot from the friction, then tap as before. The selection of solvents necessarily depends upon the nature of the contents of the bottle. For alkalis strong hydrochloric acid will do; for resinous matter benzol or chloroform acts best. [*Reply to* W. H.—10/32.]

BOTANICAL.—Your specimens are *Salix cinerea* and *Pedicularis sylvatica*. [*Reply to* J. F. W.—11/3.]

CONCENTRATED TONING BATH.—If there is a deposit of metallic gold, it shows the presence of an impurity of some kind. Distilled water must of course be used. [*Reply to* J. C. W.—11/12.]

BLACKING PLATE CARRIERS.—The best way to black plate carriers is to use a dead black varnish, such as may be made by rubbing up lampblack with a little gold size and turpentine. [*Reply to* FEROX.—11/13.]

COMPOSITION OF MANGE LOTION.—This appears to be a mixture of boiled linseed oil with a very little creosote, as far as we have been able to examine it in the limited time at our disposal. It contains no sperm oil as you state. [*Reply to* A. D.—10/20]

SOLUBLE LEMON FLAVOUR FOR BEVERAGES.—Fresh lemon peel cut in shreds, 20 ounces; alcohol, 90 per cent., 30 fluid ounces; terpeneless lemon oil, 1 drachm. Macerate together for fourteen days, strain, press and filter through a little powdered pumice stone. [*Reply to* H. M. M.—10/31.]

STANDARDISING B.P. PREPARATIONS.—We are not quite clear what information you require. The Pharmacopœia formulæ are specially devised in the interests of those who make small quantities, and the instructions given seem sufficiently definite and practical in most cases. [*Reply to* J. J. A.—10/22.]

SOURCE OF COMMERCIAL SUGAR.—We do not know the source of the brand of sugar you name; probably it is cane sugar and not beet sugar. But that is immaterial; if it answers to the official description and tests, it must be practically pure sucrose, whatever may be its botanical source. [*Reply to* M. P. S.—11/4.]

COMPOUND TINCTURE OF RHUBARB.—Your formula is, of course, very different from the official one, and it would not be safe to sell the preparation under the name you apply to it now that the name is that given in the B. P. 1898, which is now in force. With regard to the sale you refer to, you can only await events. [*Reply to* X. Y. Z.—11/9.]

SULPHATES OR SULPHITES.—The formula in question is perfectly correct. It must not be considered in connection with any formula for negative developers where the sulphites are used as oxygen absorbents but being for papers and not a developer, the higher salt must be used in each case. The writer of the article has used the formula exactly as written, and you may rely upon it thoroughly, provided always that a careful account be kept of the amount of paper toned in one bath, or else, when the gold is used up, "toning" goes on apparently as usual, but in reality is not gold toning at all. [*Reply to* J. I.—11/5.]

BOOKS ON BOTANY.—A popular work on the fertilisation of plants which is well worth reading is 'The Sagacity and Morality of Plants,' by J. E. Taylor, published by Chatto and Windus, price 7*s.* 6*d.* The standard work on the subject is D'Arcy Thompson's translation of Müller's 'Fertilisation of Flowers,' published by Macmillan and Co. Then there are Darwin's two classical works, 'Cross and Self Fertilisation of Plants' and 'Fertilisation of Orchids,' both published by John Murray. No, the works of Van Teighem have not been translated into English. Yes, 'Strasburger' has been excellently translated by Professor Hillhouse, and is a standard work for English students. It is published by Macmillan. [*Reply to* BOTANICAL.—11/18.]

OBITUARY.

BRADDOCK.—On May 28, George Braddock, Chemist and Druggist, Oldham. Aged 52.

COMMUNICATIONS, LETTERS, etc., have been received from Messrs. Barrett, Baylis, Brown, Butterfield, Cummings, Eccles, Elsdon, Gadd, Gamble, Gifford, Hill, Hoit, Howie, Holloway, Jones, Keeley, Lunan, McKnight, Miller, Neville, Nightingale, Penistan, Sage, Spencer, Taylor, Vizer, Wiggin, Wright.

Pharmacy and the Allied Sciences.

A REVIEW OF CURRENT WORK.

Lead and Potassium Iodide.

F. C. H. Brooks has recently examined a double iodide of lead and potassium, $PbI_2,2KI$, which was discovered about a year ago and possesses the remarkable property of being decomposed by water, with the formation of lead iodide and potassium iodide, thus :—

$$PbI_2,2KI = PbI_2 + 2KI.$$

This peculiar property makes the double salt a most delicate test for water, the action of which appears to be catalytic. To prepare the compound dissolve 1 Gm. of lead nitrate in 10 C.c. of distilled water, add a saturated solution of potassium iodide until the precipitate is just dissolved, and on allowing the solution to stand for a few minutes a copious crystalline precipitate of the double iodide falls. Wash the almost white, silky, acicular crystals with a little absolute alcohol to remove any excess of potassium iodide, and preserve in a stoppered bottle over calcium chloride. Exposure to the air of a room for a few minutes causes decomposition, a distinctly yellow colour then making its appearance. The salt is very slightly soluble in boiling chloroform, but is easily dissolved by a strong solution of potassium iodide without decomposition.—*Chem. News*, lxxvii., 191.

Proteids of the Pea and Lentil.

T. B. Osborne and G. F. Campbell publish further information respecting the proteids of the pea. They find that the legumin of that seed, as formerly described by them, was contaminated with more or less vicilin, and that when the latter is completely separated, the legumin is identical in composition and reactions with that of the vetch. The pea is now shown to contain legumin, a globulin not coagulated by heating its solutions ; vicilin, a globulin soluble in a more dilute brine than legumin and coagulated on heating its solutions to 95° to 100° ; legumelin, a proteid partially precipitated by dialysis ; a proto-proteose and a deuteroproteose. The combined amounts of legumin and vicilin extracted was about 10 per cent., whilst the amount of legumelin obtained was slightly more than 2 per cent. The lentil was found to contain the same proteids as the pea.—*Journ. Am. Chem. Soc.*, xx., 348.

Cathodic and Röntgen Rays.

Papers on kathodic rays, Röntgen rays, and electro-dispersion are very plentiful at present. Professor Battelli and Dr. Garbasso have examined more closely the action of kathodic rays on insulated conductors with the view of testing the existence of indeformable rays in the interior of the Crookes' tube, and their results agree with the hypothesis that the different modes of action of kathodic and Röntgen rays depend on the different conditions of the medium in which the conductor is placed. P. de Heen, in a paper on the electro-dispersive power of air modified by a Bunsen burner, publishes results which indicate the existence of a special kind of energy, to which he applies the name "infra-electric," and in a second paper he describes experiments dealing with the propagation of what he calls "anti-electric" energy behind shadows, but it is not clear what is the distinction between the terms "infra-electric" and "anti-electric." Drs. R. Malazoli and C. Bonacini, writing on the diffusion of Röntgen rays, state that the two electrodes contemporaneously emit "ortho-kathodic" rays, but that which communicates with the negative pole of the excitor develops them the more intensely. They also find that, at a certain stage of rarefaction, two cones of radiation seem to start from the electrodes, carrying opposite charges, both being displaced by magnets subject to the same laws. The violet anodic light, like the ortho-kathodic rays, is intensely affected by magnetic action, but it follows the opposite law, behaving like an electric current from the anode to the anti-anode. M. Villard is of opinion that the action of kathodic rays in reducing crystals, silicates, copper oxides, etc., suggests that those rays are formed of molecules of hydrogen due to traces of moisture left in the tube.—*Nature*, lvii , 544.

Staining Tubercle Bacillus.

According to Dr. G. Sims Woodhead, the following is one of the best methods of staining the tubercle bacillus :—The small, yellow, caseous-looking points from a sputum rich in the bacilli are spread out by pressure between two cover-glasses, so that a fairly thin film remains on each when they are carefully slipped one over the other until they come apart. Thoroughly dry the covers, protecting them carefully from dust, pass rapidly three times through the flame of a spirit-lamp, care being taken not to scorch the film, then float film-face downwards, on the staining solution, which has previously been filtered into a watch-glass. The stain should consist of saturated alcoholic solution of basic fuchsine, 1 part; absolute alcohol or rectified spirit, 10 parts carbolic acid solution (5 p. c.), 10 parts. Leave the preparations in the watch-glass for 12 to 24 hours, unless time is an object. In the latter case heat the fluid gently until vapour is given off, then drop the films on the surface, and leave them for 3 to 5 minutes only. Next transfer the covers to an aqueous solution of sulphuric acid (25 p. c.), and when decolorisation is complete, as evidenced by the pink coloration not returning when the specimens are plunged into a bowl of tap-water containing a single drop of ammonia solution, thoroughly rinse in the slightly alkaline water and counter-stain in an aqueous solution of methylene blue. Finally, wash in water, carefully dry and mount in Canada balsam. The bacilli should stand out as bright red rods on a blue background of cells, etc.—*Practitioner*, lx., 590.

Miersite.

L. J. Spencer describes a cubic modification of native silver iodide—miersite—the existence of which proves that silver iodide is trimorphous. Whilst the new mineral is cubic, tetrahedral and isotropic, iodyrite is hexagonal, hemimorphic and optically uniaxial, and iodobromite, the third modification, is cubic, holohedral and optically anomalous.—*Nature*, lvii., 574.

Dialysis in Photography.

A. Haddon has studied the passage of certain salts used in photography through gelatin septa. He finds that sodium hyposulphite dialyses more rapidly through a septum tanned with oxidised pyrogallic acid than through plain gelatin, and that gelatin hardened with chrome alum allows least salt to pass through. Potassium bromide passes at the same rate, whatever the state of the gelatin ; sodium carbonate resembles the hyposulphite in its action ; sodium sulphite passes most rapidly through plain gelatin, and least through that treated with chrome alum ; mercuric chloride resembles sodium hyposulphite ; and pyrogallic acid passes most rapidly through gelatin hardened with chrome alum, plain gelatin coming next in order.—*Photo. Journal*, xxii., 224.

Softening Bones.

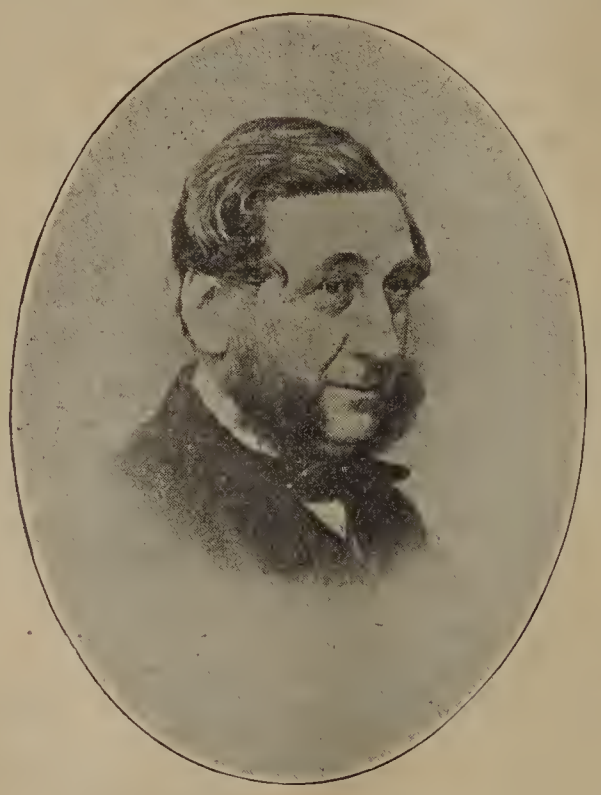
J. J. Andeer finds that an aqueous solution of phloroglucin acts as a powerful decalcifying agent on the bones of animals, but is without action on the most delicate organic tissue. If treatment with hydrochloric acid be employed as well, the residual "ossein" will be without a trace of either calcium phosphate or carbonate.—*Comptes Rendus*, cxxvi., 1295.

THE PHARMACEUTICAL SOCIETY AND ITS PRESIDENTS.

GEORGE WEBB SANDFORD.—1863-69, 1870-71,* AND 1879-80.

THIS eminent pharmacist was the direct political successor to Jacob Bell, but, though he was a member of the Council when Bell died in 1859, he was not elected to the presidential chair until four years later, and beyond being an almost constant attendant at the Council meetings, he took no prominent part in pharmaceutical affairs until that time. His work was chiefly political, and his only contributions relating to the practice of pharmacy being a paper on the process of displacement, read at an evening meeting of the Society in December, 1860, and a note in 1862 on the characters of lithium citrate as a suitable salt for medicinal purposes.

Mr. Sandford was a man endowed with much strength of will and indomitable perseverance, and he was born to be a leader of men. He had eminently a judicial habit of mind, and was singularly clear in his judgment, so that he was consulted on all sides and on every manner of subject. Had circumstances called him to public life, he would infallibly have made his mark. His fine presence commanded respect, the impression thus created being aided by a ready utterance and an engaging manner. Jocularly he was called the Member for Bloomsbury, and he was singularly successful in his interviews with exalted official persons. He may be regarded as the central figure of the contest between the purely trade element of pharmacy and its more professional tendencies as represented by the Society, which preceded the passing of the Pharmacy Act, 1868. Born in 1813, his connection with the business of pharmacy commenced about the period when chemists and druggists were becoming generally recognised as retailers and dispensers of medicine, taking in that respect the position formerly occupied by apothecaries before they had been authorised by the Act of 1815 to practise medicine. About the same period the first attempts to establish organisation among chemists and druggists were being made and the desirability of regulating the sale of poisonous drugs was also attracting attention with the public and the Legislature. About the year 1827, Sandford was apprenticed to a Mr. Sadler, who carried on the business of a chemist and druggist at North Walsham, a small market town in Norfolk. After completing his term of apprenticeship, Sandford came to London in 1832, and called first on Alexander Blake, of Piccadilly, who considered him too young (19); but not succeeding elsewhere in gaining a situation, he arranged to be taken on trial by Mr. Blake for six months. That probationary engagement developed into a more permanent connection extending over sixty years, and for nearly fifty years Sandford was in partnership with three generations of the Blake family.



GEORGE WEBB SANDFORD.

Shortly after the formation of the Pharmaceutical Society, of which Alexander Blake was a founder, Sandford became an associate, his name appearing in the list of associates published in 1842, and in the supplementary list published in March, 1846, his name appears among the members of the Society. In 1853 and 1854 he was elected a member of the Council, and again in 1857, continuing to hold that position until 1881, when he retired.

On the death of Jacob Bell in 1859, immediately after the commencement of the fourth year of his presidency, his immediate successor in that office was Thomas N. R. Morson, who continued to occupy the chair for two years with Peter Squire, as Vice-President. After the Council had duly recorded its grateful sense of the invaluable services rendered by the deceased leader to the Society and of the total self-abnegation in which those services were ever given, a committee was appointed to take the requisite steps to form a Capital Fund, out of which one or more scholarships, bearing the name of Jacob Bell, might be established, and Sandford was elected a member of it. At the same meeting intimation was received of the fact that the sum of two thousand pounds had been bequeathed to the Society by Bell, with directions that it was to be extended in increasing the efficiency of the School of Pharmacy or in otherwise promoting pharmaceutical education. It was decided that the best means of giving effect to the testator's desires would be to provide a new and larger laboratory, and in accordance with that view, plans were prepared for extensive alterations of the Society's premises, and the existing laboratory was erected and fitted at the top of the house in Bloomsbury Square. The *Pharmaceutical Journal* had already become the property of the Society, the copyright of the publication having been transferred by its orginal proprietor and editor shortly before his death, and arrangements were made, in accordance with which the editorial dutics were divided into three parts. Professor Redwood taking charge of the department of chemistry and pharmacy, whilst Professor Bentley edited communications dealing with botany and materia medica, and John Barnard those treating of matters of commerce. The world of pharmacy being disturbed by no contentious matters or internal discords, whilst outside attempts at legislative interference with the craft were for the time being non-existent, the work of the Society was carried on quietly until the expiration of Mr. Morson's third term of office as President in 1861.

From 1861 to 1863 Peter Squire, another past President, followed Morson in the chair, with Sandford as Vice-President. His term of office was rather more eventful than that of his predecessor, for the latent spirit of opposition to the Pharmaceutical Society once more became active in an organisation of dissatisfied opponents, and again became a source of trouble.

* Resigned, April 5, 1871, during his term of office.

The United Society of Chemists and Druggists was formed in 1860 with a variety of objects, more or less identical with those of the Pharmaceutical Society. At first, however, such competition as existed was beneficial rather than otherwise to the Pharmaceutical Society, as it stimulated those at the head of affairs to more active exertions, and caused them to consider whether all their arrangements were the best possible. Meanwhile it was definitely decided that no further relaxation should be permitted in the rule which stipulated that examination should precede admission to membership of the Society. Amongst other incidents in Mr. Squire's later term of office was the appointment of a committee, including the whole of the Council of the Pharmaceutical Society, to make arrangements in connection with the International Exhibition of 1862, for the formation of a representative collection of drugs and pharmaceutical preparations. Much more important than this, however, was the exemption of pharmaceutical chemists from service on juries, which was secured in connection with the Juries Bill of 1862. The reason given in the House of Lords for not extending this privilege to all chemists and druggists was that they had no statutory qualification by which they could be distinguished as persons entitled to exemption.

The distinction, in regard to a coveted privilege, thus drawn between pharmaceutical chemists and other persons carrying on business as chemists and druggists was a practical demonstration that the advantage attaching to statutory pharmaceutical qualification was not merely the right to use a "fancy title." The medical press spoke of it as being, in the public interest, a useful recognition of chemists belonging to the organisation of the Pharmaceutical Society as distinguished from the "motley host of traders" exercising the calling of chemists and druggists outside that organisation. In that respect the exemption of pharmaceutical chemists from jury service was regarded as offering important encouragement to the educational efforts of the Society that might be expected to have the effect of widening its influence and raising the educational standard of druggists. Even the United Society, though at first vehemently denouncing the measure as an instance of "exclusive legislation," unjustly favouring a class interest, was so much impressed with the cogency of the argument in support of educational organisation, that shortly afterwards proposals were made by that body for obtaining an Act of incorporation, and, at the same time, to provide for education and examination as the only means by which chemists and druggists could obtain recognition. This adoption of the principles of the Pharmaceutical Society was in some degree satisfactory, though it placed the two societies in such a position of competition that one of them must necessarily be absorbed or superseded by the other, and it was under these conditions that Sandford became President. When elected in 1863, he entered at once on his political career. The two great objects he kept in view were the importance of associating the whole of the trade in one great corporate body, with compulsory registration by Statute and, secondly, the prevention of interference by any outside body.

In this latter object he was opposed in the first instance by the General Medical Council. At the suggestion of the Home Secretary that body had prepared a draft Bill which was to include the regulation of the practice of pharmacy. There was to be a general system of education and examination under the direction of the Medical Council, registration of all persons qualified to practise pharmacy, such qualified persons alone to have the right to dispense and compound prescriptions, or to keep open shop for that purpose. Inspectors were to be appointed by the Medical Council, whose duty should be to see that the provisions respecting pharmacy were duly carried out. The sale of all secret remedies was to be prohibited, and proprietary medicines were to have their composition stated by a sworn certificate.

The main principle of the proposed measure was quite in accordance with that on which the Pharmaceutical Society had endeavoured to establish a system of qualification that would afford at once security to the public and due protection to those engaged in the practice of pharmacy. It was, therefore, only the contemplated mode of applying that principle that could be opposed by the Council. The position was one of extreme difficulty, as it was obvious that self-government on the part of the Pharmaceutical Society would be at an end if the provisions of the Medical Act Amendment Bill were carried out. Further complication arose from the action of the United Society of Chemists and Druggists which had then become an antagonistic body, under the influence of a secretary who manipulated its proceedings. Many amongst the members of that Society were men of cultivation and high standing, but strenuous opponents of medical control and probably in many instances conscious of having unwisely declined to embrace the opportunity offered at the passing of the Pharmacy Act to secure a recognised position. The members of the United Society were not in favour of the proposed legislation any more than Mr. Sandford. Their leader, from whom subsequently they threw off allegiance, owed his position to a mellifluous mode of speech and to a retentive memory, by which he recollected in a surprising manner the names and persons of those whom he was supposed to introduce. His was the policy of attack, which crumbled when once mutual understanding was established, and though for a time he succeeded in promoting opposition to the Pharmaceutical Society he utterly failed to lessen the estimation in which the Society was held in influential quarters as being the most suitable body to carry out the regulation of the practice of pharmacy that was felt to be necessary.

Eventually the Medical Council was induced the following year to withdraw its Bill, and to suggest to the Home Secretary the importance of legislative enactment, which might ensure competence in persons keeping open shop for dispensing medicines and compounding prescriptions.

This was Sandford's chance, for the Pharmaceutical Society had been pointed out as being the proper body to take charge of education, examination, and registration for the future chemist and druggist; it was already in existence, and had moved in that direction. The Medical Council, the Colleges of Physicians of London and Edinburgh, were won over to allow the Society to draft a Bill, and at a special meeting of the members (1864) the Council was urged to make application to Parliament for further powers without delay.

In addressing the annual meeting at the close of the first year of his presidency, Sandford spoke of the Medical Council as being very willing to assist the Pharmaceutical Society in obtaining independent power to regulate the practice of pharmacy, and there is reason for believing that he had been usefully instrumental in promoting that disposition by impressing the members of the Medical Council with appreciation of the work done by the Society to advance pharmacy. Speaking on that occasion of the difficulty of having to satisfy the Medical Council on the one hand and on the other members of the trade who ought to have been co-operating with the Society in advancing a work that was really more for their benefit than that of the Society, he referred to the Society's Pharmacy Bill as offering an opportunity of raising the position of chemists and druggists as a class while adding to the general welfare and security of the public.

But the United Society, unhappily, drafted another Bill, so that rival proposals were submitted to the House of Com-

mons. The inevitable consequence ensued: Both Bills were referred to a Select Committee, and as the subject was of small interest to the House, it soon proved wearisome, and the Committee closed its sittings by recommending legislation on the sale of poisons only. The one remaining hope for a Pharmacy Bill was reconciliation between the two Societies. In effecting that Sandford was conspicuously successful. Interviews were arranged between the Council and the Executive of the United Society, to the great gain of both, and notwithstanding the persistent efforts of the secretary of the latter body, he was not permitted to frustrate that most desirable amalgamation. In view of the importance of the occasion, Mr. Sandford was unanimously requested to continue the onerous duties of President; and the Bill, of which this better understanding was the outcome, became law on July 31, 1868.

At the Conference meeting at Norwich, the supporters and former opponents of Mr. Sandford united to do him honour. A public testimonial was presented, and his portrait by J. P. Knight, R.A., is suspended in the Council Room of the Society. The passing of the Pharmacy Act, 1868, by no means ended Sandford's work; on the contrary, it drifted into a variety of detail which was the cause of much labour, sometimes of a vexatious character. Bye-laws had to be prepared, and poison regulations to be considered. These did not meet with approval when submitted to the Society at the annual meeting in 1870. A resolution embodying the same draft as "recommendations" only was passed at the following Annual Meeting, on which occasion Mr. Sandford resigned his office.

The Privy Council attempted to make the "recommendations" agreed to at the meeting regulations having the force of law by special legislation, but the Bill introduced was withdrawn. Sandford was re-elected President about ten years afterwards, but at the election in 1881, he decided not to accept nomination; accordingly he retired from the Council after twenty-four years of unceasing service. He died at Cromer in 1892, aged 80.

HALOGEN METABOLISM.

Under this heading F. Blum, in the *Münchener Medicinische Wochenschrift* of February 22 and March 1, 1898, discusses the nature and physiological relations of the active substance of the thyroid gland. Our knowledge of the subject began with Baumann's discovery of iodine in the normal thyroid. The same observer with Roos subsequently showed that the iodine of the gland exists in organic combination, constituting iodothyrin, the substance in which resides the active property of the thyroid.

1. THE NATURE OF THE IODINE-CONTAINING SUBSTANCES OF THE THYROID GLAND.—Blum holds that the accepted view that iodothyrin is the active substance of the gland must be modified, because extraction with hot alcohol gives only a trace of iodine, and that not as iodothyrin but as an albuminate. The residue insoluble in hot alcohol also yields an iodine-containing compound which differs from iodothyrin in containing a greater proportion of sulphur and a smaller proportion of iodine. This substance is an iodine-albuminate which, like alkali-albumin, is slightly soluble in hot alcohol. "Thus free iodothyrin is not present in the thyroid gland, nor is it set free by boiling with alcohol in a way comparable to the separation of lecithin from yolk of egg by ether; but on the contrary, alcohol extraction yields only an iodine-containing substance belonging to the albumins." Even extraction by water and subsequent coagulation by heat does not give iodothyrin, but an albuminate containing iodine. After long extraction with water the greater part of the iodine-containing substance passes into solution, and by heating this extract after addition of NaCl, a coagulum containing all the iodine in the form of albuminate is obtained. If this coagulum is treated with superheated steam an iodine albumin incoagulable by heat is obtained. To this substance Blum proposes to apply the term, "Thyrogen 'C.'" The importance of this substance consists in its solubility and its capability of being sterilised.

This incoagulable iodo-albumin, like other albumins, is capable of being converted into an insoluble body by the action of formalin (formaldehyde). For this insoluble body the term "Thyrogen f" is proposed.

These observations are in favour of the author's view, viz., that the iodine is present in chemical combination with an albumin and not merely as an association-body of iodothyrin and albumin. This finding is further corroborated by the following facts:—1. That the amount of iodothyrin obtainable from the iodo-albumin varies according to its mode of preparation. 2. That by treating synthetically-formed iodo-albumins with acids and alkalies or by submitting them to artificial digestion, bodies resembling iodothyrin can be obtained.

The amount of iodothyrin obtainable from sheep's thyroids by weak acids or alkalies varies greatly according to the time during which the action is continued. After long boiling with weak alkalies sheep's thyroids yielded between 8 to 9 per cent. of iodine, and from the residue no more iodine could be extracted. When the latter proportion had been obtained it was thought that because the proportion of iodine underwent no further change, the proportion of sulphur present varied at different periods of the preparation. By long heating with alkalies, a sulphur-free compound was obtained when the iodine amounted to 9 per cent. This, according to Blum, points to the conclusion that the sulphur and the iodine originally belong to the same molecule, but that the iodine is in more stable combination than the sulphur; that an iodine- and N-containing molecule, iodothyrin, forms the nucleus of a larger molecule. The latter, in the process of decomposition, yields NH_3, H_2S, and trimethylamine, as detected by smell. Blum's observation that in albuminous bodies I, Br, and Cl form substitution-products, in which the halogen group is in stable combination, has been confirmed by other observers.

II. THE ORIGIN OF THE IODO-ALBUMIN.—Blum found the amount of the iodo-albumin was increased in animals' thyroids by feeding on sheep's thyroids and also by administrations of KI. The additional iodine in the thyroid glands of animals thus fed was found to be in combination as iodo-albumin. The author concluded that in the thyroid gland the iodine-containing substances brought by the circulation were split up with the development of free iodine, which entered into combination with albuminous substances in the gland, resulting in the increase of iodo-albumin present.

3. THE FATE OF THE IODO-ALBUMIN IN THE ORGANISM.—In order to ascertain whether the iodine-containing substance of the thyroid undergoes katabolic change in other parts of the body, having estimated the amount of iodine in a sheep's thyroid at 1 Mg., the author fed dogs on sheep's thyroids, and found that he could recover from the urine nearly the whole of the iodine, by using ammoniated silver solution and applying heat. This mode of treatment does not affect iodothyrin, and hence it may be concluded that nearly the whole of the iodine-containing albumin of the thyroid substance taken as food had undergone destructive metabolism, resulting in the liberation of nascent I. The following considerations give a clue to the part of the body in which the chemical changes occur. It is not in the alimentary canal, for neither peptic nor tryptic digestion cause decomposition of iodothyrin. Again, since in animals that have been deprived of their thyroid glands, the administration of iodo-albumin by the mouth causes iodine salts to appear in the urine, the destructive metabolism cannot be solely attributed to the thyroid, but since in animals that have been given KI with their food traces of albumins containing iodine are found in various tissues, such as the muscles and the spleen, it would appear probable that destructive metabolism of iodo-albumin may be executed in any part of the body where oxidation processes are in progress.

4. IS THERE AN IODINE METABOLISM IN THE BODY IN NORMAL CONDITIONS, *i.e.*, apart from the artificial administration of iodine? Blum considers that his investigations warrant the conclusion that an iodine metabolism does occur, and that its chief seat is in the thyroid gland which elaborates iodo-albumin. The latter is redistributed to the tissues by the blood-stream. In the body generally, iodine metabolism is observed only after artificial administration of iodine. It is different with the thyroid gland. This organ seizes on the traces of iodine-containing substances present in the circulation in normal conditions; elaborates them into its own peculiar iodo-albumin, and for a long period of time holds a stock of iodine established, and thus exercises its action upon the tissues of the body generally.

DETECTION OF ARACHIS OIL IN OLIVE OIL.—For this purpose Blarez suggests the saponification of 1 C.c. of the suspected oil with 15 C.c. of 5 per cent. alcoholic potash. Since earthnut oil gives a hard potash soap, whilst olive oil soap is liquid without a trace of crystals, the amount of arachis oil can be approximately determined from the consistence of the resulting soap. In this way an admixture of 5 per cent. of arachis oil with olive oil is shown by the separation after 3 to 4 days of a few crystals, which liquefy above 10° C.—*Répertoire*, 1897, 446, through *Pharm. Centralh.*, xxxix., 32.

NOTES ON MICROSCOPY.

Cleaning Cover Glasses.—Braun recommends the following process for cleaning microscopical covers. Collect the cover glasses to which cedar oil adheres, in a glass containing methylated alcohol. Pour off the alcohol, wash with benzene, boil for about half an hour with soda solution, stirring with a platinum needle. When rinsing, rub the glasses with the hands to remove any adhering matter. Then place them for twenty-four hours into acetic acid, and finally into 96 per cent. spirit. Rub dry with a piece of soft leather, and pass through a flame.—*Ph. Ztg.*, xlii., 762.

Preserving Media for Biological Preparations. — The following fluids are recommended by Amann for preserving biological specimens:—*Lactophenol*: Carbolic acid, 20; lactic acid, 20; glycerin, 40; distilled water, 20 parts. Recommended for fronds of mosses, hepaticæ, fungi, and algæ. *Lactophenol copper solution:* Crystallised chloride of copper, 0·2 part; crystallised acetate of copper, 0·2 part; distilled water, 95·0 parts; lactophenol, 5·0 parts. For preserving chlorophyll, recommended for Demidiaceæ, Palmadaceæ, Confervæ, etc. *Concentrated lactophenol copper solution:* Crystallised copper chloride, 2·0 parts; crystallised copper acetate; 2·0 parts; lactophenol, 95·0 parts; water containing algæ is mixed with 10 per cent. of the above solution. The whole material is preserved thereby for a long time. *Lactophenol glycerin jelly:* White gelatin, 85; distilled water, 44; glycerin, 30; dissolve by heating on the water bath, filter and mix with 10 parts of lactophenol. *Lactophenol copper glycerin jelly:* Prepared as above with the substitution of 10 parts of lactophenol copper for lactophenol. Phyocyanin and chlorophyll retain their colour excellently in this medium. *Lactophenol gum:* A strong solution of gum arabic in water 1, glucose 2, and lactophenol. For preparing mosses for the herbarium. *Potassium mercuric iodide glycerin:* The author states that the salt dissolved in concentrated anhydrous glycerin gives a mounting medium of 1·78 to 1·80 refraction index. He recommends the mixture for Diatomaceæ. The preparations are ringed on with amber or dammar varnish mixed with 2 per cent. of boiled linseed oil.—*Pharm. Centr.*, xxxviii., 544.

Reagents for the Microscopical Examination of Food.—Van Bastellar finds the following reagents useful for the microscopic examination of foods:—(1) Chloral hydrate, 5; distilled water, 3. This is an excellent clearing medium, and shows the structure of various cells, such as beet in chicory, and chicory in coffee, also renders detection of inorganic matter mixed with starches more rapid. (2) Aniline, 1; acetic acid, 10. Gives a bright yellow tint with schlerenchyma and woody tissue, detects powdered nut shells, olive stones, etc., in pepper. (3) Acetic acid, 1; water, 2. Gives a violet tint with fragments of tissues of *Melampyrum* seeds in flour. (4) Potassium iodide, 1; iodine, 1; water, 50. Renders starch distinct by colouring the granules blue and therefore making the size and shape more evident for their identification. (5) Potash, 1; water, 100. Causes certain grains of starch to swell, and thus distinguishes them from others which are more resistant. Also gives a reddish tint with turmeric and a violet colour to ergoted particles in flour. (6) Methyl violet, 1; water, 300. Stains starch granules. (7) Tincture of logwood (1 in 15), 4; sodium chloride, 1. Detects presence of alum in bread, flour, etc. (8) Sulphuric acid, 1; water, 20. Gives effervesence in presence of carbonates or bicarbonates, thus detects such mixtures as chalk in flour. Also gives a blood-red tint to ergoted flour. (9) Eosine, 1; solution of ammonia, 10. Stains altered yeast cells and bacilli. (10) Hæmatoxylin, 1; water, 25; alcohol, 25; sodium chloride, 5. Resembles No. 7 in action. (11) Solution of ferric chloride, 1; water, 5; blackens acorn tissues, also those of leguminous seeds. Gives a greenish tint to powdered date stones and other adulterants in pepper. (12) Copper sulphate, 1; water, 20; ammonia *q.s.* to give a clear blue solution. Gives a dirty greenish blue with some foreign admixtures with rice. (13) Ferrocyanide of potassium, 1; water, 100. Gives a reddish tint with flour or other substances contaminated with copper salts. (14) Fuchsine, 1; alcohol, 100; stains various tissues, notably those of pepper. (15) Chlor-iodide of zinc, 1; water, 50 Reacts like potassium iodide. (16) Solution of ammonia, 1; water, 20. Acts like No. 5, and gives blue tint with copper.—*Journ. de Pharm.* [6], vi., 228.

PHARMACEUTICAL SOCIETY.

MEETING OF THE COUNCIL.

WEDNESDAY, JUNE 8, 1898.

Present:

Messrs. Allen, Atkins, Bateson, Bottle, Carteighe, Corder, Cross, Grose, Hampson, Harrison, Hills, Johnston, Martindale, Newsholme, Park, Savory, Southall, Storrar, Symes, Warren, and Young were present, and the chair was taken by Mr. Walter Hills.

The minutes of the last monthly meeting and of the special meeting on May 18 were read and confirmed.

Mr. Hills said that in connection with the minutes he had to report that letters had been received from Dr. Leach, Professor Ramsay, and Professor Remson, expressing their gratification at being elected Honorary Members of the Society.

The Late Lord Playfair.

The Chairman said that, before passing to the agenda, he wished to call attention to the fact that they had lost another of their distinguished Honorary Members in the person of the late Lord Playfair, who died on May 29. Lord Playfair was elected an Honorary Member of the Society in 1889, having been proposed by Mr. Daniel Frazer, a former member of the Council. Lord Playfair expressed on several occasions his interest in the work of the Society, and it was interesting to call to mind that he had undertaken at the Jubilee Dinner, in 1891, the charge of the toast of the Pharmaceutical Society. He mentioned then that he claimed to have a very early connection with the Society, that he had been connected with pharmacy, for he had attended a six months' course of lectures some fifty years previously under Pereira, and that he had served something like six months in a chemist and druggist's shop in Glasgow. Lord Playfair spoke of his experience in a chemist's shop as having been of inestimable benefit to him in after life. As they all knew, Lord Playfair was a very prominent man in the political world. He was a member of the Cabinet at one time, a Privy Councillor, Vice-President of the Council in 1886, and also Lord in Waiting to Her Majesty. He was a chemist to the Museum of Practical Geology, Professor of Chemistry at the University of Edinburgh, Founder of the Chemical Society, and he was an associate of the celebrated John Dalton. He was a distinguished politician, an educationalist, and a scientist, and was one of those men of whom all Britishers might well be proud.

Election of President.

The ballot having been taken in the usual way Mr. Walter Hills was unanimously re-elected President.

Mr. Hills said it was very pleasant to him to be once more elected to that honourable position with such unanimity, and he thanked his colleagues for this renewed expression of their confidence in him. He could only say, as he did two years ago, that relying on their kind help, which had never failed him hitherto, he would do what he could for the advancement of their common interests.

Election of Vice-President.

On a ballot being taken Mr. Newsholme was unanimously re-elected Vice-President.

Mr. Newsholme said he was exceedingly obliged to the Council for this mark of confidence. He felt it a great honour to occupy that position, and he appreciated it all the more that he should be associated for another year with Mr. Hills as President. His work during the past year had been very light, thanks to the President, and it must be very gratifying to every one to see that his services were so much appreciated, as indicated by his re-election at the head of the poll.

Election of Treasurer.

On a further ballot being taken, Mr. Robert Hampson was unanimously re-elected Treasurer.

Mr. Hampson, in returning thanks for his re-election, said he hoped that his duties would be more onerous than ever during the coming year; owing to larger funds coming into his possession as Treasurer of the Society.

STANDING ORDERS.

The Standing Orders of the Council were re-enacted for the ensuing year.

REAPPOINTMENT OF OFFICERS.

Mr. Richard Bremridge was reappointed Secretary and Registrar for the ensuing year. Dr. B. H. Paul was reappointed Editor, and Mr. John Humphrey, Sub-editor of the Journal. Mr. E. M. Holmes was reappointed Curator of the Society's Museum, and Mr. J. Rutherford Hill was reappointed Assistant-Secretary in Scotland.

EXAMINERS FOR THE COUNCIL PRIZES AND SCHOLARSHIPS.

It was decided that Messrs. Harvey Gibson, McLeod, and E. H. Farr should be requested to conduct the examination for the Council Prizes Competition in July next. It was also agreed that Messrs. Phillips, Saul, and Pinches should be requested to conduct the examinations for the Jacob Bell Memorial and Manchester Scholarships.

ELECTION OF MEMBER.

Pharmaceutical Chemist.

Percy Davies, of Penistone, having passed the Major examination and tendered his subscription for the current year, was elected a "Member" of the Society.

ELECTION OF ASSOCIATES IN BUSINESS.

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

Beckwith, John Batty; Liverpool
Brooks, Albert Henry; Margate
Cornfoot, Thomas Boots; Herne Bay
Eaton, Robert; Manchester
Jago, Charles Albert; Chertsey
Jones, Richard Robinson; Amlwch
Knights, George Ekins; Swaffham
Petrie, James; Blairgowrie
Rowell, Thomas Bell; Haydon Bridge
Shakerley, William Arthur; Clapham
Whittle, James; Morpeth

ELECTION OF ASSOCIATES.

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

Brigham, J. George; Thornton Watlass
Checketts, Mary; Leamington
Clunas, John; Nairn
Callwick, John Henry; Birmingham
Emsley, Robert Burns; Southport
Field, George Rogers; West Bromwich
Ludlam, William Henry; Sheffield
Phillips, Ivor Regina'd; Abergavenny
Ritchie, David French; Southsea
Rollin, Arthur Stanley; Durham
Rowan, William; Creetown
Smith, Harry; Huddersfield
Whitehead, Thomas; Northallerton

ELECTION OF STUDENTS.

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

Akhurst, Arthur Alfred J.; Brixton
Barker, Frank Horace; Northampton
Bennett, Oswald Edward; Bristol
Booth, John; Huntly
Boulton, Jesse; Kidsgrove
Brisby, Thomas Edmund; Pickering
Cable, Alice Mildred; London
Cuthbert, Thomas H.; Lancaster
Daft, George; Southwell
Doughton, Samuel Davies; Aberystwith
Duncan, Samuel Claudius; Liverpool
Dunkerton, Edward Bernard; Lincoln
Fann, Charles Montague; Grimsby
Flew, William Norman; Bradford
Forster, Edward Maver; Alnwick
Grayshon, Harry; Leeds
Hanbury, F. Capel; Upper Clapton
Hirst, Benjamin A.; Ilkley
Holmes, John William; Kensington
Holroyd, Asa; Queensbury
Horton, Albert John: Maidstone
Horton, Alexander H.; Birmingham
Hughes, Thomas Kiernan; Corwen
Izdebski, Stanislas; Ross-on-Wye
Jack, Robert Martin; Lochgilphead
Jenkins, Henry Watkins; Brecon
Jones, Frederick James; Runcorn
Jones, John Richard; Rhyl
McKee, Isaac; Glasgow
McPhail, John; Newcastle-on-Tyne
Maidment, Harold Harding; Faringdon
Marsden, Joseph; Manchester
Moffatt, William; Barnard Castle
Nowell, John Percy L. D.; Paignton
Pattison, George; Darlington
Pettifer, Frank; Leighton Buzzard
Peverett, Stephen Walker; Wisbech
Priest, William; Huddersfield
Prime, William Arthur; Birmingham
Raywood, Vaughan Rycroft; Harrogate
Sayle, Ernest Edward; Huntingdon
Scott, Charles; Falkirk
Searle, Frederick William; Plymouth
Shorthouse, Ronald Gordon; Bilston
Smith, Alfred; London
Stocks, Alfred Booth; Queensbury
Stone, George; Llanelly
Urwin, Albert; South Shields
Webb, James Thomas; Dukinfield
Wilson, Frank; Barnard Castle

RESTORATIONS TO THE REGISTER.

The names of the following persons, who have severally made the required declarations and paid a fine of one guinea, were restored to the Register of Chemists and Druggists:—

Charles Grayson, East Hartlepool.
Charles Lemon Seely, 7, Victoria Parade, East Finchley, N.
Charles William Davis Stevens, 71, East Hill, Wandsworth, S.W.

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

APPOINTMENT OF COMMITTEES.

The Council went into Committee to consider the arrangement of the different Committees, as the result of which the following appointments were made:—

General Purposes.—The whole Council, to meet on the evening before the meeting of the Council, and at such other times as may be necessary.

Finance.—The President (Mr. Hills), Vice-President (Mr. Newsholme), and Messrs. Allen, Carteighe, Grose, Hampson, Martindale, Park, Savory, Storrar, and Warren.

Benevolent Fund.—The President (Mr. Hills), Vice-President (Mr. Newsholme), and Messrs. Atkins, Bateson, Bottle, Corder, Cross, Harrison, Johnston, Southall, Symes, and Young.

Library, Museum, School and House.—The President (Mr. Hills), Vice-President (Mr. Newsholme), and Messrs. Allen, Atkins, Bottle, Carteighe, Hampson, Harrison, Martindale, Savory, and Warren.

Law and Parliamentary.—The President (Mr. Hills), Vice-President (Mr. Newsholme), and Messrs. Allen, Atkins, Bottle, Carteighe, Cross, Hampson, Harrison, Johnston, Martindale, Park, Savory, Southall, Storrar, Symes, Warren, and Young.

Standing Committee to watch Parliamentary Business, and take action thereon in the interests of Chemists and Druggists.—The President (Mr. Hills), Vice-President (Mr. Newsholme), and Messrs. Allen, Carteighe, Martindale, Savory, and Warren.

Research.—The President (Mr. Hills), Vice-President (Mr. Newsholme), and the members of the Library, Museum, School, and House Committee.

Evening Meetings.—The Staff of the Society's School, the Editor, and the Curator were appointed to assist the President and Vice-President in making arrangements for the Society's evening meetings in London.

REPORT OF THE FINANCE COMMITTEE.

The SECRETARY read the report of this Committee, which was of the usual character, and recommended sundry accounts for payment.

The PRESIDENT, in moving the adoption of the report and recommendations, said there was nothing to which he need call special attention. He would like to refer to the donations which had been received for the Benevolent Fund, because it showed the widespread interest taken in that Fund by the different classes connected with the Society. A letter had been received from the Brighton Junior Association of Pharmacy enclosing a cheque for £4 10*s.* representing the winter's collection, bringing up their total to £31 odd. Letters had also been received from the Chemists' Assistants' Association forwarding 16*s.* 8*d.* collected at the musical and social evenings, and from the Nottingham Chemists' Association enclosing 5 guineas. It was a matter for satisfaction that there was such a good object on which the Members could devote their surplus cash on all possible occasions.

REPORT OF THE BENEVOLENT FUND COMMITTEE.

The report of this Committee included a recommendation of grants to the amount of £81 in the following cases:—

A pharmaceutical chemist, life member (61) and subscriber, who has recently failed in business and is unable at present to do anything in consequence of an accident. (London.

The widow (63) of a chemist and druggist member and subscriber who is in poor health, and without employment. (Forest Gate.)

The widow (48) of an associate, who has had two previous grants; she is unable to do much in consequence of illness. (Towyn.)

A former chemist and druggist (42) whose name was erased from the Register in 1896. He is now suffering from chronic disease and has a wife and two young children. (Mitcham.)

The widow (34) of an associate in business and subscriber, who has three children dependent on her. (Hyde.)

A registered chemist and druggist (78) whose name was erased in 1892; is acting as temporary assistant, but is suffering from ill-health. (London.)

A registered chemist and druggist (70), and former subscriber, who has had four previous grants. (Bootle.)

One application was not entertained.

The Vice-President, in moving the adoption of the report and recommendations, said he need only refer to one of the cases which came before the Committee—that of an old gentleman to whom a grant had been made for the purpose of enabling him to go into the country for a short time for the purpose of recruiting his health and enabling him to get work and earn his living, which he was anxious to do. There were certain institutions in the north of England where persons temporarily broken down were received at a very cheap rate, but the amount voted would not allow of a long railway journey, and if any one knew of any similar institution in the south, the Secretary would be glad to receive information about it. With reference to the case of an orphan whose name was mentioned by Mr. Bottle in October last, he was glad to report that, owing to the publicity thus given to the case and to the exertions of the Secretary, who always took a great interest in such cases, the little boy had been elected to the Wanstead Orphan Asylum. He had also to report the death of an old gentleman, to whom a sum of money was voted last month, who was found by the Secretary, when he went to see him, to be practically at the point of death, so that the grant was of no use to him, and had not been expended.

Mr. Allen said he had also to report that a sum of money which had been placed in his hands to distribute at the rate of 5*s.* a week had not been wholly expended, owing to the death of the recipient. He wished to add, however, that that small weekly sum had been of the greatest benefit and had kept the home together during the last few months of the poor man's life, and his widow was very grateful for the help the Society had afforded.

The report and recommendations were unanimously adopted.

Library, Museum, School, and House Committee.

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

	Attendance.	Total.	Highest.	Lowest.	Average.
April	Day	255	22	5	11
	Evening	88	8	2	5

Circulation of Books.	Total.	Town.	Country.	Carriage paid.
April	150	71	79	19*s.* 5*d.*

Several donations had been received (*Ph. J.*, May 14, p. 466), and the Committee had directed that the usual letters of thanks be sent to the respective donors.

The Committee recommended that 'Pharmaceutical Formulas' be purchased for the Libraries in London and Edinburgh.

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

	Attendance.	Total.	Highest.	Lowest.	Average.
April	Day	483	33	11	20
	Evening	43	8	1	2

Several donations had been received (*Ph. J.*, May 14, p. 466), and the Committee directed that the usual letters of thanks be sent to the respective donors.

The Secretary having read the Report of this Committee,

The President said there was only one point to which it was necessary to call attention. It was suggested by the Committee that the associates and students of the Society be permitted to borrow books from the Library without being required to obtain a recommendation from a member or an associate in business, and that the regulations be amended accordingly. He thought the Council would thoroughly agree with the changes recommended by the Committee. Hitherto associates and students had to obtain the signature of a member of the Society in order to obtain books, but it was thought now that there was no need for any such restrictions.

The Report was unanimously adopted.

The Sessional Address.

It was decided that Sir J. Crichton Browne should be invited to deliver the sessional address in October next.

Correspondence.

The President announced that a letter had been received from the Registrar of the Pharmacy Board of Victoria acknowledging receipt of the Society's letter of January 14 last, which had been forwarded to the various colonies which had joined with Victoria in forwarding the request made by that Board.

A letter had been received from the Dover Chemists' Association enclosing a resolution passed by that body, which stated that the present method of electing annuitants was satisfactory, and deprecating any restriction on the voting powers of the members as likely to be disastrous in its results.

A letter had been received from the Tunbridge Wells and District Chemists' Association, enclosing a resolution that in the opinion of that Association it was desirable that the recommendations for the keeping and storage of poisons adopted at the meeting of the Pharmaceutical Society on May 17, 1871, should be adopted as regulations and incorporated as a Bye-law. This letter was referred to the General Purposes Committee.

A letter had also been received from the Secretary to the Agent-General for Queensland, enclosing a request from the Brisbane Public Library to be supplied with the publications of the Society. This letter was referred to the Library Committee for consideration.

Local Secretaries.

The President said an extract had been sent up from the Minutes of the Executive of the North British Branch, of April 29, in which the opinion was expressed that it would be an advantage to appoint Local Secretaries for a period of five years instead of annually as at present, and also that it would be well for the Council to select Local Secretaries directly, without the formality of local nomination, though still leaving it open to local associations to make recommendations. This communication was also referred to the Library Committee for consideration.

A letter had been received from the Clerk to the Spectacle Makers Company, saying that a scheme had been under the consideration of the Court for some time for conferring diplomas on opticians who can prove that they possessed certain scientific qualifications, and as it was proposed to admit pharmaceutical chemists to the examination for the diploma, and to the freedom of the Company at a reduced fee, it was desired that the Council of the Pharmaceutical Society should nominate a member to serve on the Committee.

This communication was referred to the Library Committee.

An application to receive certificates of the University of Bucharest in lieu of the First examination was referred to the Board of Examiners.

Mr. Bottle said with regard to the letter from the Dover Association, he should like to say that the opinion expressed was in consequence of an observation from himself inviting it, but that he in no way influenced the decision by any expression of his own opinion or feeling in the matter.

Report of the General Purposes Committee.

The Council then went into Committee to consider the report of this Committee.

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

SELECTED FORMULÆ.

Puncture Cement for Rubber Tires.

Glycerin, 3 vols.; liquid water glass, 1 vol. Add acid till a jelly is formed. Dilute this with three times its volume of glycerin, and place 4 to 6 ozs. of the mixture in each tire.—*Amer. Druggist.*

Pascola Tablets.

These are said to be composed of extract of cascara sagrada, 0·72 gramme, senna, pulv. corticis ulmi, pulv. radicis glycyrrhiz., āā 0·18 gramme, saccharin, 0·24 gramme in each.—*Zeit. d. allg. oest. Apoth. Ver.*, li., 798.

Chrome Glue.

According to Schweitzer a mixture of glue containing 10 per cent. of potassium bichromate solution (1 in 50) becomes insoluble when exposed to sunlight. Broken glass coated with the freshly prepared solution and exposed to the sun for some hours, becomes so firmly united that even hot water had no effect on the joint, and the fracture was scarcely visible. This cement will be found useful for repairing glass ornaments and similar articles where the joint is required to be as little visible as possible. The glue may also be used for producing waterproof textures.—*Sci. Amer.*, lxxiv., 343.

PHARMACY ACTS AMENDMENT BILL.

THIRD READING PASSED.

The House of Commons on Wednesday went into Committee on the Pharmacy Acts Amendment Bill, the short title of which is "A Bill to Amend the Pharmacy Acts, 1852 and 1868." The objects of the Bill are to render persons who have passed the "First" or Preliminary examination required by the Pharmacy Acts, and who are consequently registered as "Apprentices" or "Students," eligible to become "Student-Associates" of the Pharmaceutical Society, instead of "Students" as heretofore; to render every person whose name appears on the Register of Chemists and Druggists eligible as a member of the Society; to provide for the retirement of one-third of the Council every year by rotation, instead of by ballot as provided by the Charter; and to enable the Secretary to receive voting papers for the election of members of Council up to and on the day of election.

Clauses 1 and 2, the interpretation clause, and the clause making Apprentices or Students eligible to be elected Student-Associates, were agreed to without discussion, two amendments on the paper in the name of Mr. Alexander Cross and one in the name of Mr. Weir not being moved.

On Clause 3, which proposes to make all registered chemists and druggists eligible as "Members" of the Pharmaceutical Society,

Mr. YOXALL proposed an amendment, extending the clause to "the assistant of a legally qualified apothecary, having served not less than three years at the trade." He said: The object of the amendment which I propose to move is to amend the present educational test applied by the Society to those persons who want to rank as Members of the Society. At present there are two tests applying to the two ranks in the Society—the Major examination applies to membership, and the Minor examination qualifies for associateship. The object of the Bill is to allow those who are Associates to become Members without passing the higher test. I am aware that during the lapse of years the lower test has become almost as stringent as the higher test used to be, and my objection to this clause is removed by that consideration, and if the Hon. Member in charge of the Bill would be so good as to give me an assurance that the Society would, in view of a subsequent Bill, take into consideration the status of those who are now members so as to preserve the proportion between the present Members and the present Associates — if he would give me that assurance I would not press the amendment. May I hope for an assurance on that point?

Colonel BROOKFIELD: I do not like to pledge the Pharmaceutical Society, but I promise to recommend the proposition of the Hon. Member to the Society.

Mr. YOXALL: In that case I will not move the amendments which stand in my name.

The remaining clauses of the Bill, dealing with the retirement of Members of the Council by rotation, the voting for the election of officers, the exclusion of Ireland from the operation of the Act, etc., were agreed to without discussion.

Dr. CLARK: There was a new clause proposed by the Hon. Member for the Camlachie Division of Glasgow, and I want to ask the Government, who, I understand, are practically in favour of this Bill, what action they propose to take in reference to this matter. The Hon. Member (Mr. Alexander Cross) opposes the Bill for this reason: He is a wholesale seed merchant, and he is in the habit of sending farmers and cattle-dealers antiseptic solutions for killing vermin, and some of these contain scheduled poisons. My hon. friends are in the habit of sending out these scheduled poisons in large quantities mixed with other things, and I understand the Society is trying to prevent them selling these poisons for agricultural or commercial purposes. I understand the Government have practically pledged themselves to bring in a Bill to amend the Pharmacy Act in order that men of this type may be able to sell poisons for agricultural purposes, so that farmers and others might not be compelled to buy them from chemists and druggists at three or four times the price charged by those firms who deal with them in large quantities. It is for this reason that my hon. friend has put down his amendment. Unless I am given to understand that the Government intend to bring in a Bill I should be inclined to move this new clause. The object of legislation, I take it, is to prevent the sale of drugs for medicinal purposes by individuals who are not qualified to do so, and what we want is to get from the Pharmaceutical Society an assurance that it will not use the powers it has got from Parliament for that purpose for an entirely different purpose. At the present time the nearest chemist's shop to this House is kept by a man who is unqualified. By calling his shop a drug store and refusing to sell certain poisons a man can evade the Pharmacy Act altogether. What the Pharmaceutical Society ought to do is to get the Act amended so as to get further powers to deal with a case of this kind, and not to attempt to prevent the sale of poisons for other than medicinal purposes. I do not know whether the Hon. Member in charge of the Bill will give a pledge of that kind, otherwise I will move this new clause.

Dr. FARQUHARSON: I do not think it matters for what purpose poisons are going to be used. What we want to do is to stop their unrestricted sale. This Bill gives no extra powers to the Pharmaceutical Society. That Society has done good work in the past in trying to prevent a great and growing evil by putting a stop to the system under which associations which called themselves drug stores were able to elude the provisions of the Pharmacy Act and go on selling dangerous poisons without let or hindrance. There is nothing in this Bill which regulates the sale of poisons, and the Hon. Member, in proposing that we should add to the measure a clause authorising the sale of dangerous poisons in the form of agricultural manures and things of that kind, is raising a very dangerous and difficult question. My hon. friend will be well advised not to stir up this question, because many of us believe that there is a very dangerous principle involved in these very powerful poisons being sold by agricultural chemists without any restriction whatever.

Mr. CHANNING: I should like to say in support of what has fallen from the Hon. Member for Aberdeenshire (Dr. Farquharson), that we have had during the last few days a striking example of how extremely undesirable it is that the present lax regulations in regard to the sale of dangerous poisons should be continued. The case which is present in all our minds led to a frightful murder, owing to the facility with which a person can obtain poisons even in a chemist's shop, and if public attention is drawn to the fact that they can obtain scheduled poisons on the excuse of wanting them for agricultural purposes, surely the danger would be extremely great. I do not think my hon. friend would be well advised to press the amendment.

Dr. CLARK: Poisons such as are used for agricultural purposes cannot be used for the purpose indicated by the Hon. Member, because they must be mixed with indigo blue or soot, and they could not possibly be used in that form for a different purpose. The new clause which I propose to move is as follows:—"That nothing in this Act nor in the Act to regulate the sale of poisons, 31 and 32 Victoria, c. 121, entitled the Pharmacy Act, 1868, shall apply to or interfere with the business of persons who are engaged in the sale, distribution, or manufacture of insecticides, destroyers of vermin or disease germs in plants, of ant destroyers, of preparations for prevention of disease in potatoes, grain, or other field or garden crops, or for the preservation and protection of plants from disease in greenhouses or in the open air, or for other such or similar purposes, or of sheep dips or wool dressings or other articles used for such purposes." Now, sir, the condition of things at the present time is perfectly ridiculous. Some very powerful poisons are not scheduled at all, and anyone can sell them. Take for instance carbolic acid. That is not a scheduled poison, but it is one of the most dangerous poisons that can be had, and yet anyone can get it in any quantity anywhere. This Bill I know is only a small Bill for the purpose of admitting Associates as Members of the Society, but now that we have got the question before us I want to ask the Government—and perhaps I should address my question to the representative of the Local Government Board—whether they intend to bring in a Bill dealing with this question? We want legislation in order that the purpose and object of the Pharmacy Act may be carried out; that there shall be strong restrictions upon the sale of poisons, especially on the sale of poisons that are not mixed with soot or blue to prevent them being used for improper purposes. We want to increase the number of scheduled poisons, so that instead of having only half-a-dozen, the list may include all poisons except those which are mixed with other articles, which cannot be separated except by a chemical process, so that none but chemists can extract the poison in such a form that it could be used for the purpose indicated by my hon. friend. Unless I get an assurance from

the Government that they intend to bring in a Bill to amend the Pharmacy Act, I shall take a division on this amendment.

The Chairman (Mr. Lowther): The Hon. Baronet, the Member for Wigan, asked me whether this clause was in order, and I said I thought it was, but after hearing the arguments, I must say that I think I made a mistake in accepting the words in the first two lines, "Nor in the Act to regulate the sale of poisons, 31 and 32 Vict., c. 121, entitled the Pharmacy Act, 1868." The clause would be in order with the omission of those words.

Dr. Clark: I will put it in that form.

Sir F. S. Powell: It is rather a strong order to bring into a Bill of this kind, dealing with the constitution of the Pharmaceutical Society, a clause dealing with the regulation of the sale of poisons. I do not think it is quite fair to the House, and I do not think it is fair to the public, who have a large interest in this matter I do not think it is a reasonable proposal to introduce a provision of this kind into the Bill, and I hope the Hon. Member will not press it to a division. His object is not at all the same as that of the Hon. Member for the Camlachie division of Glasgow. The object of the Hon. Member for Caithness is that which all right-minded men have at heart, including Her Majesty's Government, viz, to restrict the sale of poisons, or to put the sale under thoroughly sound restrictions; to enlarge the Schedule rather than to restrict it; but the object of the Hon. Member who sits on this side of the House (Mr. Cross)—I hope I am not attributing to him any criminal motive—his object is to facilitate the sale of poisons which in the particular business for which he is responsible are used for a useful and proper purpose. I think most members of the Committee will agree that so serious a proposal as is contained in the new clause which has been suggested should not be tacked on at the end of what is virtually a private Bill for the better government and constitution of a perfectly harmless and respectable corporation. For this reason it is impossible to accept the amendment, although I sympathise entirely with the object of the Hon. Member for Caithness.

Mr. John Burns: It is evident by the discussion that has taken place that the regulations under which poisons of many kinds can be sold are in a most unsatisfactory state. I hope the Hon. Member who has charge of this Bill, and I presume the Pharmaceutical Society—when by this Bill we have improved the status of its members—will be willing to give the House of Commons all the assistance they can in the endeavour to put the regulations for the sale of poisons on a satisfactory footing. I support the general object of this Bill; anything that will educate chemists or anyone else will certainly have my support. I believe that the average chemist and mixer of poisons is capable of much education in the right direction. I believe that when they are properly qualified and properly controlled the sale of poison will be restricted to proper persons. I venture to say that chemists and druggists connected with the Pharmaceutical Society have not fully recognised the duty which they owe to the public, and that as soon as they have put their own house in order they must join either with the Government, or with the Hon. and gallant Member who has charge of the Bill, in putting the sale of poisons under such conditions that the wholesale seed merchants, the sellers of sheep dip, the sellers of marine scaling compositions, and other traders, who must have poisons for the proper carrying on of their business, are not handicapped by the legislation which has been passed in the interests of the Pharmaceutical Society. If the Hon. Member will accept the suggestion which I offer he will facilitate the passing of this Bill. Coming from that point to another, I would like to mention that the members of the Pharmaceutical Society have much to improve in their own body. Within the last four or five months there have been some poisoning cases in which members of that Society have shown great laxity. I do not wish to weary the House with instances, but let us take that frightful tragedy the poisoning of Mrs. Aveling at Norwood. If the chemist from whom the poison was obtained had done his duty to the public, that lamentable event might have been avoided. The mere passing of this Bill would not prevent a recurrence of such cases unless the Pharmaceutical Society undertakes to put the law as it stands into operation with all the vigour that it is capable of. Acts of Parliament are all very well, but if they are enforced with laxity there is not much good even in an Act of Parliament. I would suggest to the Hon. and gallant Member, who is likely to get his Bill to-day, that he should read into the Bill the various suggestions that have been made with regard to the future sale of poisons generally, and that he should tell his friends who are promoting the Bill that they must use their powers with greater courage and greater discretion in the interests not of the Pharmaceutical Society alone, but in the interests of the general public.

Colonel Denny did not think there was any danger in leaving the sale of poisons used for commercial and agricultural purposes under the same regulations as at present.

Dr. Farquharson pressed the Government to explain their intentions with respect to a future Bill.

Mr. F. W. Russell: The Local Government Board has no interest in this Bill—it is not a matter which comes within our province at all, but after the discussion that has taken place I think the Hon. Member for Caithness would be well advised to withdraw his amendment, which raises a question altogether outside the scope of this Bill.

Dr. Clark: I do not wish to widen the scope of this Bill, but to press upon the Government the fact that the present condition of things is very unsatisfactory. There are a number of very deadly poisons that are sold practically without any restriction, in fact the Poison Law is a ridiculous farce. There is no check, for instance, on the sale of one of the most deadly poisons, cyanide of potassium, a single grain of which will kill a person. It is used very much in the arts, and in Wales it is used in gold production, and if you are making any change you should assuredly put some restriction on the sale of this particular poison. The reason why opposition was raised by the Hon. Member for one of the divisions of Glasgow was because, as a wholesale seed merchant, he had been selling for years a preparation of arsenic and soot. The Pharmaceutical Society lately instituted a prosecution against him for selling this compound, and it was in consequence of that he put down this amendment, and in his absence I moved it. At the same time I hope something will be done to further restrict the sale of poisons, especially in quantities that will destroy human life. At the present time any person could, by giving a fictitious name, purchase as much poison as would kill every member of this House. What we want to do is to have the system further amended under the Pharmacy Act, and to have the Schedule of Poisons revised with the view to its extension. I beg leave to withdraw the amendment.

The schedule was agreed to and the Bill was reported to the House without amendment.

Colonel Brookfield formally moved that the Bill be read a third time.

Mr. John Burns: On the third reading may we have some expression of opinion from the Hon. and gallant Member as to the effect on the promoters of this Bill of the general discussion that has taken place.

Colonel Brookfield: I shall indicate to the Society the wishes of the Hon. Member and others, that it should give more strict attention to the subject of the regulations for the sale of poisons, and if I could also persuade the Society to fall in with the proposals that the Government make in that direction it will be my duty to do so. I entirely sympathise with the views of the Hon. Member, but the whole intention of this measure is to make the position of the Pharmaceutical Society more democratic than it has been, and in that endeavour I think we may claim the sympathy of the Hon. Member for Battersea.

Mr. John Burns: In consequence of the answer of the Hon. and gallant Member I do not propose to offer any opposition to the Bill; but I wish to remind the Hon. and gallant Member that democracy does not go the length of allowing people to poison each other.

The Bill was then read a third time amid cheers.

Xeroform.—Paschkis has used xeroform in about 100 cases, the result, on the whole, being very satisfactory. Venereal ulcers were cleaned very quickly, deep losses of tissue were soon healed by the formation of healthy granulations, and cicatrisation made rapid progress. Erosions and surface lesions healed remarkably quickly, and scleroses in the course of a few days. The latter will of course frequently break out again. A special advantage of xeroform is that it is non-caustic and does not form a scab, which favours the retention of pus. The author has not been able to determine from his own experience the antiseptic properties of xeroform, but Huepp, Hesse and Schmit state that it is germicidal. He recommends xeroform as a most serviceable remedy for wounds, the application being extremely simple.—*Wiener Klinische Rundsch.*, xi., 693.

PRACTICAL BACTERIOLOGY.

TECHNICAL MYCOLOGY: THE UTILISATION OF MICRO-ORGANISMS IN THE ARTS AND MANUFACTURES. By Dr. FRANZ LAFAR, with an introduction by Dr. Emil Chr. Hansen, translated by Charles T. C. Salter. Vol. I.—Schizomycetic Fermentation. Pp. xviii., 405, with Plate and 90 Figures in the Text. Price 15*s*. London: Charles Griffin and Company, Limited. 1898.

No better evidence could be offered of the extent to which bacteriology has become an applied science of the highest importance than the existence and contents of this—the first—volume of Dr. Lafar's work. Its four hundred odd pages treat of bacteria both in theory and in practice, for whilst technical microbiology as a whole is more comprehensively dealt with in the book than in any other publication, the theoretical side of the subject is most exhaustively considered previously. Thus, in the introduction, the author commences by presenting the facts for and against the theory of spontaneous generation, concluding by observing that, as a matter of reason, we are obliged to assume that, at some definite moment in the past, organic living beings were produced from unorganised potentially organised substances; and further, that such creative power may still be operating, may perhaps be performing at present. The possibility of this, it is contended, cannot be gainsaid, though it is thought that much less complicated organisms than bacteria must have been the result of this primary creation of living beings.

After referring to the labours of Leeuwenhoek, Plenciz, Needham, Spallanzani, Schultze, Schröder and Dusch, Pasteur, Béchamp, and other investigators of the little things of the Universe, the author then summarises the theories of fermentation that have been propounded by Stahl, Gay-Lussac, Cagnaird-Latour, Schwann, Kützing, Liebig and others, and defines fermentation as a decomposition or transformation of substances of various kinds, brought about by the vital activity of fungi. The so-called "spontaneous" fermentation of sweet fruits and decompositions effected by light and air are briefly touched upon, and a short section is devoted to the position of the organs of fermentation in the botanical system.

Coming to the body of the work, we find it is divided into thirty-eight chapters, which in turn are arranged in nine sections, dealing respectively with the general morphology and physiology of the Schizomycetes; the principles of sterilisation and pure cultivation; chromogenic, photogenic, and thermogenic bacteria; the heat-resisting bacteria; lactic fermentation and allied decompositions; the formation of mucus, and allied phenomena of decomposition; decompositions and transformations of organic nitrogenous compounds; oxidising fermentations.

Section I. treats of the form and dimensions of bacteria, the structure and constitution of the bacterial cell, the power of independent movement in bacteria, vegetative reproduction by fission, the permanent (reproductive) forms or spores, and the germination of the endospere. Concerning this section it is unnecessary to do more than refer to the excellent manner in which the subject-matter has been presented in the least possible space, and appropriately illustrated with well-chosen drawings. Section II. deals with bacteria under the influence of physical agencies and in their relation to one another, as well as with the classification of the organisms. The influence of electricity, temperature, light, and mechanical shock are discussed in turn, whilst symbiosis, metabiosis, and antagonism are clearly explained.

The principles of sterilisation and pure cultivation are very fully considered in Section III., and in Section IV. we arrive at some practical applications of the subject. Thus the red coloration in milk, cheese, and stock-fish; blue coloration in milk and cheese, and green coloration of the latter are all shown to be produced by chromoparous bacteria, and everything known regarding those particular organisms is clearly stated. Luminous bacteria are shown to be tests for enzymes, many interesting facts are recorded concerning phosphorescent forms, and the spontaneous heating of hay, cotton, and hops are attributed to the proper bacterial agencies, as well as the fermentation of tobacco and the production of burnt hay.

In Section V. we are introduced to the *Bacillus subtilis* and its congeners, including the potato bacillus and organisms found in the soil. The fermentation of cellulose, the "retting" of flax, and the rancidity of fats are considered in connection with butyric acid fermentation and allied decomposition processes. The preservation of milk, meat, eggs, vegetables and fruit naturally come in for their proper share of attention in this section. Section VI. is devoted to a study of the souring of cream, the curdling of milk, and the part played by lactic acid bacteria in distilling, brewing, vinification, and the preparation of fodder, as in the ensilage process, whilst kindred organisms are shown to be concerned in tanning processes.

The importance of bacteria in the manufacture of sugar, and the production of ropiness in milk, wine, beer, and other liquids are described in Section VII., whilst the succeeding one treats of the phenomena of putrefaction, the fermentation of cheese and allied decompositions, the fermentation of urea, etc., and the fixation of free nitrogen by bacteria. Finally, in Section IX., the iron, sulphur, and nitrifying bacteria are fully considered, after which acetic fermentation and the oxydases are described.

It is quite apparent from this rough summary of the contents of the book that no important phase of the subject of which it treats has been overlooked; neither the theoretical nor the practical side of the subject has been sacrificed to the other. Moreover, the matter has been so skilfully compiled that enough is said in most, if not all, cases, without verging on excessive treatment of any particular part. The botanical, chemical and technical aspects of the subjects have, alike, been satisfactorily dealt with, and the work should prove of the utmost value to pharmacists, chemists, agriculturists, and many others who are directly or indirectly concerned in the utilisation of micro-organisms in the arts and manufactures. No similar work so complete in its arrangement has yet been published, and it is difficult to conceive of a more satisfactory practical handbook being produced. Pharmacists who make a specialty of bacteriological work should not hesitate to procure this book at once.

PHOTOGRAPHY AS AN ART.

PRACTICAL PICTORIAL PHOTOGRAPHY. Illustrated. Part I. Practical Instructions in the Application of Photography to Artistic Ends. By A. HORSLEY HINTON. Pp. 108. Price 1s. London: Hazell, Watson and Viney, Ltd. 1898.

This little book contains a simple statement of the theories which govern pictorial work in photography, together with working instructions to reduce the art as far as possible to practical rules. As the author points out probably no branch or application of photography has been so misunderstood, or has suffered so much by such misunderstanding, as that which forms the subject of this book. "It has suffered because it has been so often criticised for failing to do what it was never intended to accomplish, and condemned for not doing the very thing the performance of which it was essential should be left undone if success was to be attained in the particular application of photographic means which we call Pictorial Photgraphy." The author does his best in the space allowed him to correct prevailing errors on the subject, and the outcome is a useful and practical little guide.

PHARMACEUTICAL JOURNAL.

A Weekly Record of Pharmacy and Allied Sciences

LONDON: SATURDAY, JUNE 11, 1898.

THE COUNCIL MEETING.

As is usually the case, the principal business of the reconstituted Council last Wednesday was of a formal nature. After the minutes of the previous monthly meeting and of the special meeting on the 18th ult. had been read and confirmed, Mr. WALTER HILLS, as Chairman, drew attention to letters which had been received from Dr. LEECH, Professor RAMSAY, and Professor REMSON, expressing their gratification at having been elected Honorary Members of the Society. Reference was also made to the recent death of Lord PLAYFAIR, who had long been associated with the Society as one of the most distinguished of its Honorary Members, and he mentioned the circumstance that he was elected in 1881 on the motion of Mr. DANIEL FRAZER, a former member of Council, who had in early life been a fellow-pupil with PLAYFAIR in the establishment of FRAZER and GREEN, of Glasgow. Mention was also made of the great interest Lord PLAYFAIR always took in the progress of the Society.

The first business of the meeting was the election of a President for the ensuing year, when all the votes were in favour of Mr. WALTER HILLS, a result that will be satisfactory not only as reflecting his position at the head of the poll in the Council election and renewing the association of an honoured name with the occupation of the presidential chair; but also as a recognition of the zeal with which Mr. HILLS has sought to advance the interests which are common to the Society and the craft it represents.

The election of Mr. NEWSHOLME as Vice-President was equally unanimous, and in returning thanks to the Council for this renewed mark of confidence, he expressed his sense of the honour being enhanced by the opportunity of again serving with Mr. HILLS as President.

Mr. HAMPSON was unanimously re-elected Treasurer, and in returning thanks gave utterance to the hope that his labours in that capacity might be increased during the coming year by larger additions to the Society's funds.

The standing orders of Council were then adopted by resolution. Mr. RICHARD BREMRIDGE was re-appointed Secretary and Registrar: the Editor, Sub-Editor, Curator, and Assistant-Secretary in Scotland were also re-appointed.

It was resolved that Messrs. HARVEY GIBSON, MCLEOD, and FARR should be requested to conduct the examinations for the Council prizes competition, and Messrs. PHILLIPS, SAUL, and PINCHES the examinations for the Jacob Bell Memorial and the Manchester Scholarships.

The several committees were re-appointed, as shown at page 550.

The report of the Finance Committee was adopted without discussion, the only particulars referred to by the PRESIDENT being the receipt of several donations to the Benevolent Fund, which show the interest taken in it throughout the country. One of these donations was from the Brighton Junior Association of Pharmacy, as the result of a collection of small sums, and bringing up the total contribution from that source to thirty-one pounds. Another donation was from the Chemists' Assistants' Association, and a third from the Nottingham Chemists' Association. This mode of adding to the resources of the Benevolent Fund might be considerably extended.

On the recommendation of the Benevolent Fund Committee, seven grants, amounting to £81, were ordered to be paid, the particulars of which are given at page 550.

The VICE-PRESIDENT, in moving the adoption of the report, mentioned the case of one of the recipients, to whom a grant had been made in order to enable him to go into the country to recruit his health, and added that he would be glad to receive information as to whether any institutions exist in the south like those in the north of England, where facilities are provided at a cheap rate. With regard to the case of the orphan mentioned last October by Mr. BOTTLE, he was pleased to say that the boy had been elected to the Wanstead Asylum as a result of the assistance which had been given. Mr. ALLEN also mentioned a case in which assistance from the Fund had been very beneficial in relieving the necessity of a family, and had been gratefully acknowledged.

The report of the Library, etc., Committee recommended that in future the signature of a member of the Society should not be required when associates or students desire to borrow books from the Library as there is now no need for that restriction; the suggestion was agreed to, and it was resolved that Sir J. CRICHTON BROWNE should be invited to deliver the sessional address in October next.

Several communications were mentioned by the PRESIDENT, One from the Registrar of the Pharmacy Board of Victoria, stating that the reply sent by the Council in regard to reciprocity had been forwarded to the various colonies which had joined with Victoria in the request made by the Board.

A letter from the Dover Chemists' Association expressed the opinion that the present mode of electing annuitants is satisfactory, and that any restriction of the voting power of subscribers to the Benevolent Fund is undesirable.

A letter from the Tunbridge Wells and District Chemists' Association, enclosed a resolution passed by that body to the effect that it is desirable to adopt, as regulations, the recommendations for the keeping and storage of poisons agreed to at the meeting of the Pharmaceutical Society on May 17, 1871, such regulations to be incorporated in a Bye law.

A letter from the Secretary of the Agent-General for Queensland enclosed a request that the Brisbane Public Library might be supplied with the Society's publications.

An extract from the minutes of the Executive of the North British Branch, expressed the opinion that local secretaries should be appointed for a period of five years instead of annually, and that it is desirable for the Council to appoint local secretaries directly without the formality of local nomination, unless that was voluntarily done.

A letter from the Clerk to the Spectacle Makers' Company gave details of a proposed scheme for conferring diplomas on opticians, to certify their scientific qualifications, and as pharmaceutical chemists are also to be admissible to examination for that purpose, the Council was requested to nominate a member of the Society to serve on the Committee which has this matter under consideration.

An application has been received to accept certificates of the University of Bucharest in lieu of the First examination.

After the Report of the General Purposes Committee had been considered, resolutions were passed authorising the Registrar to take proceedings under the Pharmacy Acts against a number of persons alleged to have infringed their provisions.

ANNOTATIONS.

THE PHARMACY ACTS AMENDMENT BILL passed its third reading in the House of Commons on Wednesday. Colonel Brookfield, member for Rye, was taking charge of the Bill, in the unavoidable absence of the Hon. W. F. D. Smith, and it so happened that the favourable position of the Bill permitted it to be brought on for discussion. That, of course, was all that was required to show the weakness of the opposition against the measure, and as the now too familiar adverse arguments were brought up one after another their weakness was easily revealed, with the result that the Bill passed through the Committee stage unaltered and was read a third time. The next step is to present it to the House of Lords, and all things considered the present position of the Bill cannot be regarded as otherwise than highly favourable. The report of the debate in the House of Commons is given in full at page 552, and the attention of our readers is specially directed to the remarks of the various speakers, more particularly those of Dr. Clark and Mr. John Burns, which contain much food for thought.

MR. YOXALL'S POSITION with regard to the Pharmacy Acts Amendment Bill has been far from intelligible to those whom alone the Bill concerns, and the report of what he said on Monday, when he was waited upon by a deputation from the Nottingham and Notts Chemists' Association, seems to show very clearly that he knew little about his subject. He informed the deputation that his action with regard to the Bill was solely in the public interest, but public interests are not involved in the slightest degree. Again, he insisted that he had been safeguarding the position earned by men who had passed the Major examination, but the position earned by passing that examination is the right to use the title "pharmaceutical chemist," which is amply safeguarded by a special Act of Parliament; there is nothing in the Bill to affect that right, which is entirely independent of membership of the Society. The legal qualification of chemists is the only matter that concerns the public interests, and that qualification alone should be taken into account in regard to membership of the representative body of the craft. Moreover, as it happens, that position has commended itself to the House of Commons, and, we may reasonably hope, will also commend itself to the House of Lords.

THE TUNBRIDGE WELLS AND DISTRICT CHEMISTS' ASSOCIATION has issued a circular letter to the medical men of the district, suggesting that, owing to the difference of opinion as to the actual date on which the new British Pharmacopœia should be generally adopted as the standard for dispensing purposes, it seems desirable that some date should be decided upon by the medical profession, in order that the chemists may know when it is desired that the new preparations should be used generally. Midsummer Day was suggested in the circular as a convenient date, and attention was directed to the more important alterations in the strengths of official preparations, whilst with a view to securing uniformity of procedure, it was further suggested that all prescriptions written before Midsummer Day should be dispensed with preparations of the 1885 Pharmacopœia, unless the contrary is specially indicated. We understand that the circular which was signed by Messrs. R. A. Robinson (President), and A. E. Hobbs (Hon. Secretary), and headed by a list of all the members of the Association, has elicited satisfactory responses from all the principal medical men in the Tunbridge Wells district, whilst in several instances the Association has been cordially thanked for bringing the matter forward.

THE PHARMACEUTICAL SOCIETY OF IRELAND is to be congratulated upon its persistent efforts to secure for chemists and other professional men that protection by the Legislature which is their just due, and though no immediate effect may be produced by those efforts, it is nevertheless possible that if they be properly followed up some good may be effected in the future. The proposal submitted to the Committee of the House of Lords on the Companies Acts Amendment Bill was that a Clause should be inserted in the Bill, to the effect that "No company may be registered to do acts for which a course of education and examination are required to qualify, unless each member of the company is qualified." In support of that proposition, the respected President of the Irish Society urged that, whilst the purpose of the Companies Act is understood to be "to enable any seven or more persons associated for any lawful purpose" to form themselves into a company and secure registration, it cannot reasonably be regarded as a "lawful purpose" to enable seven unqualified persons to do what one is legally prohibited from doing. But the Select Committee, unfortunately, is averse to such extension of its inquiry as would enable the subject to be brought under consideration, and for the present, therefore, the efforts of the Council of the Irish Society are apparently as abortive as those of the British Council, an account of which will be found duly recorded in our issue of April 9 last.

NEWSPAPER REPORTS OF INTERVIEWS appear, as a rule, to have but a slight basis of fact nowadays. So much is that generally accepted as being the case, that it comes somewhat as a surprise to find people of intelligence taking such reports seriously. Some months ago quite a small sensation was produced by a report of an alleged interview on pharmaceutical matters published in *Truth*, and now the Secretary of the Pharmaceutical Society finds it necessary to deny that he or any member of his staff has been interviewed by another newspaper representative with regard to the new Pharmacopœia. Doubtless the artless interviewer will continue on his accustomed way, whatever may be said about his methods or results, but it would appear as if trustworthy news was very scarce when the conductors of daily papers have resort to such padding as Mr. Bremridge's letter refers to.

ANOTHER NEW GAS has been discovered in the atmosphere by Professor Ramsay and Mr. Morris W. T. Travers, or rather they have detected it in the residue left on evaporating a large quantity of liquefied air. Crypton, as the new element has been named by its discoverers, exists in the air in the minute proportion of one part in twenty thousand, and its presence was only detected by the aid of the spectroscope. The spectrum of the gas is said to be characterised by two exceedingly brilliant lines, one being nearly coincident with the helium yellow line D3, whilst the other may be compared in intensity with the helium green line. The gas is monatomic, and its density is conjectured to be about forty. A small specimen of it was shown at the meeting of the Paris Academy of Sciences on Monday, and a communication on the subject was presented to the Royal

Society on Thursday of this week. According to the Paris correspondent of the *Standard*, the discoverers of the new element operated on seven hundred and fifty cubic centimetres of liquid air, supplied to them by Dr. W. Hampson, who has recently been in conflict with Professor Dewar regarding the invention of the apparatus employed by the latter for liquefying gases. The liquid was reduced by evaporation to ten cubic centimetres, and the residue, after being converted into gas, was successively freed from oxygen and nitrogen. The residual gas measured twenty-six cubic centimetres, and presented the weakly-defined spectrum of argon, together with the additional lines already referred to above.

The Report of the Pharmacopœia Committee, which was received too late to be referred to last week, shows that considerably more than half of the twenty thousand copies printed of the fourth British Pharmacopœia have already been disposed of. Special indebtedness is acknowledged to Dr. Leech and Dr. MacAlister for their original investigations in connection with many problems that arose during the work of compilation, and it is intimated that progress has already been made in connection with the preparation of an Addendum, in which medicinal plants and other substances suggested for inclusion by Indian and Colonial authorities will be dealt with more fully than has been possible in the Pharmacopœia itself. It is hoped that the Addendum may be ready for publication in eighteen months, and a first proof will be submitted to the Indian, Colonial and other medical authorities interested in about six months. Dr. Tirard continues to act as Secretary of the Committee until the Colonial Addendum is published, and Dr. Attfield has been appointed Editor. A long appendix to the report describes the methods adopted in preparing the British Pharmacopœia, 1898, and when due allowance is made for the quite unnecessary complexity of the arrangements that have prevailed, one can only wonder that a workable Pharmacopœia was ever produced at all. The Editor of the work, in particular, is deserving of much sympathy, and not the least for the time and labour he must have spent in compiling the curious collection of facts and figures recorded in the appendix to the Pharmacopœia Committee's report.

The Alkali, etc., Works registered in England, Ireland, and Wales number 1058, according to the report by the Chief Inspector for the year 1897, the decrease since the previous report was published being 16—11 alkali works and 5 others. In Scotland there are 125 works registered, bringing the total number of registered works to 1183. Though the number of works decomposing salt by the Leblanc process shows a reduction, great activity is displayed in those that remain in operation. Hargreave's process for the direct production of sodium chlorate from chlorine and sodium carbonate has been in regular work on the large scale during the year, and with excellent results as regards absorption of chlorine. Four works are now actively engaged in the production of chlorine by electrolysis, and the erection of works on the large scale to test the commercial practicability of the Hargreaves and Bird electrolytic cell is anticipated. The technical difficulties at first experienced by the Electro-Chemical Company of St. Helen's appear in great measure to have been overcome, and manufacture is now steadily proceeding, whilst operations were commenced early last year at the large works of the Castner Kellner Alkali Company at Weston Point, near Runcorn. At those works very careful provision has been made for absorbing the residual chlorine in the bleaching powder chambers, whilst the form of the latter is such as to obviate the necessity of workmen entering to pack the powder.

Referring to the St. Neot's Poisoning Case, the *Morning Post* surmises that it is impossible to devise any fresh precautions against the sale of poisons for nefarious purposes than those which the Legislature has already provided, as it would be "at once pedantic and improper for a chemist to demand any guarantee beyond that which the Legislature has prescribed, viz., that the applicant, in addition to giving to him the statutory acknowledgment, should be known or come to him with a responsible introduction." It is acknowledged that it is not to any fresh legislative restrictions that we must look to safeguard society against the attentions of the professional poisoner, who belongs usually to the apparently respectable and well-to-do class, and, if he can create a sufficiently plausible excuse, can obtain more than enough poison to accomplish his purpose. But there are two circumstances, it is pointed out, from which people who are apprehensive of a serious increase in homicidal poisoning in this country may derive considerable comfort. The one is the immense growth which has taken place in recent years of the power of toxicologists to trace and bring home to criminals who adopt this method of murdering their victims, the presence and use of even the most subtle and intangible drugs known to chemical science. The other is the almost judicial blindness which nearly always characterises the action of the nineteenth centurp poisoner. Not only does the criminal usually leave behind him a track of blunders which make identification a comparatively easy task, but the poisoner is also apparently unable to grasp, and to perceive the consequences of, the plainest historical facts in connection with the science of toxicology. For it is extremely difficult to understand how anyone who intends to poison another should, at this time of day, make use of strychnine. Its effects are so obvious, and its detection so certain, that no one can expect to use the poison for illegal purposes with impunity.

Films for Photography are strongly recommended by Mr. W. J. Stillman, who has sent to the *Times* an account of a crucial experiment he has just concluded to test the value of films of celluloid as a substitute for glass. Having been requested to organise the photographic section of the first African expedition led in 1893 by the late Captain Bottego, he decided to provide the official photographers with celluloid films, and with a view to exhaustive testing of the capacities of the material, he kept by him several packets of the thick cut films, and tested them from time to time. Of one of those packets, which has been in his possession in Rome ever since, having been coated in June, 1892, he has just exposed and developed four on a most difficult subject, and produced four perfect negatives, as good in every respect as if they had been made five years ago. Considering the extreme portability and infrangibility of the films and their inestimable superiority in these respects over glass, and in other respects over paper, he thinks these experiments have a high value for scientific voyagers to whom photographic illustration is so important and the difficulties of photographic operation *en voyage* are so great. *A priori*, as the celluloid is produced under the action of strong acids, and has a certain tendency to liberate the acids with time, their action tending to cause insensibility in the haloid which holds the photographic image, he anticipated that in so long a time as has been covered by his experiment they would have become quite insensible, but he did not see that in this respect there was much falling off. A little there probably must be, for in the case of films of the highest sensibility he has found that impressibility for all practical purposes had disappeared after a year, those of a lower sensibility losing less in proportion; but that is of absolutely no moment, exposure in the camera for a second more or less being a matter of no importance.

MEETINGS OF SCIENTIFIC SOCIETIES

ROYAL INSTITUTION.

On Saturday, May 28, the second and last of a series of lectures was given by J. ARTHUR THOMSON, M.A., on the

Biology of Spring.

The attention of the audience was first directed to the rapid multiplication of minute organisms so charactcristic of spring, many cxamples being given, including lowly algæ, which may multiply six-fold within a week, and infusoria, which are capable of becoming a million in the same space of time. Nutritive chains were then referred to, *e.g.*, that traceable from diatoms to fishes. The lecturer next gave the life-histories of crabs, gnats, dragon-flies, May-flies, eels, frogs, butterflies and other living things, illus-ting the various points of interest by the aid of exquisite drawings and abundant lecture-specimens. Reference was made to Grant Allen's recent account of the gnat in the *Strand Magazine*, describing the boats of eggs floating down the stream, three hundred in each mass, giving rise to the voracious larval form which casts its cuticle three times over, then the pupa with its big head without a mouth, and finally the gnat itsclf. Many points of interest were mentioned concerning the May-fly, which may pass two or three years in the water in the larval form, but spends one or two short days in air, taking no nourishment and concerning itself chiefly with the propagation of its kind. The larval form is subject to many adverse conditions, being affected by attacks of disease known as "moulting," and liable at all times to be thinned in numbers by hungry fishes. It is espccially interesting to note the life history of the common eel, because from the days of Aristotle this subject has been a mystery, and has only recently been solved. Indeed, Aristotle thought that eels were bred from mud by a process of spontaneous generation, and among other ancient recipes we find it stated that a good supply of turf moistened with dew is all that is required to produce a large family of eels. In our own times this question has puzzled the mind of so great a man as Huxley. As a matter of fact, in spring what is commonly known as the "eel-march" takes place. The elvers or young eels, then about one or two years old, and in size resembling a stocking-needle, migrate from the sea to the estuaries of the rivers, such as the Thames and Severn. Here, and in the broader reaches, the males remain, whilst the more adventurous females steadily make their way up the river to its source and along the tributaries, in spite of water-falls, sluices, and mill-dams. Nothing deters them, until at length they reach the ponds, where they remain for some years and reach maturity. At the proper time they re-commence their wanderings, this time travelling down the rivers, and only by night, in tur-bulent crowds, until they meet their mates in the waters of the estuaries. They pair and go together into the deep sea, where the eggs are laid and the young are reared. This explains why the eggs and very young eels are never found in England. Laid in the dark in the deep sea, the eggs eventually float, are hatched, and the larvæ spend from one to two years of sea life. Before they were recognised as young eels they received the name of *Lepto-cephalus*, but now they are known to be identical with the elvers that yearly may be seen marching up the rivers. Passing to the frog, the lecturer gave many interesting details of its meta-morphosis. After the winter-sleep, during which time the frog needs no food, it wakes up and during March lays count-less eggs in watcr. These eggs are encased in jelly, and many are the useful purposes which the jelly serves. It prevents crushing of the eggs as they are rocked to and fro on the surface of the water, and, being unpalatable, offers little or no temptation to water animals. Again, from its slipperiness only broad-billed ducks can make anything out of it, and the interspaces afford a refuge for green algæ, which give off a constant supply of oxygen during the day. The jelly also enables the eggs to receive a larger supply of the sun's rays, and so acts as an incubator. The various changes in the frog's career were then briefly sketched, showing how in about ten days the tadpole comes out of the egg and goes through numerous stages until finally the frog is produced. It is interesting to note the variety of food that nourishes the frog at different periods in its history, since the various forms are either vegetarian, carnivorous, or insectivorous. Speaking of cater-pillars, it was shown how many are the risks to which their lives are liable. On account of the turgid state of their bodies the peck of a bird or a pin-prick is fatal. Reptiles lie in wait for them, ichneumon flies attack them for the purpose of laying eggs in their bodies, and adverse climatic condi-tions do them serious harm. It follows that they adopt many protective devices, by virtue of which they are able, *e.g.*, to resemble in colour the twigs on which they live. Mr. Thomson went on to discuss the question of instinct in young birds. Young rooks, reared artifically, so that there was no possi-bility of parental authority, suggestion or example coming in to upset the experiment, did not know red worsted from real red worms, nor did they understand the use of water until they pecked at their feet whilst standing in a bath. A young moorhen that had been hatched in an incubator and reared in a study, away from all its kind, swam readily in a bath, but showed no inclination to go under water. It was taken from Bristol to Yorkshire and allowed to swim in a stream, in the hope that running water might awake the sleeping instinct. It was not until one day a dog came bungling through the reeds at the side of the stream and made a feint at it that the instinct to dive came to the bird. At the critical moment it dived unhesitatingly. The lecturer concluded by gathering together some of the impressions that spring makes on the mind of the biologist. A visit to a fish hatchery, where a million eggs may be seen in the oscillating tubs, will convince one of the abun-dance of life at that season. The great mortality is another striking feature of springtime; the man who attends to the hatchery is content if he gets one fish from 10,000 eggs. A million embryo oysters are produced before one full-grown healthy oyster is obtained, a fact which should add prestige to this dainty article of diet. Though a frog lays many thousands of eggs, yet the average number of frogs in any district remains fairly constant. Darwin found that only 8 per cent. of the seeds in his seed-plot became full-grown plants, and it is known by all that farmers must ruth-lessly single their turnips in order to obtain a good crop. In fact, it has been well said of Nature—

> "So careful of the type she seems,
> So careless of the single life."

Another point of extreme interest, which nowadays is receiving a large share of attention from eminent men of science, is the plasticity of youth. By feeding young tadpoles with flesh, the proportion of females may be raised from 50 to 80 per cent. Finally it was shown how the child organism exhibits heredity, in being in one sense as old as its parent, whilst in addition the child organism is often something new, leading the race, and causing variation. In this connection it was remarked that the researches of Professor Hodge, of Chicago, had led him to the con-clusion that bees after a day's work are in a state of cellular collapse, the nuclei being affected. Nerve fatigue thus exerts a considerable effect on structure, an assertion which is again borne out by the discovery by Professor Hodge that there are more healthy and normal nerve cells in a young bee's brain than there are in the brain of the same bee at the end of the summer.

At the meeting on Thursday, June 2, EDWARD E. KLEIN, M.D., F.R.S., Lecturer on Physiology at St. Bartholomew's Hospital, gave the first of two lectures at the Royal Institution, on—

Modern Methods and Their Achievements in Bacteriology.

The determination of the number of bacteria in a given material their rapidity of growth and multiplication, first received atten-tion. In order to convey some concrete idea of their extreme minuteness, it was mentioned that if a postage stamp $\frac{7}{8}$ inch long and $\frac{3}{4}$ inch wide (22·2 Mm. by 19·05 Mm.) were covered by a single layer of the typhoid bacteria, placed end to end and side by side, 500,000,000 bacteria would be required; and further, that the same area, covered to the depth of one-tenth of an inch (2·54 Mm.) would accommodate no less than 2,000,000 million of these microscopic creatures. If beef-broth be sterilised, and to the limpid liquid be added bacteria known as *Staphylococcus aureus*, in the proportion of 246 per cubic centimetre of broth, and the whole maintained at the temperature of the animal body (about 98° F.) for twenty-four hours, it will be found that the liquid has become quite turbid, and calculation will reveal the presence of 20,000,000 bacteria in every cubic centimetre of the solution. In other words, each original bacterium has become 80,000. The bacterium which causes fowl cholera, an epidemic disease which quickly decimates a large fowl yard, is so abundant that the blood of an infected fowl teems with them to the extent of

15,000,000 to each cubic centimetre. Indeed, if 1/50th of a drop of this blood be injected into a healthy rabbit the animal sickens and dies in twenty-four hours, and the blood in its body contains about 12,000,000,000 bacteria. The lecturer then described the methods now in use of cultivating bacteria in solid media, and which were first introduced in 1881-82 by Robert Koch. It was mentioned in passing how great were the benefits conferred upon humanity by the rapid increase in our knowledge of bacteria, due mainly to these methods, especially in the departments of medicine, chemistry, and botany. A series of slides was then shown, illustrating the cultivation of bacteria by the use of solid media, their identification by appropriate methods of culture and various modern methods of artificial staining. It was shown how bacteria may thus be sifted out and determined specifically by accurately noting their morphological and biological characters. One slide showed a culture of some bacteria collected in Oxford Street at mid-day, by exposing a bottle containing beef-broth to the air for a few minutes. A portion of the broth was mixed with gelatin, spread on a glass plate 3½ inches (88·9 Mm.) in diameter, and placed for a few hours in an incubator. The result of this treatment was that the isolated bacteria multiplied enormously and founded colonies, which could be transferred to other portions of the nutritive medium and sub-cultures so obtained. A sample of sewage was diluted to a known extent, mixed with a definite quantity of medium, and similarly treated. In this way it is possible not only to identify and sift the multitudinous forms of bacteria, but also to estimate their number and roughly compute their weight. Thus the sewage was found to contain about 2,000,000 typhoid bacteria per cubic centimetre, and it is estimated that about 40,000 million *Staphylococcus aureus* weigh 1 gramme. The lecturer next dealt with the analysis of water, and showed conclusively the absolute futility of a chemical analysis, unless it is supplemented by a careful bacteriological examination. It has been stated by the most eminent authorities on water analysis that the presence of 0·05 of organic matter per 100,000 parts is a negligible quantity. Some time ago a water was described as containing 1 grain (0·0648 gramme) of organic matter in 5000 tumblers, *i.e.*, one 5/000th of a grain (·00001296 gramme) per tumbler. Now, granting that this organic matter represented bacteria, and in weight they resembled the *Staphylococcus aureus*, it follows that each tumbler contained the alarming proportion of over 518 thousand typhoid bacteria. If we go a step farther and consider the alarming rate at which the cholera bacteria multiply in the blood of a healthy rabbit, we cannot fail to grasp the shockingly fatal results that may accrue from an imperfect examination of a sample of water infected with the typhoid bacterium. The fact was emphasised that infinitesimal weights of bacteria cannot possibly be detected by the aid of purely chemical methods, and that no examination of water is complete unless it has passed through the hands of an expert bacteriologist. One-sixtieth part of crude sewage in 100 C.c. of distilled water gives a proportion of about 1·7 of sewage per 10,000 of water. Chemical analysis detects this small amount of organic impurity, but the chemist looks upon this sample of water as one of exceptional organic purity, and passes it as a first-class potable water. But the bacteriologist has methods at command which enable him to detect far smaller proportions of organic matter, and he sees great danger when water is contaminated with sewage to the numerically small extent of one part in 500,000. The lecturer passed on to the consideration of the conditions that affect the growth and vitality of bacteria. All bacteria may not be present in a given area in the same proportion, and if a culture be made in a nutritive medium that favours the growth of all alike, it is possible to miss specific bacteria that may be of great importance. It is customary, therefore, to add to the media certain substances that are known to retard the multiplication of the rabble, whilst they favour the growth of the few. The addition of 1/500th per cent. of carbolic acid acts in this way, and is largely used in the case where, *e.g.*, it is required to find the *bacillus coli*. By adding sewage to phenolated broth a pure culture of *B. coli* may be obtained. This medium is favourable also to the typhoid bacillus, and both multiply well in a medium prepared from a sterilised infusion of potato mixed with gelatin and iodine. The incubation period for these two varieties of bacillus varies from twenty-two to forty-eight hours. It was noticed that whereas the *B. coli* develops carbon dioxide the typhoid bacillus does not. The cholera vibrio grows and multiplies best in a medium containing 1 per cent. of salt and 1 per cent. of peptone. By such devices the specific bacteria may be isolated from other varieties, and in the form of a sub-culture spread upon glass, dried, stained, and examined. In 1893 the value of this selective method was proved in a striking manner. A man died from an unknown cause, an inquest was held on the body, and as a result the death attributed to pneumonia. Another doctor, somewhat sceptical about this conclusion, took a portion of the dead man's bowels, mixed it with gelatin and placed it in an incubator for ten days. Then a portion of the putrid, evil-smelling substance was transferred to a peptone solution, a plate culture of the same prepared, and the presence of the cholera bacillus proved beyond the shadow of a doubt. Dr. Klein described another method of sifting, depending on the principle that whilst some bacteria thrive in air, others are killed thereby. These two classes are described respectively as aerobic and anaerobic bacteria. The cholera bacillus and *B. coli* are examples of the former class. Anaerobic conditions are attained by a variety of methods, including the absorption of oxygen by alkaline pyrogallol and its removal by the use of an air-pump. If milk, boiled and sterilised, be mixed with sewage, placed under anaerobic conditions, and examined after twenty-four hours' incubation, it will be found clear in one part, while the top and bottom portions of the vessel will be occupied by a coagulum. The liquid literally teems with anaerobic bacteria. Bacteria which cause phosphorescence on old rotten wood, and the bones of dead fish next received attention. In such cases the bacteria either themselves become luminous or else produce a luminous secretion. A medium composed of broth with small proportions of sodium chloride and asparagin favours the multiplication of these luminous bacteria in the course of 48 hours' incubation. An exquisite photograph was shown of a flask filled with a fluid charged with such bacteria; the plate and flask were left in the dark for several hours and a strikingly beautiful picture was produced. Slides were then placed in the lantern, showing many specific forms of bacteria, including those of anthrax, tuberculosis, influenza, as well as those which convert urea into ammonium carbonate, nitrites into nitrates, and give rise to other well-known and important changes in nature. It was shown how useful are the bacteria which invade the roots of leguminous plants in enabling a plant to absorb its supply of nitrogen direct from the atmosphere. The question of the choice of suitable dyes was then discussed, and the various aniline dies, *e.g.*, methyl blue and gentian violet passed in review. A slide was exhibited of the bacteria cultivated from the expectoration of a person suffering from tuberculosis. The culture had been stained with fuchsine and then treated with nitric acid, which discharges the colour from all bacteria except the tubercular bacillus. The discovery of a method of isolating this dreadful scourge was made in 1882 by Koch, and enabled him to prove conclusively that tabes mesenterica in children, lupus, scrofula and many other loathsome and unmentionable diseases are but different forms of one and the same complaint, viz., tuberculosis. In conclusion Dr. Klein said that though he would place high in the list of famous achievements Simpson's discovery of the use of chloroform, Jenner's method of vaccination with calf-lymph, and Lister's antiseptic surgical methods, yet he reserved the highest place of honour for Koch's discovery of a method of isolating the bacillus of that fell destroyer, tuberculosis.

CHEMICAL SOCIETY.

A meeting was held on Thursday, June 2, the PRESIDENT, Professor Dewar, in the chair.—The usual routine business having been gone through, the PRESIDENT announced that it was his melancholy duty to pay a tribute, in the name of the Chemical Society, to the memory of the late Lord Playfair. As a man he was straightforward and generous to a fault. He used to own that his unrivalled success was largely due to his early training in chemistry under Liebig and Graham. It is noteworthy that the deceased scientist has developed a new type of public man in applying deep scientific knowledge in a political sphere. The President went on to say that owing to the death of this sole remaining founder and senior past President of the Chemical Society it was necessary to postpone the proposed banquet to the past Presidents, and in all probability October 28 would be the date ultimately fixed upon for the function.

Professor DEWAR then modestly suggested that as there were only two papers to be read that evening he might be permitted to communicate further information concerning the properties of

Liquid Hydrogen.

The preliminary announcement respecting the properties of hydrogen in the liquid condition was necessarily meagre, considering the small quantity of liquid operated upon. Further supplies have, however, been obtained, and various physical constants determined. It is extremely difficult to obtain any quantity of the liquid at pleasure, on account of the impurities that will cling to the hydrogen, the formation of solid air, and furthermore, the effect of the low temperature reached on the apparatus itself, which prevents it working well for several days. The first constant that had been determined was the boiling point under atmospheric pressure. This was done by means of a platinum resistance thermometer. Provided the platinum is fairly pure, the relation between temperature and resistance is practically that of a straight line. The resistance is taken at 0° and 100° C., a line is drawn between these two points, and a figure is obtained which is the temperature in platinum degrees for the thermometer employed. It is then necessary to find the relation of this temperature to the ordinary temperature degrecs. It is not possible with the instrument used on this occasion to reach a lowcr temperature than −263°·3 C. The resistance in liquid hydrogen was found to be a little more than one-tenth of an ohm, and at 0° C. 5·3 ohms. On deducing from these data the temperature in standard degrees, Professor Dewar found that liquid hydrogen boils at either −238° C. or −239° C., *i.e.*, at about 35° on the absolute scale. This result is about 8° higher than that obtained by Wroblewski by means of Van de Waal's theory, or in other words, about 15 per cent. higher than was anticipated. The critical temperature of liquid hydrogen is about 50° on the absolute scale. Hence the whole phase of the liquid condition of hydrogen takes place within a range of 15° C., *i.e.*, between 35° and 50° on the absolute scale. This range is small compared with that of oxygen and nitrogen, which is about 65° C. It follows that slight numerical variations are of the utmost importance, for who can say what internal molecular changes are accomplished within the narrow range of 15° C. ! On comparing the platinum thermometer with another, and calculating what figures would have been obtained if the second instrument had been used, the figures were found to be −238°·2 and −238°·9 C. Mr. Dixon, of Peterhouse, has calculated the relation of the platinum degrees to those on the ordinary scale of temperature, and finds the number lies between −237° and −239° C. Therefore thc boiling point of hydrogen lies very near −238° C., but, said the lecturer, this number must still be taken with reservation, because at this low temperature we are within 6° of the limit of temperature at which the platinum resistance thermometer will work. Some other instrument will have to be invented if ever a lower temperature is to be registered by mortal man. The density of hydrogen vapour as it leaves the boiling liquid is about 0·55, or one-half that of air and about equal to the density of marsh gas in a similar condition. It is remarkable that whereas the vapour of air from liquid air is about 3¾ times the density of air at ordinary temperatures, the vapour of hydrogen from liquid hydrogen is 8 times denser than that of hydrogen at ordinary temperatures. On exposing liquid hydrogen to the air in an open vessel, a cloud of solid air quickly formed in the interior of the vessel and sank into the liquid; consequently the vapour of hydrogen in the vessel was less dense than air. By plugging the vessel with cotton wool this cloud of air may be prevented from falling into the liquid. Professor Dewar questioned whether we shall ever reach within twenty degrees of absolute zero, and then drew attention to the fact that whilst liquid oxygen is 250 times as dense as the vapour of oxygen at its boiling point, in the case of hydrogen the liquid is 100 times the density of the vapour. On June 1, careful experiments were made in order to determine exactly the density of liquid hydrogen. Ten C.c. of liquid hydrogen were taken, evaporated, and the volume of gas produced was measured. The professor expected the density would prove to be about one-half that of air, or perhaps a little more. The 10 C.c. of liquid gave 8 litres of gas, and the density was calculated as 0·07 (approx.). The atomic volume of hydrogen is 14·3, as compared with oxygen 13·7, and nitrogen between 14 and 16. The density of hydrogen in palladium has been computed at 0·62. If the above figures are correct the specific heat of hydrogen must be high; it may be about 6·4, or six times that of water. The latent heat of vaporisation of a substance being proportional to its absolute boiling point, it was found that the latent heat of vaporisation of hydrogen is about 350 units per gramme, which is high in comparison with oxygen, 16 grammes of which require 864 heat units. In comparing liquid hydrogen with oxygen and air, the liquids must be taken volume for volume, and not weight for weight.—Professor THOMPSON proposed a hearty vote of thanks to Professor Dewar for this valuable communication, and regretted that the author himself was the only one present who could discuss the subject. In seconding the proposition, Professor Dunstan suggested that had the members known what was in store for this meeting a much larger audience would have assembled. The proposition was then carried with acclamation.—A paper by H. J. H. Fenton, M.A., and Mildred Gostling, B.Sc., was then read by Mr. FENTON on

The Behaviour of Certain Organic Substances towards Hydrogen Bromide in Presence of Ether.

The formation of the ethylic salt of dihydroxymaleic acid gave the authors the first clue that there was anything unusual in the action of hydrogen bromide on organic substances. The investigation was followed up, ethyl oxalate, stearate and borate were produced, and it was found that ether acts as a base towards an acid in the presence of perfectly dry hydrogen bromide. Various carbohydrates were then subjected to the action of hydrogen bromide in presence of ether. One gramme of the carbohydrate was put in a stoppered cylinder, and a certain amount of ether, saturated with dry hydrogen bromide gas, was added. Cane sugar at once developed a fine purple colour, lævulose, inulin and sorbose (an isomer of lævulose) gave the same colour on standing from fifteen to thirty minutes. Dextrose, galactose, and maltose developed a purple colour after standing twenty-four hours, but the colour was not so brilliant as was the case with cane sugar. Starch and dextrin gave only a yellow coloration, arabinose and rhamnose developed a reddish-brown tint, whilst mannite, sorbite, and erythrite became yellow. Generally speaking, the hexaldoses give a purple coloration on standing twenty-four hours, the keto-hexoses almost at once develop a purple colour, pentoses do not give the purple tint at all, whilst the alcohols are similarly unaffected. Xylose occupies an intermediate position, as regards its reaction with hydrogen bromide and ether, between the keto-hexoses and the hexaldoses. Rhamnose, though a six-carbon sugar, since it is methyl pentose, develops no blue colour. The authors found that the presence of ether was unnecessary, and that the development of colour was due entirely to the hydrogen bromide. The substance which nearest approaches this with the purple coloration is Stenhouse's metafurfurol. The substance which the authors obtained has its colour discharged by water with the formation of a greenish-black precipitate. Sulphuric acid brings back the purple colour.—In the discussion that followed, Mr. CHAPMAN mentioned that some years ago a paper appeared dealing with the absorption of hydrogen chloride by cane-sugar.—Professor DUNSTAN asked whether the authors had experimented with the chloride and iodide of hydrogen. He would like to hear any speculations which Mr. Fenton might have to bring forward as to the cause of the colour and the composition of the compound. It would be interesting to know whether the substance is identical with metafurfurol.—The PRESIDENT suggested that it would be a most desirable thing if the authors could devise a rapid method for the detection of the various sugars, and the present investigation might possibly prove capable of such application. He hoped that the authors would before long give the Society more definite information concerning the interesting compound which they have discovered.—In reply, Mr. FENTON hesitated to say anything at present as to the composition of the new compound. He had failed to obtain any purple colour, using hydrogen chloride in place of hydrogen bromide. It is important to remember that whilst all sugars that give this reaction have six carbon atoms, there are some 6-carbon sugars, *e.g.*, rhamnose, that do not react in this way, and it is only those which show the ketose grouping that rapidly develop the purple coloration referred to.—Professor J. NORMAN COLLIE, Ph.D., F.R.S., then followed with a paper by himself and Wilfred Lean (Redwood Research Scholar of thc Pharmaceutical Society), dealing with the

Production of some Chloropyridine Carboxylic Acids.

The authors prepared from chlorolutidine carboxylate (*Chem. Soc. Trans.*, 1897, lxxi., 303), several chloropyridine carboxylic acids, and by reducing one of these with tin and hydrochloric acid, obtained carbo-cinchomeronic acid, which is one of the products of the action of oxidising agents on quinine, cinchonine, papaverine and several other alkaloids. The substance used as the starting point of the research was ethylic chlorolutidine-mono-carboxylate. It is a sweet-smelling liquid, having a boiling point of 288°-290°C.

By the hydrolysis of this ether the free acid was obtained crystallising in small needles, with a melting point of 148° C. By the action of permanganate of potassium on the ethylic salt, two acids were obtained, one having the formula $C_5HN(COOH)_2(COOEt)Cl(\alpha\gamma.\beta.\alpha')$ and melting at 169°, the second an α'-chloropyridine-$\alpha\beta\gamma$-tricarboxylic acid, $C_5HN(COOH)_3Cl$, melting at 212° C. This latter acid yielded carbo-cinchomeronic acid, or pyridine-$\alpha\beta\gamma$-tricarboxylic acid, $C_5H_2N(COOH)_3$, when reduced with tin and hydrochloric acid.—This paper produced no discussion, possibly for the same reason that had obtained in the case of Professor Dewar's paper.—The President thanked the authors for their communication, and adjourned the meeting until June 16.

Pharmaceutical Transactions.

SCHOOL OF PHARMACY STUDENTS' ASSOCIATION.

The last meeting of the session was held at 17, Bloomsbury Square, London, on May 20, when Mr. J. Evans occupied the chair.

Mrs. K. L. Moore gave an interesting account of

A Visit to Japan.

So rapid is the progress of civilisation—or rather of Western ideas—in the country, that impressions of yesterday may be incorrect to-day. The Japanese seem to have lost their former good taste in many things, but particularly in dress, recklessly combining some of their native garments with an English bowler and American boots. Right in the country one still sees occasionally the old peasant with his white or blue leggings, straw shoes, big hat, and robe tucked into his girdle, his head shaved down the middle, and back hair turned up in a queue in the ancient mode. The woman of the old school is a curious person with blackened teeth and shaved eye-brows, peacefully occupied with a pipe of such small dimensions that two puffs exhaust it; quickly filling it, however, the good lady starts again with unruffled countenance and undiminished patience. The former custom was for all married women to blacken their teeth and shave their eyebrows, for a very obvious reason. The present Empress set the fashion in discontinuing this. At Kamakura one comes across the famous Diabutsu or Great Buddha, a magnificent bronze figure, forty-nine feet in height, the eyes are pure gold, and a silver boss on the forehead weighs 30 lbs. This Buddha dates from the thirteenth century, and is perhaps the grandest of all Japanese works of art. It is truly an imposing figure, the calm, intellectual, passionless face seeming to concentrate in itself the whole philosophy of the Buddhist religion, "the triumph of mind over sense, of eternity over fleeting time." Around the figure crop up numerous temples, and here are many lotus ponds. The lotus is intimately connected with Buddha, being considered typical of the ideal man. Since it grows in the mud, yet produces a lovely flower, it is a symbol of purity in a wicked world; as its odour sweetens the air around, so his good deeds influence those about him; it opens in the morning sunshine, and his mind is expanded by the light of knowledge; its branchless stalks, rising without a break to the leaf or flower, are a type of his single-mindedness and directness of purpose, and its edible root shows that the basis of his life must be usefulness to others; to this it may be added that, like the very good, the flower dies young. The flower opens early, closes before noon, and falls the second day. In roaming the country, whenever one rests for a few minutes at a tea-house, the smiling owners place instantly by your side a little teapot and tiny handleless cups, and a hibachi, with its pile of glowing charcoal. Their friendly welcome never fails to make an impression, however poor the quality of the tea may be. The bamboo plantations are an essential feature of the landscape. The young plants grow so fast that one can almost see them move. Some are cut and eaten while still tender, those which are allowed to grow to large poles are used for every imaginable purpose, they are made into water pipes, flower vases, barrel hoops, umbrellas, baskets, waterproofs and hats, scaffolding poles, pipe stems, fans, and delicate whisks for stirring the powdered tea. Indeed, it would be almost easier to say what the bamboo is not used for. At the door of one of the tea-houses visited was a tank of water containing fish. You were invited to indicate your particular fish, and it was caught and cooked on the spot. Like all other houses, this was a light framework structure with a roof heavy in proportion, and supported on stones with slightly hollowed tops resting on the surface of the soil. There are no continuous walls—the side of the house, composed at night of wooden sliding doors, is stowed away during the daytime. In summer everything is thus opened to the outside; in winter semi-transparent paper slides replace the wooden sliding-doors during the day. The floor of all living rooms is covered with thick mats made of rushes, fitting perfectly together. Furniture is conspicuous by its absence, consequently you have to sleep on the mats. Fortunately they are soft, and when covered with a heavy "futon"—the regulation Japanese bed-covering—sleep is by no means impossible. The journey from Nikko to Utso-nomiya was undertaken in jinrickshas, a couple of coolies to each, and they covered the 25 miles in 2½ hours with an occasional rest, and appeared fresh and smiling at the end. The Japanese are remarkable in their love of small things. Their trees 60 years or more old and yet only a foot high are well known, their carvings in ivory and their pottery and metal work are on the same lines. You can get small vases in the Satsuma ware, not more than 3 or 4 inches high, with battle scenes painted on them, in which are depicted at least 1000 warriors, every detail being perfect, though the faces are so small that a good magnifying glass is necessary to see them. The lecturer concluded by expressing a wish that when the Trans-Siberian Railway is opened in 1900, many would take advantage of any excursions on that line, and go to see the beauties of Japan.

Mr. W. J. Spurway then read a note upon the

Determination of Arsenious Anhydride by Means of Volumetric Solution of Iodine,

embodying the results of work undertaken to clear up a difficulty met with in the course of work in the Society's Chemical Laboratory. That method of ascertaining the amount of As_4O_6 in a solution was devised by Möhr, and depends upon the fact that As_4O_6 is oxidised by means of iodine to the higher oxide As_2O_5. The reaction is represented by the equation—

$$As_4O_6 + 4I_2 + 4H_2O = 2As_2O_5 + 8HI.$$

This reaction does not take place, however, in an acid solution. It is therefore necessary that some alkali should be present to neutralise the hydriodic acid which is liberated by the reaction. Further, it is necessary that the alkali employed shall not absorb or otherwise affect the iodine solution, so as to prevent the formation of the blue iodide of starch at the end of the reaction. For this purpose Möhr selected the acid carbonate of sodium, which, if added to a cold and neutral solution of As_4O_6, answers the purpose quite well. It is one of those acid salts which, curiously enough, have an alkaline reaction. Regarded as a compound of the basic oxide Na_2O with two molecules of the acid oxide CO_2, and one molecule of water ($Na_2O \cdot 2CO_2H_2O$), this fact is explained thus: The strong alkaline nature of the Na_2O molecule is sufficient to overcome two molecules of the acid oxide CO_2.

Mistakes, however, arise when, following the instructions of text-books, we bring the arsenic into solution by boiling it with a strong solution of acid carbonate of sodium. The boiling converts the acid carbonate into the normal carbonate, so that when we titrate such a solution with iodine, the end of the reaction is hidden owing to the absorption of some iodine by the strongly alkaline carbonate.

The following experiments show the error that is introduced by this treatment:—

10 C.c. of a neutral solution of $As_4O_6 + NaHCO_3$ at 60° F. decolorised 9·4 C.c. of iodine solution.

10 C.c. of a neutral solution of $As_4O_6 + NaHCO_3$ after boiling, decolorised 9·6 C.c. of iodine solution.

10 C.c. of a neutral solution of $As_4O_6 + NaHCO_3$ boiled and titrated whilst boiling, decolorised 10·3 C.c. of iodine solution.

The amount of $NaHCO_3$ used in each case was the same. Also, it has been pointed out by Fresenius that there is a considerable variation in the amount of iodine absorbed by a solution of Na_2CO_3, which apparently depends upon the amount of dilution. These are the figures he gives:—

20 C.c of pure Na_2CO_3 sol. (5 grains in 100 C.c.)	absorbed.	·4 C.c. Iodine sol. (53064 in 100 C.c.)
20 C.c. of the same sol. +	60 C.c. of water absorbed	·8 C.c. of the same iodine sol.
20 C.c. ,, ,, ,, +	120 C.c. ,, ,, ,,	1·2 C.c. ,, ,, ,, ,,
20 C.c. ,, ,, ,, +	280 C.c. ,, ,, ,,	2·2 C.c. ,, ,, ,, ,,

These two sets of experiments appear to account in some measure for the variations and inaccuracies of results obtained by following

the instructions given in text-books. Whilst working at this subject, the author's attention was directed to a paper read before the Association about ten years ago by Mr. E. J. Woolley, who recommended that borax should be substituted for acid carbonate of sodium. He claimed that it gave quite as accurate results as when $NaHCO_3$ is added to a neutral solution of As_4O_6, and was preferable, since it could be heated to any extent without producing any absorption of iodine afterward, even when used in comparatively large quantities. Now borax is another acid salt which has an alkaline reaction. This is explained in the same way as in the other case. The strongly basic properties of the Na_2O molecule are more than sufficient to overcome two molecules of the weak acid oxide B_2O_3. It was suggested that it would be useful to try a series of experiments in order to ascertain whether the use of borax gave such satisfactory results as was claimed for it, because as far as can be ascertained he is the only person who has recommended its use. The following results were obtained:—

I. A solution of borax is not decomposed by boiling, does not absorb iodine, and does not prevent the formation of blue iodide of starch.

II. It is an easy and convenient solvent for arsenic.

III. In a series of comparative titrations, using varying quantities of borax and sodium acid carbonate with a neutral solution of As_4O_6 and a weak solution of iodine, the following results were obtained:—

10 C.c. of neutral solution of As_4O_6 with 1 gramme of $NaHCO_3$ decolorised 23·2 C.c. of iodine solution.

10 C.c. of neutral solution of As_4O_6 with 5 grammes of $NaHCO_3$ decolorised 23·4 C.c. of iodine solution.

10 C.c. of neutral solution of As_4O_6 with 10 grammes of $NaHCO_3$ decolorised 23·3 C.c. of iodine solution.

10 C.c. of neutral solution of As_4O_6 with 1 gramme of borax decolorised 23 3 C.c. of iodine solution.

10 C.c. of neutral solution of As_4O_6 with 5 grammes of borax decolorised 23·3 C.c. of iodine solution.

10 C.c. of neutral solution of As_4O_6 with 10 grammes of borax decolorised 23·25 C.c. of iodine solution.

It will be seen that, if anything, borax is less liable to variation than sodium acid carbonate, even when the latter is used under proper precautions. These results, therefore, corroborate the statements made by Mr. Woolley, and prove that such determinations can be carred out, not only more conveniently and quickly but more accurately if borax be used instead of sodium acid carbonate.

In conclusion, attention was directed to the instructions given in the British Pharmacopœia for the estimation of arsenious anhydride. The 1885 edition directed that the As_4O_6 should be dissolved by boiling it with sodium acid carbonate in excess, and titrated with iodine solution. That method, of course, renders the determination liable to the errors previously pointed out, and it is therefore satisfactory to find that in the new Pharmacopœia instructions are given to cool the solution, to add a small quantity of hydrochloric acid in successive drops, and to shake well, the idea being to convert the Na_2CO_3, which has been formed by the boiling, back into the acid carbonate. Again, in the B.P. 1885, in the determination of As_4O_6 in liquor arsenicalis it is directed to boil the solution for five minutes with sodium acid carbonate and titrate with iodine solution. Now this preparation contains an excess of potassium carbonate, and by boiling with $NaHCO_3$, an additional quantity of sodium carbonate is formed. Each of these absorbs iodine in varying degrees, and it is little wonder that inaccurate results are obtained by following such directions. The new B.P. orders that the solution should first be neutralised with hydrochloric acid and then titrated with iodine in presence of a slight excess of sodium acid carbonate. That method of course gives satisfactory results.

Animated discussions followed both papers, the CHAIRMAN, SECRETARIES, and Messrs. BATTLE, DURBIN, LESCHER, MATTHEWS, PAYNE, SMITH, A. W. TURNER, and J. S. TURNER took part.—The meeting then adjourned.

PHARMACEUTICAL SOCIETY OF IRELAND.

On Wednesday, the 1st instant, the monthly meeting of the Council was held at 67, Lower Mount Street, Dublin. The PRESIDENT, Mr. R. J. Downes, was in the chair, and there were also present the Vice-President, Mr. Grindley (Hon. Treasurer), and Messrs. Bernard, Wells, Porter, Conyngham, Ryan, Kelly, Simpson, Sullivan, and Dr. Walsh.—The PRESIDENT reported that he had been a guest at the annual dinner of the Pharmaceutical Society of Great Britain, and was received very kindly and favourably. In response to the toast of his health, he said he did not take it as a personal compliment, but as a recognition of the position of the Irish Society in pharmacy. He said they respected the seniority and talent of the British Society, and would stand by them as far as they could in the project they had on hand, whilst they expected the same support from them. The President, in a subsequent interview, told him that the British Society would assist them as far as they could in their effort to obtain an amendment of the Companies Act, and would be delighted if they should succeed. He (the President) also had an interview with the Duke of Abercorn, who promised to support them, and the Earl of Mayo had written promising to present their petition in the House of Lords when the House meets.—Mr. BERNARD: Did anything occur about our Preliminary examination being accepted by them?—The PRESIDENT: No, it was not referred to.—Mr. BERNARD: They accepted our recognition of their Preliminary examination, but would not give us anything in return.—Mr. CONYNGHAM said the British Society had treated them very badly in not receiving into their warm and big-hearted bosoms the Irish Society, which received no man without examination, although they themselves registered drapers and ironmongers without examination (*sic.*).—Mr. KELLY: I do not think there is any use in bringing up these old sores. We should clasp hands of friendship with them and work for the common good. I myself felt their not receiving our Preliminary certificate; at the same time they offer to help us and we offer to help them, and let us work together for the common good of pharmacy.—Mr. WELLS said he did not think they should be looking back at past wrongs and keeping open old sores. He (Mr. Wells) believed they had a good friend in the President of the English Society.—The PRESIDENT repeated that he had been received most kindly by the British Society on the occasion of his visit, and he thought the Council should reciprocate the feeling.—The subject dropped.—The question as to whether the examiners at the ensuing examinations should examine out of the new British Pharmacopœia was considered in Committee, and it was ordered that the Examiners should take cognisance of that work, but that they should use a discretion in awarding marks.—Mr. John McCloy, who had passed an Intermediate Board Junior Grade examination was admitted to preliminary registration as a student, but the PRESIDENT said he would give notice of a motion to rescind the existing regulation as to examinations other than the Society's Preliminary, as they were accepting examinations that did not come up to the standard of their own.—Two new members were admitted, and three were nominated for membership; and other business having been disposed of, the Council separated.

NOTTINGHAM CHEMISTS AND MR. YOXALL, M.P.

In accordance with a resolution passed at the annual meeting of the Nottingham and Notts Chemists' Association a deputation waited upon Mr. Yoxall, M.P., at the House of Commons on Monday evening with reference to the Amendment to the Pharmacy Bill, which stands in his name. Owing to illness and other causes, several influential members of the Association were unable to journey to London, and the interview was entrusted to Messrs. F. R. Sergeant and W. Gill, who were genially received by Mr. Yoxall, although the hon. member had been obliged to put off an important engagement in order to meet them. At the outset Mr. Yoxall wished to make it clearly understood that, apart from his attitude to the measure, the Bill had in his opinion no chance of passing this session, owing to the large amount of Government business to be disposed of. He had never blocked the Bill, and his action with regard to it was solely in the public interest, and to safeguard the position earned by men who had passed the Major examination. Any movement which aimed at improving the educational standard of any profession would have his cordial support.

The deputation, after expressing appreciation of the motives which actuated the hon. member, proceeded to point out some of the special circumstances which existed at the time the 1868 Act was passed and their bearing on that Act, and briefly alluded to the action of the Pharmaceutical Society since that date, making special reference to the increasing stringency of the Minor examination and the Government Inspectors' Reports thereon. Allusion was also made to the part played by chemists and druggists in promoting pharmaceutical education in various parts of the country, and the desirability of strengthening the Pharmaceutical Society in

order to further prosecute that work. With regard to the title "Pharmaceutical Chemist," that would still be reserved for Major men.—After discussing these matters Mr. YOXALL said: I now see the position of affairs better than before; the Bill has, I think, no chance of passing this session, but if again introduced next session with clauses that specify distinctly (1) That the title of Pharmaceutical Chemist shall be reserved for Major men; (2) That membership of the Society, according to the terms of the Bill, shall not carry with it the right for Minor men to attach the letters M.P.S. to their names; or if that right is conferred on Minor men, then Major men shall take a different title (and I would suggest Fellow of the Pharmaceutical Society), then I would move no amendment to it, but on the other hand give the Bill my cordial support.—The deputation thanked Mr. Yoxall for his kindness in receiving them, and for the careful attention he had given to the facts laid before him, and were afterwards shown round the House, and then returned to Nottingham feeling that although the Pharmacy Bill was doomed for this session there was a brighter prospect for it next year.

LETTERS TO THE EDITOR.

COMMERCIAL SUMATRA BENZOIN.

Sir,—Mr. Evans, in his paper on this subject (*ante*, p. 507), in reference to my Conference paper, seems to have overlooked the title of it when he said, "Mr. Dunlop gave no indication of the actual quality of the benzoins he examined beyond merely the trade designation." My starting-point being different from his did not admit of me giving further description, and, moreover, all the samples were submitted for examination—and thus spoke for themselves—at the time my paper was read. Mr. Evans bought "the best" (he did not say what he paid). I bought the highest priced in nine cases out of twelve, and two seconds (also in price), and one "elect" for comparison. The purchases were made from the leading London and provincial houses in the ordinary course of business. These conditions were, I think, the best for finding out what was in the market. Mr. Evans' results confirm the statement made in the *Chemist and Druggist* editorial comment on my paper. viz, "Dieterich's repeated assays of the resin show that from 7·5 to 10 per cent. of matter insoluble in 90 per cent. alcohol is the range for first-class resins." When such is the case it is to be regretted that the B.P., 1898, has only modified its previous mis-statement about solubility by adding the words "almost entirely." The importance of the drug is indisputable, and on that account the limitation of the pharmaceutic use of it to the Siam varicty would have been in line with the modern trend towards standardisation. The up-to-date details anent acid benzoic could with advantage have been extended to benzoin itself.

Glasgow, June 3, 1898. THOMAS DUNLOP.

THAT DISPENSING PROBLEM.

Sir,—If Miss Kathleen Spencer will refer to my letter of May 20 respecting the ointment difficulty, she will not find any specified time stated; thus I fail to understand how she can disagree upon a point with which she is unacquainted. As a matter of fact the ointment, made according to my first process, occupied seventeen minutes, so after all we do not differ to any great extent, viz.:—only two minutes. However, I thought seventeen minutes too long for the examination room, and that if a more rapid process could be given it would be acceptable to the majority of students.

Lewisham, S.E., June 3, 1898. GRAHAM BOTT.

REGISTERED CHEMISTS AND JOINT-STOCK COMPANIES.

Sir,—It is with a feeling of profound sorrow that I read in this week's Journal, under the heading "Annotations," an expression of regret that all chemists who have had remuneration for their services at the hands of a limited company cannot have their names expunged from the Register. The palpable narrow-mindedness of this remark must be evident even to your contributor. Let us take a few of the pros and cons of the matter—service with limited companies. First, the limited company pays a salary 25 per cent. more than the average chemist (who may employ an out-door assistant). The hours are better arranged, there being considerably less confinement The freedom of the out-door situation (which system of employment is practically universal with limited companies) is so in accordance with the natural instincts of the Englishman (even a chemist) that a renegade (I suggest this term to your contributor) never returns to the narrow-minded fold. Again, a week or two ago I read in your "Situations Vacant" column "an out-door berth" offered by a private chemist to a really good man, salary 30*s.* per week (or did he mean month?). A salary generally given to a porter in the store trade. When I read such advertisements, with such a salary, publicly offered, I cannot restrain a faugh of disgust. That an educated man can so hold up the trade or profession to general ridicule passes my comprehension. And this is the type of man who would wipe the name of an assistant, who earns an honest salary, off the Register. Perhaps your readers will say that the writer is a rank store man. I am not, neither am I engaged by a limited company. There are, without doubt, sides to the store problem, but in my very varied experience, embracing—speaking generally—every class of business, I count my knowledge gained with the stores not the least valuable.

London, June 6, 1898. H. BROOK CLEGG.

*** When our correspondent is himself a registered chemist his opinions may possibly undergo a change. Meanwhile, it may be suggested that the "narrow-mindedness" is obviously displayed by those registered men who, for the sake of receiving, for the time being, 25 per cent. more in the way of salary, and having a few hours more freedom per week, are prepared to damage the position of their craft, and injuriously affect their own future prospects, by enabling unqualified persons to compete unfairly with registered chemists and druggists. [ED. *P.J.*]

THE DILUTION OF LIQUIDS FROM ONE GRAVITY TO ANOTHER.

Sir,—The following formula holds good for the dilution of syrups with water and other liquids where no contraction of volume takes place; for instance, I desire to know how much water must be added to 40 fluid ounces of oxymel scillæ, s.g. 1·45, to bring it to s.g. 1·32, the formula in question is—

$$\frac{1{\cdot}45 - 1{\cdot}32}{1{\cdot}32 - 1{\cdot}00} = \frac{13}{32} \times 40 = 16{\cdot}25$$

By the process of alligation this works out accurately, thus

40	×	1·45	=	58
16·25	×	1·00	=	16·25
56·25			=	74·25
		1	=	1·32

Now on using this formula to liquor ammonii acetatis I find it does not agree according to the official s.g.'s and by experiment I find no contraction takes place, and the question I desire to submit to your readers is, which is wrong, the formula or the official s.g.'s? Pharmacists who have the concentrated liquores could dilute their stocks to the present requirements if only the difficulty herein referred to was overcome and a standard s.g. inserted in the B.P. During experiments I have generally observed a peculiar odour of the preparation in question, Howard's ammonia and Beaufoy's acetic acid being used. Can any of your readers explain what this is due to?

Birmingham, June 7, 1898. R. L. DAVIS.

THE NEW PHARMACY BILL.

Sir,—In my letter which appeared in the *Pharmaceutical Journal* of March 12 last I suggested as a new and additional title for what I considered would become the "disposed" Pharmaceutical Chemist under the Act that of "Master of Pharmacy." It seems such a title would not be without precedent, as according to Mr Marsden's interesting paper in the Journal of last week on "The Practice of Pharmacy in Russia," that of "Magister" of Pharmacy is in use in that country denoting the highest rank of Russian pharmacists.

Great Witley, June 6, 1898. JOHN TWINBERROW, Ph.C.

THE NEW PHARMACOPŒIA AND THE MINOR EXAMINATION.

Sir,—At the Council Meeting in May the President stated that it had been decided that candidates for the Minor should not be examined in what was special to the new Pharmacopœia until January, 1899, that is, eight months after it has been issued. It occurred to me at the time that this arrangement was not necessary nor desirable, and would not be convenient. Since then several circumstances have arisen in my own experience to confirm my first impression, and I venture now, though late, to refer to the subject. The arrangement in question was professedly for the convenience of Minor candidates. There are two examinations still to be held this year—one in July the other in October. The Pharmacopœia became official as soon as it was issued so I apprehend. Consequently candidates presenting themselves in July and October will have been reading for two months and

five months respectively a book which is unused, out of date and not official. This seems to me a huge waste of time. Besides, may not a candidate at one of these examinations have some legal justification if he objects to be examined on the obsolete Pharmacopœia? I fail to see the necessity for any delay whatever. As soon as the Pharmacopœia was issued, pharmacists hastened to get ready all the new preparations. Members of their staff who are possible candidates would in consequence have opportunity to make, or assist in making, a greater number of preparations in a given time than they ever previously made, or saw made, in a like period. They would thus become familiar with the processes right away. Moreover, I venture to think that any candidate who is familiar with the 1885 Pharmacopœia could, in a shorter time even than he would have at his disposal before either examination, get a grip of what is special to the 1898 Pharmacopœia. And supposing that a candidate knew very little about it, it strikes me that it would be more profitable to him to do his reading from the book which he is to use afterwards, than from one which he must necessarily abandon immediately whether he pass or fail. It will be much easier to "get up" the New Pharmacopœia than the old. The more uniform classification of strengths and doses will lessen memory work very considerably. I very much doubt whether the candidates will appreciate the delay. While it is desirable that consideration should be shown them in the matter, possibly the discretion of the examiners might be trusted to temper justice with mercy suited to the occasion of the introduction of a new medicine book.

Edinburgh, June 7, 1898. PETER BOA.

A DISCLAIMER.

Sir,—Will you kindly make it known that the representative of the *Evening News* who is reported in that paper as having "visited the Pharmaceutical Society." and who retails the conversation he had with the "Society's official," did not come to my office, and consequently did not interview me or any member of my staff.

17, Bloomsbury Square, W.C., June 3, 1898. RICHARD BREMRIDGE.

ANSWERS TO QUERIES.

TINCTURE PRESS.—Messrs. Maw, Son and Thompson and other dealers supply good double-action tincture presses, both of English and foreign make. [*Reply to* W. E. M.—11/16.]

SALE OF FOOD AND DRUGS ACT.—The labels alone would not suffice; you must be able to prove, in case of need, that the customer's attention was properly directed to the fact that the preparations sold were not according to the Pharmacopœia standards. [*Reply to* W. H. G. L.—11/23.]

SUBSTITUTE FOR SOLUTION OF ETHYL NITRITE.—Possibly an aqueous solution of sodium nitrite will answer the requirements of the case. Use the pure salt, with about 10 per cent. of glycerin in the solution. The dose of sodium nitrite is from 2 to 5 grains. The action of the salt is very similar to that of ethyl nitrite. [*Reply to* ETHYL NITRITE.—11/17.]

PREPARATION OF ANTIMONY OXYCHLORIDE.—The buff colour which you note is not due, as you suppose, to iron, but to the presence of a trace of H_2S, the mixture of Sb_2S_3 and HCl not having been boiled sufficiently to drive off the last vestige of that gas. It takes a good deal of boiling to drive it all off, and the least trace left will affect the colour of the precipitate in the manner you state. Redissolve your buff oxychloride in acid, boil it well, reprecipitate with water and it should then appear white. [*Reply to* GLYCYRRHIZA.—10/28.]

PERCENTAGE SOLUTION.—A true percentage solution must contain x parts by weight in 100 parts by weight, or x parts by volume in 100 parts by volume. In the first instance you quote, the simplest plan would be to weigh, in a suitable vessel, the required number of parts of menthol and chloroform, then add sufficient alcohol to make a hundred parts by weight. You would thus have a true percentage solution. In the second case, either proceed in a similar manner, or take ten volumes of the previously melted acid and dilute to one hundred volumes with the solution ordered. [*Reply to* EXACTITUDE. 11/27.]

NATURAL HISTORY.—Write to the Director of the Natural History Museum, Cromwell Road, S.W.; the Director of the Royal Gardens, Kew; or to the Superintendent of the Zoological Society's Gardens, Regent's Park, N.W. [*Reply to* PHUSIS.—11/26.]

COLOUR FOR CARBOY.—What colour do you want, green, red, or yellow? Your query of the 13th ult. did not reach us. Please note that all queries should be addressed to the Editor. [*Reply to* R. W.—11/14.]

RECIPE FOR SAUCE.—Please repeat your query and state what type of sauce you want; thick or thin. Despite the hackneyed saying of the witty Frenchman that we English have a "thousand religions but only one sauce," the name of the latter is legion, and we cannot spare space to give you even typical examples. [*Reply to* R. W.—11/14.]

FORMULA FOR PROPRIETARY PILLS.—They are said to contain arsenic, but we do not profess to give formulæ for quack medicines advertised in the public press. All such recipes must necessarily be more or less mere guesses; moreover, to prepare or sell a mere imitation of another man's proprietary article should be beneath the dignity of one of the craft. [*Reply to* P. P.—11/8.]

PERFUME FOR TOILET LANOLIN.—To give the lanolin a white lilac odour nothing is better than a few drops of terpineol unmixed with anything. For violet a few drops of a mixture of ionone, 20 minims; oil of lignaloe, 1 minim; otto of rose, 2 minims; terpineol, 5 minims, in essence of orris, 2 drachms, may be used. The use of coumarin, vanillin and of essential oils which contain much aldehydes should be avoided in preparations for the skin, since these bodies are apt, sometimes, to irritate. [*Reply to* NEPETA.—11/11.]

APPRENTICESHIP.—You say you were apprenticed "three years ago last June, . . . for the term of four years." If that be so, your term of pupilage will expire during the present month, and it seems absurd therefore to talk of cancelling your indentures. But, to answer your question, we are most decidedly of opinion that, unless there be exceptional reasons to the contrary, an employer is entitled to compensation if he is to be deprived of a pupil's services during the last year of apprenticeship. You should not overlook the fact that your services are worth more to him now than at any time previously; if up to the present he has fulfilled his part of the bargain, you should now be prepared to fulfil yours. [*Reply to* H. H.—11/25.]

OBITUARY.

BEST.—On May 27, James Best, Pharmaceutical Chemist, Moorgate Street, London. Aged 64.

BAXTER.—On May 29, at Bromley, Kent, Alice Emily, third daughter of Wm. Walmisley Baxter, Pharmaceutical Chemist. Aged 34.

VARNEY.—On May 30, Henry George Varney, Chemist and Druggist, Oxford. Aged 47.

HEELY.—On June 1, John Heely, Chemist and Druggist, Kennington Road, London. Aged 67.

COX.—On June 1, John Cox, Pharmaceutical Chemist, Watergate, Grantham. Aged 71. Mr. Cox had been a member of the Pharmaceutical Society since 1853, and was local secretary for Grantham from 1878 to 1885. He was apprenticed to Mr. Wilcockson, chemist, of Long Row, Nottingham, in 1839, and in 1848 purchased the business of Mr. Smith, Watergate, Grantham, which he continued to conduct until the day before his death. He served on the Town Council from 1868 to 1874, and also acted as Mayor's Auditor and Overseer of the Poor. Mr. Cox was generally respected, and his death will be mourned by many friends.

SMITH.—On June 6, Percy Smith, Chemist and Druggist, Croydon. Aged 28. Mr. Smith was an Associate of the Pharmaceutical Society.

COMMUNICATIONS, LETTERS, etc., have been received from Messrs. Batty, Davis, Dawson, Dell, Ferrall, Gill, Hobson, Hyslop, James, Jesper, Johnson, Kermonde, Lance, Macaulay, Manners, Marshall, Neville, Parker, Shepherd, Taylor, Tredaway, Whysall.

Pharmacy and the Allied Sciences.

A REVIEW OF CURRENT WORK.

Assay of Nitrites.

C. E. Smith bases a new method for the assay of ethyl and amyl nitrites on the reaction between nitrous and chloric acids, which results in the formation of nitric and hydrochloric acids. B. Grützner had previously utilised the same reaction in the determination of nitrites, dissolving 0·1 to 0·2 Gm. of the nitrite in 500 C.c. of water, adding 0·5 Gm. of potassium chlorate and a known volume of decinormal silver nitrate, then strongly acidulating with nitric acid, while shaking, and after a few minutes titrating the excess of silver with decinormal sodium chloride. For the assay of spirit of nitrous ether, Smith introduces into a 100 C.c. flask, provided with a loosely fitting stopper, 10 C.c. of distilled water, 5 C.c. of cold saturated solution of potassium chlorate, 5 C.c. of the spirit to be tested, and 5 C.c. of 10 per cent. nitric acid. The flask is then closed and shaken frequently during half-an-hour, after which add 10 C.c. of decinormal silver nitrate, shake briskly for a moment, add 10 drops of ferric ammonium sulphate solution, and quickly titrate the excess of silver with decinormal potassium sulphocyanate. The end point is reached when, after momentary shaking, upon adding the last drop of solution, the reddish colour is not entirely dispersed. In the case of amyl nitrite, partially fill a 100 C.c. graduated flask with alcohol, insert the stopper and weigh; then add 5 to 6 Gm. of the amyl nitrite to be tested and weigh again. Next fill the flask to the 100 C.c. mark with alcohol, and mix thoroughly by shaking. Proceed as directed for spirit of nitrous ether, using 20 C.c. of distilled water, 10 C.c. of potassium chlorate solution, 10 C.c. of alcoholic dilution of amyl nitrite, and 10 C.c. of dilute nitric acid. Lastly add 20 C.c. of decinormal silver nitrate and titrate as before.—*Am. Journ. Pharm.*, lxx., 273.

Bacteria in Calf-lymph.

Careful quantitative determinations of the bacterial contents of calf-lymph by Dr. Dreyer have shown that the initial number of microbes present may vary considerably, and that in the majority of cases it is very large indeed—on one occasion reaching as many as 17½ millions in one cubic centimetre. Within twenty-four hours, however, a great diminution takes place, but that decrease does not continue at the same rapid rate. Thus, one sample contained on the first day of its collection over 2½ millions of bacteria per C.c.; after five days, 112,750; after eighteen days there were still, however, 111,765 present. As G. C. Frankland points out, some forms persist over very long periods of time, from five months to a year or more. To determine the pathogenic character of lymph-bacteria Dreyer inoculated, subcutaneously and intraperitoneally, both mice and guinea-pigs. Out of thirty-five mice thus treated only two succumbed, one to subcutaneous and the other to intraperitoneal inoculation; in none of the other animals was any reaction perceptible. As regards the guinea-pigs, in no single instance did any result follow the intraperitoneal inoculation, whilst in nearly every subcutaneous inoculation a small and insignificant abscess was observed to form at the point of inoculation. Dr. Dreyer also experimented upon himself and inoculated his arm each time with some of the same lymph used for the mice and guinea-pigs respectively, but in no case did any reaction worthy of record follow. In order to determine more particularly the qualitative bacterial character of these various samples of calf-lymph, plate-cultures were made and pure cultures obtained of different bacteria, which were subsequently inoculated both into mice and into Dr. Dreyer's arm. In two cases coccus forms proved fatal to mice, whilst in the other inoculations no symptoms of importance followed. As regards the inoculations practised by the investigator upon himself with those pure cultures, nothing more significant than a slight abscess resulted, except on one occasion, when an affection of the adjoining lymphatic glands was experienced.—*Zeit. f. Hygiene*, through *Nature*, lviii., 44.

Synanthy in the Foxglove.

An interesting specimen of a monstrosity of the white digitalis has been picked in the Yealmpton district, and the following particulars have been furnished by Mr. Oswald A. Reade, of Plymouth:—"There were several such plants growing in a group, and in one of these the stamens were quite perfect and pollen-bearing. Five flowers appear to have combined to form a terminal flower, which has reversed the order of opening and turned an indefinite into a definite inflorescence." The monstrous flower is, of course, an instance of synanthy. An illustration of this, occurring in the foxglove, is given in Masters' 'Teratology,' p. 40. To this the following remarks are attached:—"One of the most common malformations in the foxglove results from the fusion of several of the terminal flowers into one. In these cases the number of parts is very variable in different instances; the sepals are more or less blended together, and the corollas as well as the stamens are usually free and distinct, the latter often of equal length, so that the blossom, although truly complex, is, as to its external form, less irregular than under natural circumstances. The centre of these flowers is occupied by a two or five-celled pistil, between the carpels of which not unfrequently the stem of the plant projects, bearing on its sides bracts and rudimentary flowers. An instance of this nature is figured in the *Gardeners' Chronicle*, 1850, p. 435." In Mr. Reade's plant the appearance is certainly that of a definite or terminal inflorescence, the flowers of the raceme, for at least four inches below the terminal flower, being small and unopened. It is, however, not really definite, for in the centre of the monstrous flower, and taking the place of the ovary, is a ring of small green sepals, enclosing still smaller greenish petals, and a ring of diminutive stamens; another flower still more diminutive and equally green occupying the centre; the whole appearing to the naked eye like an open ovary, containing seeds. It is, therefore, an interrupted indefinite, rather than a truly definite inflorescence, recalling that of the *Dipsacus* in appearance. In Mr. Reade's flower some of the outer sepals are half petaloid, and some of the filaments partly petaloid.

Mucilage in Plants.

H. Kraemer finds that methylene blue has the advantage of being a decisive reagent for mucilage in plants; only some lignified cell-walls otherwise take up the colour, and the stain may be applied by proper manipulation to dry as well as to fresh plant material. Fresh specimens of leaves, etc., are left for several hours in a solution of methylene blue, 0·4 Gm., in 95 per cent. alcohol, 100 C.c.; afterwards cut sections and transfer each to a slide with a few drops of a similar solution, in which four-fifths the alcohol is replaced by an equal volume of nearly anhydrous glycerin. The mucilage cells are stained blue in a short time, and after covering the specimens they may be kept indefinitely, the contrast between the stained and unstained portions becoming more marked as time passes. Dried material should first be softened in water, then transferred to strong alcohol prior to cutting sections.—*Am. Journ. Pharm.*, lxx., 285.

PHOTO-MICROGRAPHY.

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

Medium Power Photo-Micrography.

We now commence the next division of the subject, which perhaps, literally speaking, is true photo-micrography. Inasmuch as the apparatus used in th is section, as well as in the next—critical photography—is the same, I shall devote some little time and attention to describing it fully. Primarily, it consists of a microscope with substage condenser, a limelight with its adjusting arrangement, a secondary condenser, with its means of centreing, a camera, and a shutter to cut off the light before exposing the plate. Occasionally, too, we shall want as accessories a water-bath and also a suitable stand to hold either a coloured fluid screen or a piece of tinted glass. Inasmuch as the whole requires extreme rigidity, everything must be fixed with the utmost firmness on to a solid table having extra struts between the legs to keep it steady, and the legs themselves should rest on a concrete floor (or anyhow on four concrete supports isolated from the floor), so that any movement on the part of the photographer may not affect his apparatus. All this preparation for medium power work may seem superfluous, but as it is an absolute necessity for high power work, it had better be made carefully from the first. The precautions against tremulations of the floor cannot be too well carried out, and this is the better understood if the reader remembers that when photographing at 1000 diameters 1/1000th of an inch shake in the specimen makes a shift of 1 inch in the photographic plate. The heat generated by the limelight upon the microscope, too, is not a negligible quantity—for all metals sensibly expand with heat—and in the arrangement about to be described is provided against by having a metallic shield to protect the microscope, which screen has a hole in its centre only of sufficient size to permit enough light to pass through and fill the substage condenser. But of this I shall speak hereafter.

The tremulations caused by passing vehicles is a source of never-ending trouble to the photo-micrographer, especially if he practises his art in a crowded town, and even the most thickly concreted floor in a cellar beneath the level of the ground will certainly not suffice to entirely eliminate it. The best plan, where such troubles exist, is to adopt an arrangement such as is used by the "process block" engravers. It consists essentially in slinging the whole table, bereft of its legs, to two beams placed across the apartment. An upper room, instead of a cellar, can then be employed for the work, which is far more comfortable, seeing it can be warmed and kept free of damp. The details of this arrangement may be as follow:—Each beam should be about 4 inches wide and 3 inches thick, both being placed above the head of the photographer, who thereby will save himself many a spoilt plate by an accidental jar against the beam, let alone an occasional ugly blow on the head.

Four pieces of rope about the thickness of the first finger or stout wire should be firmly fixed to each corner of the table, and be of such length that, when the observer is sitting in a chair at the camera end of the apparatus, the ground glass is on a level with the head. If the operator be desirous of making his arrangement as complete as possible, it is a decided advantage for the ropes from the table to pass over large wheel pulleys affixed to the beams, the apparatus being kept in equilibrium by four weights. The convenience of this addition is very great, because when the microscope is not in use a cover can be thrown over it, and the whole table pushed up out of harm's way. It has another advantage, that of always being ready for use without any preliminaries whatever. To complete the details, where rooms with wooden floors are used, and the apparatus slung, it should not be neglected to suggest that a little sand or water be kept within easy reach in an open bucket, to pour over any piece of incandescent lime which may perhaps spirt off and fall on the table, or more unluckily still, on the floor. Let it be remembered that treading on incandescent lime is not a safe thing to do, save perhaps with the heel; neither is it at all times sufficient to put it out, and it may very easily cost the photographer a new sole to his boot, if not a burn on his foot. Let a cupboard with lock and key be also provided, and if the dark room be on the same floor so much the better.

Many forms of costly photo-micrographical apparatus are sold ready made, but I have hitherto found, after numerous additions and alterations, that the simple arrangement about to be described, which can be readily made by any carpenter, leaves little to be desired, and as I have had it in use some years, and have taken direct photographs with it to over 3000 diameters, I feel no hesitation in offering it to readers as certainly the cheapest form where real effectiveness is desired.

It is of the horizontal type which for general purposes is the most useful. Occasionally, however, a vertical form is wanted, and I shall describe the one I use and others in due course.

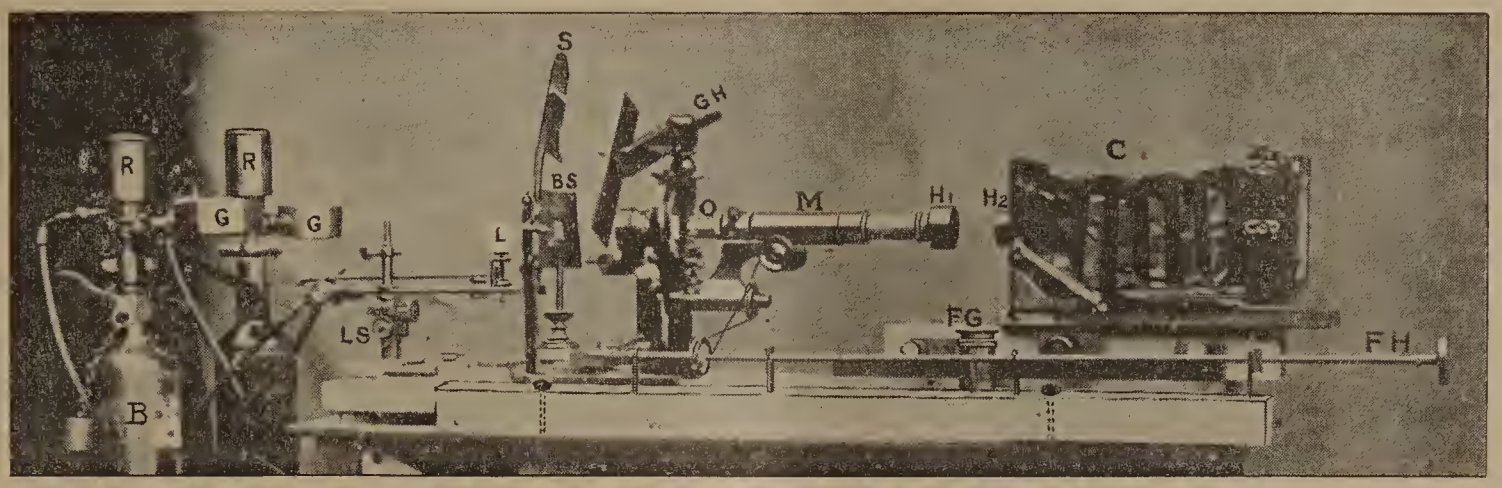
Description of the Apparatus.

Two blocks accompany the text, one showing the horizonta arrangement in elevation (Fig. 1) and the other in plan (Fig. 2). The same camera (C) is used, fixed upon its slide as described in the issue of May 21, but in this case the mahogany rails tapped for the three wooden screws are shown fixed to a broad piece of timber 1½ inches thick, 4 feet 6 inches long, and 9 inches wide, being attached to the table by firm metal screws passing through indiarubber washers. Projecting from the front of the camera, where the lens usually is fixed, is seen a small tube of brass (H2). It loosely fits into a larger tube (H1) seen attached to the microscope (M) when the camera is pushed up to take the photograph. The object of these two tubes fitting so loosely one in the other is to allow the microscope to be moved to and fro whilst focussing, without touching the camera. If properly made they should exclude all light. The microscope must be one of the best manufacture. I do not think it fair to individualise any special maker, because most well-known firms make instruments which are completely satisfactory for the purpose. Messrs. Watson and Sons have made a specialty of their Van Heurck microscope, whereas Messrs. Baker and Co., of Holborn, have introduced, at the design of Mr. Nelson, another very admirable form. Messrs. Swift and Son, too, have designed a most elaborate arrangement, I believe at the instigation of Mr. Pringle, but the instrument I employ with much satisfaction is the No. IA stand, manufactured by the firm of Zeiss. This has been in use for several years and I have little fault to find with it.

The leading points to bear in mind when choosing a microscope for photo-micrography may be summarised as follows:—The stand should be very heavy and well-balanced when placed horizontally. It should have a perfectly smooth coarse adjustment and one capable of taking up any loss of way which wear will inevitably produce in it. The fine adjustment should be as delicate as possible, and one which can be readily cleaned without necessitating the return of the instrument to the optician. There are several forms of fine adjustments in use, and each manufacturer thinks his own is the best, but it has appeared to me that whilst duly acknowledging the points of vantage each maker claims, that one frequently is apt to overlook those which turn out distinctly objectionable. Messrs. Watson and Sons claim, and very justly,

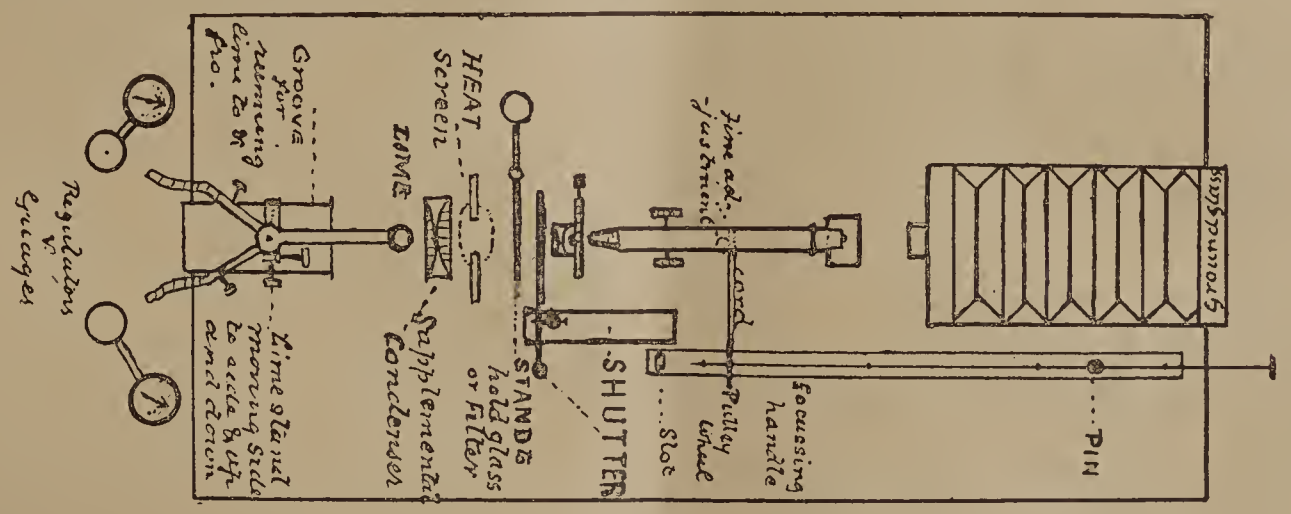
that their fine adjustment is exceedingly good, and it really must be admitted that there is little fault to be found with it; so far as personal knowledge there is none. But certain authorities, whilst approving very heartily of the excellence of the workmanship, disallow the principle upon which it is constructed, in common with all the modern forms, claiming that no principle is so good as that adopted by Powell and Lealand. The Campbell differential screw of undoubted excellence is advocated by the firm of Baker in Holborn, and the manner in which they turn it out in the Nelson model is simply excellent and well worthy of all praise. Critics even here think that the differential screw designed on purpose to give the most fine motion by the interaction of two screws of different threads overdoes its mark, and that it would be better if not so delicate. To this I entirely demur. It is my experience that the finer the movement the better, and I even obtained a screw of 200 threads to the inch from Messrs. Troughton and Simms to put in one of my microscopes for a special purpose.

In the microscope I at present employ, viz., Zeiss model IA, the fine adjustment is of the most excellent description, hard steel bearings taking all the wear—in my own case of no small amount—without any fault to find. The only exception I make in this otherwise excellent microscope is the great tendency of the fine adjustment to go "wrong," simply through the unsuitable lubricant used by the firm. Moreover, no directions are given as to cleaning, so the microscope may have to go abroad simply because the fine adjustment—in itself a most beautiful piece of workmanship—is temporarily disabled from the grease having set. I have known this to occur in two microscopes sent out by the firm, within a few days of their delivery. For the sake of those who use this firm's form of fine adjustment a description how to clean it is appended, which I have frequently done both for myself and others without a shadow of difficulty. It is a convenience to learn how to do this, for it is a most provoking experience just when in the act of photographing to find all operations must cease as the fine adjustment refuses to act. On the stem of the microscope underneath the divided head of the screw of the fine adjustment is seen on each side a small hole. A piece of soft steel exactly the size to fit these holes must be procured about 2 inches in length. Placing the pin in the hole, it is turned to the right, in the opposite direction to the hands of a watch; round and round, and the top comes off. Looking inside, a key screw will then be seen, which has to be undone by inserting a properly made key. A few turns in the same direction as the first screw and it is released and with it the spring. The body comes off and can be cleaned by passing through it a handkerchief several times. No lubricant I know of equals fine chronometer oil put on very thinly—tallow and wax, so often used, are abominable and turn green after but a short interval of use. Both the keys can be procured to fit at a trifling cost from Mr. Mason, optician, Park Road, Clapham.



ELEVATION.

Fig. 1.



PLAN

Fig. 2.

The mechanical stage must be well made and possess verniers, so that when objects are once found and noted they can be brought again into the field of view without any trouble. It is better for the stage to be capable of rotation about the axis of the microscope, and such motion is a great convenience, for at times

specimens are not placed upon the slide in a position favourable to photograph them without they are turned on their axes to the right or left. If no rotation of the stage is possible, the object itself has to be moved, which, when employing a high power, frequently causes it to pass out of the field of view, thus necessitating time and trouble to find it again. Should, however, the expense involved in having a rotating stage be thought undesirable, a mechanical one should always be obtained. Even this is costly, but that can be got over by employing one of the many forms of removable stages that are sold by most makers, which are not so costly. To a great extent these are all made after the Mayall model, which has one rack and one endless screw. None of these last so well as the ordinary type, for the endless screw soon shows sign of wear, and the loss of way rapidly becomes very annoying. To obviate that Messrs. Baker, of Holborn, have quite recently

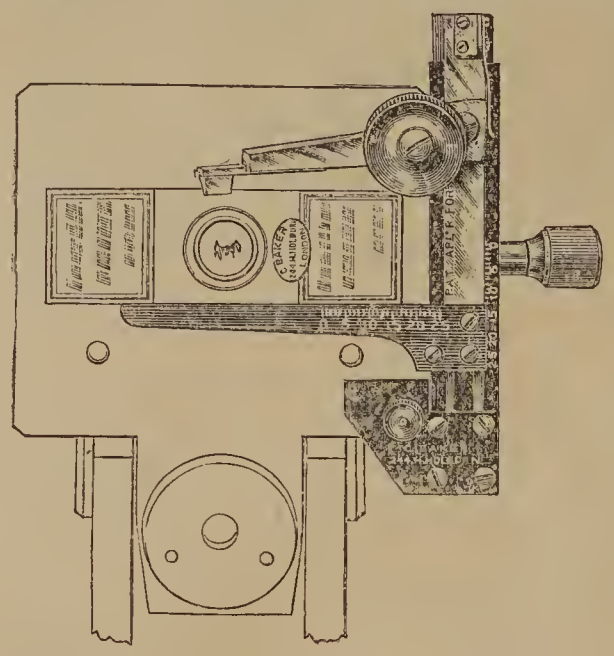


Fig. 3.—Baker's Removable Stage.

brought out a new model which only requires two screws to attach it to any ordinary stage. I have examined it carefully and can recommend it, as it seems likely to wear well, having no endless screw in its construction, and besides, it allows considerable movement in both directions, each of which is graduated to millimetres. Through the kindness of the firm a block of the arrangement is given herewith, which explains itself.

The condenser should rack up and down with ease and facility with the ordinary rack work, and if it should be provided with a fine adjustment the photo-micrographer, when dealing with very high power magnifications, will be the more satisfied This, I regret, is absent in the Zeiss microscope.

Continuing the brief general description of the apparatus, as shown in the diagram, we next come to the Bunsen holder (G H), which holds a piece of tinted glass in any position desired, or can be made to support one of Zeiss's colour screen troughs if necessary. We then see the brass screen (B S), already referred to, purposely turned slightly on its axis to show the central hole, which allows sufficient light to pass through from the lime to fill the condenser. A shutter (S), temporarily fixed in the air, is also shown, which conveniently shuts off or admits the light to the objective, as occasion requires. It is quite separate from the table, and can be removed at pleasure ; its foot is seen resting on the wooden base board. Between the screen and the lime (L) (which can be pushed to and fro with its jet and stand (L S) on a slide on the table) may be placed, when required, a secondary condenser, or paralliser, as it is sometimes called. The position is shown in the plan. It will be described in due course.

Lastly we come to the lime (L), supported on its jet, which, as before stated, was made by Beard. It is fixed to a stand (L S) by a thumb-screw and pin, as usual with lanterns. The piece of apparatus called the stand (L S) was designed to enable the lime to be moved to and fro, up and down, and from side to side, and was made by Mr. Mason, of Park Road, Clapham. I have used it with every satisfaction, and, as will be seen, it is of no small service when we come to centreing the light before taking the photograph. It will be fully described in its turn. The two gas bottles (B) with their regulators (R) and gauges (G) complete the figure, with the exception of the long arm focussing handle (F H). This is supported in somewhat a novel way, being attached to a square piece of wood, better seen when looking at the plan diagram. The pulley end is capable of movement laterally, turning upon the pin, also shown. When arranging the silken cord, passing from the fine adjustment to the pulley on the focussing rod, the piece of wood is brought near to the microscope, thus enabling the operation to be done quite easily. After it has been passed over both (the pulley and the fine adjustment screw) the wood is pushed away from the microscope and fixed there by a thumb-screw, just visible in the plan diagram at the foot of the exposure shutter, passing through the slot into the table. This method is convenient, as it enables any stretching of the cord be taken up as much as necessary.

(*To be continued.*)

SOME NOTES ON CRYSTALLOGRAPHY.

(*Concluded from page 532.*)

System 1.—The Monometric, Regular, or Cubic System.

In this form the axes are three, equal, and placed at right angles to each other, the most important forms being the cube (Fig. 7),

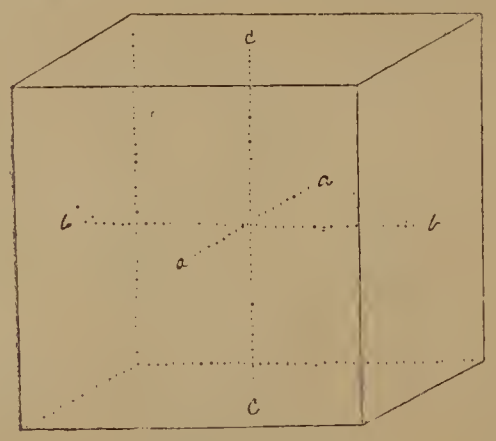


Fig. 7.—The Cube.

the regular octahedron (Fig. 8), and the rhombic dodecahedron (Fig. 9). The letters *a*—*a*, *b*—*b*, *c*—*c* show the termination of the axes.

This system has nine planes of symmetry, the three principal ones being at right angles to each other, and six others, which intersect one another at angles of 60°. Forms of this system possess the highest order of symmetry.

Examples of the cube may be well seen in common salt and iodide of potassium ; the opaqueness of the latter salt probably being due to the presence of a trace of carbonate.

Other examples of the cube are chloride and bromide of potassium, fluorspar, and disulphide of iron. Regular octahedra are the diamond, spinelle, and lead nitrate. When lead is melted and

partially allowed to solidify, on pouring off the portion of remaining liquid the metal is found to crystallise in the form of octahedra.

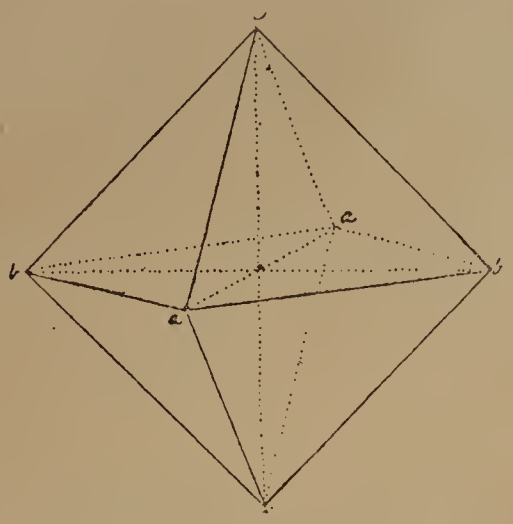


Fig. 8.—The Regular Octahedron

If a strip of zinc be suspended in a solution of lead the lead will

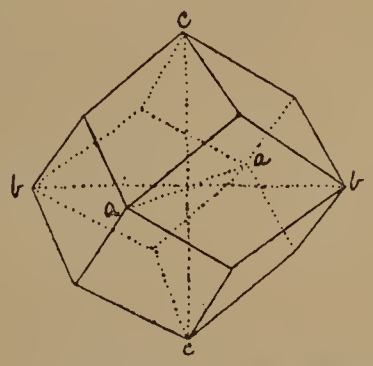


Fig. 9.—The Rhombic Dodecahedron.

be deposited in the form of arborescent crystals with a brilliant metallic lustre, showing the crystalline form very distinctly.

The crystalline form of the garnet is a rhombic dodecahedron.

System 2.—Dimetric, Quadratic, Tetragonal, or Prismatic Pyramidal.

These are symmetrical, about three axes at right angles to each other. Two only are of equal length, the third, *c*—*c*,

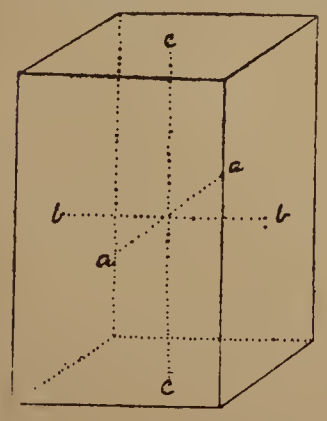


Fig. 10.—The Right Square Prism.

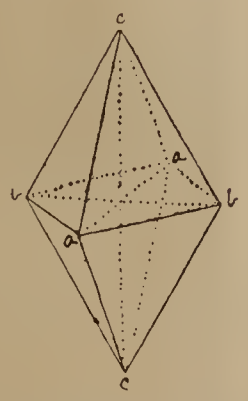


Fig. 11.—The Right Square-based Octahedron.

being longer or shorter. The most important forms are the right square prism (Fig. 10) and the right square-based octahedron (Fig. 11).

Native stannic oxide and yellow ferrocyanide of potassium are examples of this system.

These crystals have five planes of symmetry, one principal plane, normal to a vertical axis in the crystal, and four other planes at right angles to the principal plane and intersecting each other at an angle of 45°.

System 3.—Hexagonal or Rhombohedral.

Includes several forms, is characterised by four axes, three of which are equal, in the same plane, and inclined to each other at angles of 60°; the fourth axis is perpendicular to them all. The crystals have seven planes of symmetry, namely, one principal plane, normal to a vertical axis, and six other planes at right angles to the principal plane, and intersecting each other at angles of 30°.

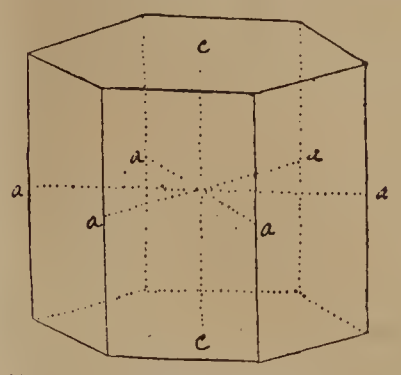


Fig. 12.—The Regular Six-sided Prism.

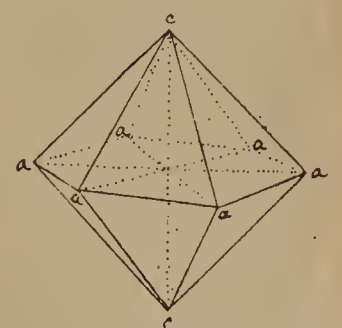


Fig. 13.—The Regular Double Six-sided Pyramid.

Nitrate of potassium crystallises in the form of regular six-sided prisms, and also in the form of small rhombohedral crystals isomorphous with sodium nitrate and calcspar.

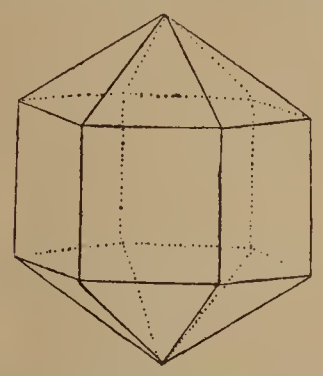


Fig. 14.—Crystal of a Common Form of Quartz.

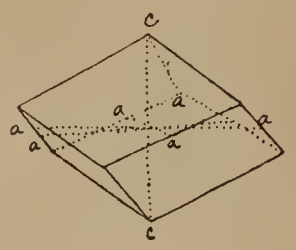


Fig. 15.—The Rhombohedron.

Quartz or rock crystal assumes the form of a hexagonal prism with pyramidal terminations, as Fig. 14.

Lead carbonate occurs naturally as cerussite in the form of transparent rhombs isomorphous with arragonite.

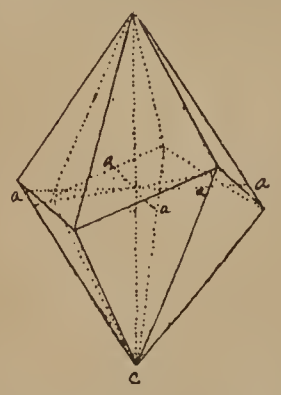


Fig. 16.—The Scalenohedron.

System 4.—Trimetric, Rhombic, or Right Prismatic.

This form has three axes of unequal lengths placed at right angles to each other. Rhombic sulphur is a good example of this variety. Fairly large crystals in this form may be obtained by allowing a solution of sulphur in carbon bisulphide to evaporate slowly.

Many substances assume this form: Potassium bicarbonate, chromate, sulphate (the two latter being isomorphous), ammonium

sulphate, barium sulphate, and white mundic. Magnesium sulphate crystallises in the form of colourless rhombic prisms isomorphous with zinc sulphate, but when deposited from a cold, super-

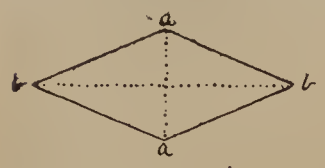


Fig. 17.

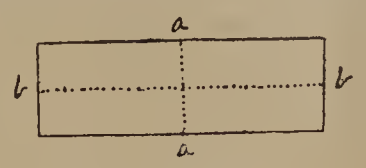


Fig. 18.

saturated solution, it forms prisms belonging to the monoclinic system, containing the same quantity of water of crystallisation; above 50° C., monoclinic prisms of the composition $MgSO_4 6H_2O$ are deposited.

SYSTEM 5.—THE MONOCLINIC OR OBLIQUE PRISMATIC.

These crystals have three axes of unequal length, two of which are obliquely inclined to each other, the other axis forming right angles to these two. The bases of these monoclinic forms are identical with those of the trimetric system. Sulphur fused and cooled, carbonate of soda, borax are examples of this system, as are also potassium carbonate, ferrous sulphate, sodium sulphate, and phosphate. Potassium chlorate crystallises in white tables belonging to this system; if a large crystal be examined it will exhibit fine iridescent colours.

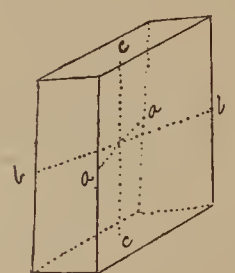


Fig. 19.

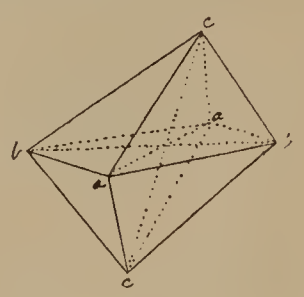


Fig. 20.

SYSTEM 6.—THE TRICLINIC OR DOUBLY OBLIQUE PRISMATIC.

The forms of crystals adopted in this system are very difficult to understand. There are three axes of unequal length, all obliquely inclined to each other. Sulphate of copper, potassium dichromate, and bismuth nitrate assume this form.

After considering the six systems a few diagrams will illustrate how one crystal of a certain system will pass to another form. I

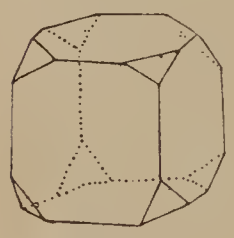


Fig. 21.

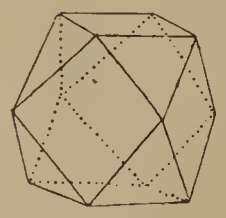


Fig. 22.

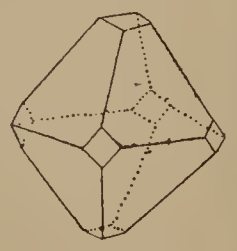


Fig. 23.

the crystal increases in size equally, it will naturally follow that its figure will remain unaltered, but should this increase be only partial, new matter being deposited unequally, but still obeying the laws of that particular system, other figures will be formed, but still having a certain direct geometrical relationship to the original.

If there be regular omissions of successive rows of matter from the cube at each solid angle while there is growth in another direction, it will be easy to conceive how the form of the cube may pass into the octahedron (Figs. 21, 22, and 23).

A tetrahedron may easily arise from the octahedron, and then the crystal assumes the form called a hemihedron, and is hemihedral to an octahedron.

A hemihedron has only half the planes which a symmetrical crystal of the type to which it belongs should possess.

The following diagrams show the passage of a octahedron to a tetrahedron :—

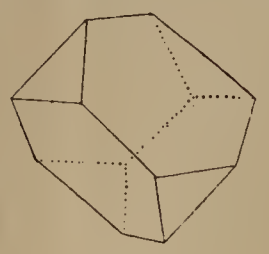


Fig. 24.

Fig. 25.

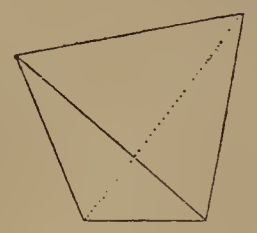


Fig. 26.

A hemimorphic crystal has two ends with dissimilar planes; that is to say, half the planes which surround a symmetric crystal occur quite independently of the other half, when the faces cannot be considered hemihedric. Hemimorphic forms always occur in combination with others. They possess the curious property of discharging, when heated, positive electricity at the analogous pole, and negative electricity at the antilogous pole, but when the crystal is cooled, the reverse action occurs.

TWIN CRYSTALS.—It often happens that during the process of crystallisation two crystals may unite, not in a parallel manner, but having one crystal plane common to both. These are symmetrical to some plane, which, however, is not a plane of symmetry for the single crystals. In the formation of crystals it has been shown that if some viscous substance be present, crystals which usually occur free are found to be united in the manner of twin crystals. This is supposed to be due to the motion of the molecules being retarded, through the partial parallelism of the molecules, but if the molecular forces have full time to act, a perfect crystal will result.

The imperfections of crystals are due to several causes, the chief being internal impurity, irregularity in their angles and surfaces, and distortion in form. The presence of a small quantity of sodium hydrate when crystallising sodium chloride will convert the crystals into the octahedral variety in place of the cubic form.

Crystals growing rapidly often enclose some of the mother liquor, which will alter their appearance. Occasionally it happens that the mother liquor upon one side of a crystal is not of the same density as that on the other, hence it is natural to conceive that growth will be greater on that side of the crystal surrounded by the solution of greater density.

DETECTION OF BORIC ACID IN MEAT.—Ten grammes of the minced material is triturated with four or five times its weight of calcined sodium sulphate. The mixture is dried on the water bath and then finely powdered with a little more dried sodium sulphate. The powder is then digested in the cold for twelve hours with 100 C.c. of methylic alcohol, with frequent agitation, and then distilled. The residue is treated with another 80 C.c. of methylic alcohol and again distilled until the total distillate measures 150 C.c. Fifty C.c. of this is mixed with 75 C.c. of water and 25 C.c. of glycerin, and titrated with semi-decinormal soda solution, using phenolphthalein as an indicator. On the appearance of a pinkish tint a little more glycerin is added; if it should not be persistent more standard alkali is run in. If borax is present as well it will be found in the residue, from which it may be extracted by filtering the methylic alcohol solution, evaporating, incinerating, and determining by the Hœnig and Spitz method.—*Rev. Chim. An.*, v., 468.

RESEARCHES ON CORYDALINE.*

BY W. HARRISON MARTINDALE, PH.D., MARBURG.

Professor E. Schmidt having proposed to me an examination of the tubers of *Corydalis cava*, with especial attention to decomposition products of corydaline, in consideration of the fact that our knowledge of *Corydalis* bases is still imperfect, it appeared of interest to study more closely the product of reduction of dehydrocorydaline and to compare its properties with those of natural corydaline. My researches on this point have demonstrated that the base formed from dehydrocorydaline by assumption of four atoms of H. possesses the same composition and the same melting point as natural corydaline, that it yields similar salts to those of the latter, with one or two exceptions, of which mention will be made later; but that this artificial base is completely inactive towards a ray of polarised light, that it is physically isomeric with natural corydaline.

I came into possession of various raw alkaloids and salts, as these had been left me by my predecessor, Ziegenbein, in work on corydaline. Further, a small quantity of an alkaloid bearing the name "corydalin crist" was given me. The latter, on examination, proved to be a mixture of corycavine and other alkaloids of higher melting points, as well as traces of bulbocapnine and corydaline. The melting point of this commercial corydaline, which it is true, was not of recent manufacture, lay between 180° and 184°.

It was purified by dissolving in dilute HCl, precipitating with NaOH and crystallising from 96 per cent. alcohol. The latter solution yielded small prismatic crystals melting at 210°. CO_2 was passed into the alkaline mother liquor and induced a crystalline precipitate melting at 215°. The melting point as well as the following colour reactions identified the body with corycavine.

1. Conc. H_2SO_4... dirty green, changing to brown.
2. Conc. HNO_3... red.
3. Conc. H_2SO_4 at 100°... dark green.

As, on the one hand, this commercial "corydalin crist" contained little or no actual corydaline, and, on the other hand, the preparations left by Ziegenbein were not in large enough quantities for the purpose of studying dehydrocorydaline in the direction stated, I decided to prepare corydaline myself from *Corydalis* tubers.

CORYDALIS CAVA (C. TUBEROSA, D.C.).

From 'Hortus Britannicus,' after 'Botanical Magazine.'

Reduced one-third.

I procured 20 kilos. of entire tubers from Rump and Lehners, of Hanover, and followed directions given by Freund and Josephi, the method being due to A. Ehrenberg.

Having been dried and powdered, the tubers were extracted in a Soxhlet apparatus with 96 per cent. alcohol for ten days. The alcohol was distilled off and an extract obtained of syrupy consistence. This was made alkaline with ammonia and shaken out twice with ether in separators. The combined green ethereal solutions were now transferred to a retort and the ether distilled off until the volume had been reduced to about one-half. This liquor was now allowed to evaporate spontaneously in shallow dishes, the following fractional crystallisations being obtained:—

I. The first crystals melted at 125°–130°.

II. The ethereal mother liqour on further evaporation gave yellowish crystals melting at 130°.

III. The volume of the mother liquor was again reduced by distillation; alcohol was now added to the extent of double the volume, and on evaporation a crust of crystals was procured possessing approximately the melting point of corydaline.

IV. Further shakings of the original ammoniacal extract with ether, after distilling off half of the latter, as well as

V. The mother liquor of IV. (evaporated further and treated with alcohol) yielded further quantities of impure corydaline.

VI. The original extract was repeatedly shaken with ether; the ethereal solutions having been mixed, the ether was partly distilled off, and crystals were formed melting at 136°.

By this means I obtained 180 grammes of corydaline. This process of fractional crystallisation was resorted to in order to separate the various alkaloids, Ziegenbein having previously procured on these lines from 20 kilos. of tubers: Corydaline, 114 grammes; bulbocapnine, 82 grammes; corycavine, 12 grammes; corybulbine.

The presence of a larger proportion of corydaline, and practical absence of the other alkaloids, was of great value in my case, as the sphere of my work lay in corydaline, and it enabled me to procure a large quantity of pure alkaloid by merely recrystallising from alcohol, using animal charcoal for the purpose of decoloration, without having to resort to tedious processes of separation.

Corydaline, when pure, melts at 134°-135°. My combustions lead me to consider $C_{22}H_{27}NO_4$ its correct formula. It turns yellow on exposure, due to oxidation to dehydrocorydaline, which latter may easily be removed by washing with alcohol.

Although many salts of corydaline have already been prepared I made and analysed several in order personally to compare them with the salts of inactive corydaline, and I found that in general the salts of the former are easily obtained with two exceptions—namely, the hydrochloride and acid sulphate.

The gold salt was prepared and was found to agree with Ziegenbein's formula

$$(C_{22}H_{27}NO_4 \cdot HCl)_2AuCl_3.$$

A normal salt

$$C_{22}H_{27}NO_4 \cdot HCl \cdot AuCl_3$$

is first formed but undergoes decomposition into the one mentioned. The platinum salt and sulphocyanide were also prepared and analysed.

From dehydrocorydaline hydroiodide $C_{22}H_{23}NO_4 \cdot HI + 2H_2O$, I prepared inactive corydaline. The best method of preparing the salt is to heat perfectly pure corydaline in alcoholic solution with an excess of iodine in strong stoppered glass bottles in a water bath for two hours. The quantities employed were corydaline, 5 grammes; iodine, 5 grammes; alcohol, 96 per cent., 100 C.c. The contents of the bottle are allowed to cool undisturbed before it is opened; the periodides will have separated in shining rosettes of crystals on the side, and as a brown mass on the base of the bottle. The periodides are then separated from the mother liquor, and excess of iodine is removed by treating with thiosulphate and sodium carbonate until a light yellow solution is obtained. The mother liquor is treated in a similar manner, and these solutions are allowed to crystallise; the hydroiodide separates in shining citron yellow needles. In

* *Résumé* of inaugural thesis for graduation in the Philosophical Faculty of the University of Marburg.

opposition to Ziegenbein, I find that the salt is comparatively easily soluble in water, especially on addition of a few drops of dilute sulphuric acid.

On reduction, dehydrocorydaline takes up four atoms of hydrogen, forming inactive corydaline. Ziegenbein obtained a body which he called "reduced dehydrocorydaline" by the action of zinc in dilute sulphuric acid upon acetone-dehydrocorydaline, but he did not examine the compound. I repeated this experiment and obtained a small quantity of the reduced base, but as the composition of the acetone compound is still uncertain, and as it is an unstable body I decided to employ the hydroiodide for the purposes of reduction, and I found that the latter salt yields better results.

Ten grammes of the latter was the quantity usually worked upon. This is placed in a 3 litre flask and heated on a steam bath with 1 litre of water and a little sulphuric acid; to finally aid solution a little alcohol may be added. A brisk evolution of hydrogen is now maintained for about a day in this solution by alternate addition of zinc (previously etched with platinic chloride) and sulphuric acid.

The solution, which should now be colourless, is allowed to cool, and is filtered, and the filtrate poured into strong solution of ammonia. The zinc hydrate precipitated redissolves, and the alkaloidal base separates as a flocculent mass on the surface, and may be easily collected, washed, dried, and recrystallised from alcohol. The mother liquor may be shaken out with ether, but contains little of the alkaloid. Inactive corydaline is tasteless, and much less sensitive to light than the natural base. The rotatory power of corydaline was found by Freund and Josephi to be $[\alpha]_D = +300{\cdot}1$.

A chloroformic solution of the reduced alkaloid which I obtained was now examined in Laurent's apparatus, and showed that it was completely inactive. Combustions proved that its composition was the same as that of natural corydaline.

The salts of inactive corydaline are much easier to obtain than the corresponding ones of the natural alkaloid. There exists a variety of small differences, but the principal one is in the gold salts.

I was unable to split up my inactive corydaline by means of the HCNS salt into the dextro- and lævo-rotatory forms. Investigations are now in progress at Marburg to determine whether this may be effected by means of the tartrate.

Dehydrocorydaline resembles berberine in forming an acetone compound. The compound is of a very unstable nature. Further similarity is seen in that they both form hexasulphides.

Action of Methyl Iodide on i-Corydaline.

Dobbie and Lauder obtained an additive compound with corydaline of the formula $C_{22}H_{23}NO_4CH_3I$. I have studied the action of methyl iodide on *i*-corydaline, and was able to procure an additive compound of similar composition to that described by Freund and Josephi of the active alkaloid, showing that the new base is also a tertiary one.

i-Corydaline methiodide was prepared by heating inactive corydaline in a stout glass stoppered bottle with an excess of iodide of methyl for two hours at water-bath temperature. The excess of methyl iodide was removed by distillation and the residue crystallised from alcohol.

i-Corydaline methyl chloride is easily prepared from the crystals so obtained by rubbing them into a paste with water and excess of chloride of silver. This mixture is heated on a water bath with gentle stirring until the reaction is complete. The chlorine body thus formed by displacement is apparently as soluble as that of the corresponding compound of active cordyaline.

The silver iodide formed and the excess of silver chloride were filtered off and the filtrate divided into four parts for the preparation of (1) the chlorine compound in crystals, (2) the gold salt, (3) the platinum salt, (4) free methyl-*i*-corydaline.

Analyses showed these to have the composition assigned to them in the tables published in my thesis.

Methyl-i-Corydaline.—According to Freund and Josephi, on addition of KOH to a solution of corydaline methyl chloride, the following reaction occurs:—

$$C_{22}H_{27}NO_4CH_3Cl + KOH = KCl + H_2O + C_{22}H_{26}(CH_3)NO_4.$$

The same equation illustrates what takes place on employing inactive corydaline methyl chloride. On addition of KOH to the above-mentioned filtrate a slight precipitate of the base occurred, but it was necessary to allow the alkaline solution to stand on a water bath some little time before the new compound was entirely thrown out in the form of oily drops. These then became hard and were collected and recrystallised from alcohol.

Methyl-*i*-corydaline melts at 224°, whereas Freund and Josephi's methyl-corydaline melts at 112°. Analysis showed that the two agreed in composition, the formula being $C_{23}H_{29}NO_4$.

Methyl-*i*-corydaline hydrochloride, $C_{23}H_{29}NO_4HCl + 3H_2O$; the gold salt $C_{23}H_{29}NO_4HCl{\cdot}AuCl_3$; and the platinum salt

$$(C_{23}H_{29}NO_4HCl)_2PtCl_4$$

were then prepared. A synopsis of the salts of corydaline and methyl-corydaline is given in my thesis for the purpose of comparison with those of inactive corydaline and methyl-*i*-corydaline.

Action of the Halogens upon Corydaline.

The action of iodine has already been mentioned. The decomposition which takes place may be represented by the equation—

$$C_{22}H_{27}NO_4 + 4I = C_{22}H_{23}NO_4HI + 3HI$$

Just as I was bringing my researches to a close Dobbie and Marsden* published a communication—Corydaline, Part V., and stated they had prepared dehydrocorydaline (originally discovered by Schmidt and Ziegenbein) by another process of oxidation, namely, by means of nitric acid. The salts mentioned in this communication had all been previously prepared by Ziegenbein.

Dobbie and Marsden propose the formula $C_{22}H_{25}NO_4$ for the base, as they still adhere to the formula $C_{22}H_{29}NO_4$ for corydaline.

They state that reducing agents convert dehydrocorydaline into optically inactive corydaline—a fact which I had discovered in November, 1896.

The action of chlorine upon corydaline was accidentally discovered by Dobbie and Lauder. A body of the formula $C_{22}H_{28}ClNO_4$ resulted.

The action of bromine on corydaline remained, therefore, for me to investigate.

A small quantity of corydaline was dissolved in chloroform, and to this solution a chloroformic solution of bromine was added until the former possessed a distinct odour of bromine. A yellow crystalline body was formed and was recrystallised from acetic ether, but the crystals obtained from the latter solution were not better defined than those from the original chloroformic solution.

On treating an absolute alcohol solution of corydaline with an alcoholic solution of bromine better results were forthcoming. It is necessary to operate with dilute solutions of each; the bromine solution being added drop by drop—a precipitate occurs which at first partly redissolves. On further addition of Br solution a bright yellow precipitate persists, becoming crystalline on standing. This was recrystallised from alcohol, and light yellow needles were produced of the formula $C_{22}H_{23}NO_4{\cdot}HBr$ – dehydrocorydaline hydrobromide.

The action is therefore analogous with that of iodine. This salt crystallises from water with four molecules H_2O. In order to characterise it further, the Br was replaced by Cl by means of chloride of silver, and from the hydrochloride formed, which showed on analysis the composition $C_{22}H_{23}NO_4{\cdot}HCl + 4H_2O$, the gold salt was prepared. This gold salt prepared by me had the composition $C_{22}H_{23}NO_4{\cdot}HCl{\cdot}AuCl_3$, and melted at 221°. That obtained by Ziegenbein, using the hydroiodide as starting point, melted at 219°, and possessed the same composition.

It will be observed that, before proceeding further, I recrystallised the precipitate at first formed on addition of alcoholic bromine to alcoholic corydaline solution. It did not seem to me probable that the hydrobromide was at first precipitated; indeed, I was of the opinion that there was an intermediary formation of a perbromide.

A fresh quantity was therefore acted upon in the way stated, and the precipitate at first formed was collected, washed, dried, and analysed in a Carius tube. The figures obtained agreed with the formula $C_{22}H_{23}NO_4{\cdot}HBr + Br_2$. This perbromide gives off its "perbromide" bromine on keeping. In endeavouring to estimate this latter volumetrically by means of an excess of KI solution, then adding an excess of volumetric thiosulphate, and finally titrating the unaltered thiosulphate with volumetric iodine solution, it was found that on running in the latter a brown flocculent precipitate was produced which completely concealed the end of the action. This occurred in two analyses. The body was therefore collected after standing a short time and was dissolved in boiling alcohol. The latter solution yielded yellow crystals, which were found to be dehydrocorydaline hydroiodide formed by an interchange between the bromine of the hydrobromide and the iodine of the volumetric iodine solution.

Proceedings Chem. Soc., 179, 101.

Pursuing the methods given by Dobbie and Lauder as closely as practicable, I found that the oxidation products of corydaline were difficult to extract from the precipitated hydrated peroxide of manganese by means of boiling water as they suggest. I divided the filtrate from this manganese precipitate, and treated each separately. The former was evaporated to dryness on a water bath after having been slightly acidulated with dilute sulphuric acid. The residue was then extracted with alcohol.

The manganese precipitate was suspended in water and SO_2 passed through it. This served two purposes—the peroxide was dissolved, forming a clear solution, whilst the organic matter was precipitated. The latter was crystallised from alcohol.

Corydalinic acid is said to be insoluble in ether, whereas hemipinic acid is soluble. The alcoholic mother liquors were therefore evaporated to dryness and extracted with ether. To the filtrate from the body precipitated by SO_2 a small quantity of sulphuric acid was added, and the whole evaporated to dryness on a water bath, and the organic matter extracted as before.

In short, all was done to possibly separate any acids formed and to purify them by treating with animal charcoal.

The mother liquors were each treated separately, on the principle of fractional precipitation, with lead acetate and these precipitates decomposed with H_2S.

Flat rosettes of crystals were thus obtained of yellowish colour with melting points 155°, 157°, 175°, 177°.

It appeared to me that what was before me was hemipinic acid in its various modifications. The following facts led me to conclude that this was indeed the case.

1. The crystals contained no nitrogen.

2. The varying melting points. Dobbie and Lauder's hemipinic acid melted at 174° – 175°. They state, however, that they often observed a difference of 10°. That procured by Schmidt and Schilbach from berberine melted at 160°-161°. Wegscheider's acid melted at 175°-179°. Beckett and Wright's at 182°.

3. As nothing definite could be concluded from these melting points I prepared the anhydride of the acid according to directions of Mathiessen and Wright and also of Schmidt and Schilbach.

The formation of the anhydride is expressed by the following equation :—

$$C_6H_2\begin{cases}(O\cdot CH_3)_2\\COOH\\COOH\end{cases} = H_2O + C_6H_2\begin{cases}O(CH_3)_2\\CO\\CO\end{cases}>O$$

Although the acid itself melts so indefinitely, its anhydride has a constant m. p. 167°.

The anhydrides I prepared agreed exactly in melting points with this figure. I observed also the blue fluorescence of the alcoholic solution of the anhydride mentioned by Schmidt and Schilbach.

4. For further confirmation these anhydrides were tested for N. None was present.

5. Characteristic to orthohemipinic acid is further the rufiopin reaction (tetraoxyanthrachinone, $C_{14}H_4(OH)_4\rangle O_2$).

The latter is formed by treating hemipinic acid with H_2SO_4 at 180°, and forms red needles soluble in alkalies with violet colour.

The samples of my acid (both low and high melting ones) gave this reaction. The identity of the hemipinic acid obtained from corydaline with that from berberine, hydrastine, narcotine is therefore clear.

In spite of the exhaustive work of Dobbie and Lauder, I can only conclude, in recognition of my own, that the existence of corydalinic acid requires further corroboration. This acid which sublimes without decomposition and is "tetra basic" may perhaps be a mixture of hemipinic acid and a trace of a body containing nitrogen; as it is, in itself, improbable that a tetra basic acid should sublime without decomposition.

Furthermore there is a concordance between the composition of corydalinic acid and its salts (taking their own data into account), and that of hemipinic acid and hemipinates.

Action of Potassium Permanganate on Corydaline in Cold Sulphuric Acid Solution.

In order to ascertain any possible resemblance between corydaline and papaverine the former was oxidised on similar lines to those employed by Goldschmidt in obtaining papaveraldine.

A small quantity of corydaline was dissolved in just sufficient 1/10 N sulphuric acid as was necessary to form the acid salt, and a 2 per cent. solution of potassium permanganate was added until, on being allowed to stand, the violet colour persisted.

The excess of permanganate having been removed by SO_2, the manganese precipitate was collected and washed and then extracted with boiling alcohol. This hot alcoholic solution, which was marked by a fine blue green fluorescence, threw out small yellowish-white opaque scaly needles on the sides of the vessel. After purifying by recrystallising from alcohol this body was examined as follows :—

It melted at 145°, and formed an almost neutral solution in hot alcohol.

Examined for nitrogen, a distinct Berlin blue reaction was obtained, which was not due to the presence of unaltered corydaline.

A combustion gave results only approximating to a hypothetical corydaldine.

Examined to determine whether the body possessed any basic properties whatever :—

1. The endeavour to form a hydrochloride failed. The body was only very slightly soluble in hot dilute HCl. Complete solution of the quantity taken for the formation of the salt did not occur. That portion which dissolved was again thrown out on cooling, and contained no chlorine.

2. It did not form a gold salt either in aqueous or alcoholic solution.

3. Platinic chloride gave no precipitate, even on long standing.

These results showed that the body in question possessed little similarity with papaveraldine.

SELECTED FORMULÆ.

Gilding Copper Articles.

The following paste is spread on evenly after the articles have been washed free from oxide :—Dissolve potassium cyanide, 30 grammes, in a little distilled water add sodium gold chloride, 10 grammes, then purified potassium carbonate in finest powder, 6 grammes, and finally precipitated chalk, 55 grammes. Add sufficient water to form into a soft paste. After the articles are satisfactorily coated, rinse several times in clear water, and dry them in sawdust.—*Pharm. Centr.*, xxxviii., 541.

Liquid Tar Soap.

Roderfeld gives the following formula for a liquid preparation of coal tar :—

Soft soap	300 grammes.
Glycerin	200 ,,
Liquor carbon. deterg.	50 ,,

Digest these on the water bath until the alcohol is entirely evaporated. When cold mix with :—

Oil of mellissa	60 gtt.
,, geranium	30 ,,

Set aside and filter in hot water funnel.—*Pharm. Centralh.*, xxxviii., 543.

Aqua Alkalina Effervescens.

Jaworski gives this name to a mixture containing in 1 litre of water, impregnated with carbonic acid, sodium bicarbonate, 8; sodium salicylate, 2·5; and sodium biborate, 1 gramme. The water is prescribed for acute acidity of the stomach. Dose, a tumblerful in the morning. A weaker preparation of the same ingredients is given in doses of a tumblerful after each meal.—*Zeit. d. Allg. Oest. Apoth. Ver.*, li., 600.

Application for Mange.

Issleit recommends the following application, which he calls scabinol, for mange in the dog :—Sapo mollis, 4; β-naphthol, 1; styracis, 2; tobacco extract, 3. To be applied to one-third of the skin at the most for three consecutive days. After three applications wash the whole of the body with dilute scabinol (a tablespoonful to a quart of water). Several hundred dogs have been cured by this treatment in the Geissen vetérinary clinic.—*Vet. Rec.*, x., after *Journ. Med. Vet. and Zoot.*, 372.

Resorcin Hair Tonic.

Salicylic acid, gr. 15; resorcin, ℥ss.; tinct. cantharidis, ℥ss.; tinct. capsici, ℥i.; saponin, ℥i.; lanolin, ℥i.; aqua rosa ad, ℥x. Melt the lanolin; dissolve the saponine in one ounce of water, and mix with the lanolin. Dissolve the other ingredients in the spirit and rose water; then mix.

NOTICES OF BOOKS.

THE 'EXTRA PHARMACOPŒIA,' by Martindale and Westcott (London: H. K. Lewis. 10*s.* 6*d.* n.) comes fresh from the press in its ninth edition, very close on the heels of the British Pharmacopœia, 1898, in accordance with which the smaller book has been duly revised. The revision, coupled with the numerous additions rendered necessary by the progress of medicine and pharmacy, has increased the number of pages from 581 to 626, but that has not involved any apparent increase in the size of the book. At the beginning there are several pages devoted to weights and measures, in which an attempt is made to facilitate the adoption of metric doses, and a table is given of approximate equivalent doses in terms of the Imperial and metric systems. Whether such doses as 0·00065 Gm. (1/100 gr.) and 0·03 C.c. (1/2 M.) will prove thinkable quantities to prescribers may well be doubted, but they are given here with many others in a table that is at least easy to refer to. A synopsis of the principal changes in British Pharmacopœia follows, and of the subsequent pages every one bears evidence of very careful revision, whilst most include important additions. One very prominent feature in the monographs is the expression of all doses in metric, as well as Imperial equivalents. As might be expected, the section on coal-tar derivatives is extended, but not largely so. Alcohol, aloes, aurantium, coca, and digitalis are the headings of the monographs that bear most marks of alteration, and the thorough manner in which all derivatives and subderivatives are dealt with is worthy of special note. The useful section on antitoxins, following the secondary list of drugs near the end of the book, has been greatly extended, serotherapy being treated by Dr. Westcott in a much fuller manner than formerly. Organotherapy has also assumed a much greater importance, relatively speaking, than formerly, whilst the appendix has grown and the indexes have not remained unaffected by the progressive spirit, a new and useful list of antidotes, for example, occupying nearly a page. In fact, the book bears evidence of the most thorough revision from cover to cover, and this best of all pocket works of reference for medical men and pharmacists is accordingly rendered better than ever.

'THE DETERMINATION OF SEX,' by Dr. Leopold Schenk (London: The Werner Company, Cockspur Street. 5*s.*) is the English translation of a work that has excited considerable attention in the world. As the author expresses it, he has made an effort to snatch a secret from Nature, and as a result of his investigations he has arrived at the conclusion that if a woman be dieted according to a method which he describes, "she can reach a stage in which she becomes sexually superior to the man, and her offspring will then be male, in accordance with the law of the cross-heredity of sex." In other words, Dr. Schenk thinks he has discovered how to secure that male rather than female children shall be born at will. The treatment recommended must be commenced some time before impregnation, and consists in giving the individual a highly nitrogenous diet with fat, adding only so much carbohydrate as is absolutely necessary to prevent its want being felt. But for details of the method, readers must be referred to the book itself. Suffice it to say that Dr. Schenk finds there is a tendency for sugar to be present in the urine of women when bearing female children, the saccharine contents sometimes reaching a remarkable quantity, though they cannot be diagnosed as indicating an unhealthy condition. The reverse is said to be the case when male children are borne, and it is therefore assumed that "a ripe fertilisable ovum in the ovary of a woman whose urine habitually contains sugar has a tendency, when the proper conditions are supplied, to develop into a female." By regulating the diet so that the sugar disappears, Dr. Schenk proposes to change that tendency and cause the ovum to develop into a male, and he gives particulars of several instances in which his method was apparently successful. So far, however, it has not been found possible to exercise any influence over an alteration in the course of development of the ovum, such as would occasion the birth of a female. Whilst, therefore, according to Dr. Schenk, boys can be produced at pleasure, girls will only come at their own sweet will. The book consists in great measure of an excellent summary of theories that have prevailed from the earliest periods, on the subject of which it treats, and it will therefore be found interesting, even if the author's arguments should not prove convincing. The volume is well printed, of a convenient size, and may be expected to have a wide circle of readers.

A NEW POISONS BILL.

The following is the text of a Bill for regulating the sale of certain poisonous substances not at present scheduled under the Pharmacy Act, 1868. The Bill was introduced into the House of Lords by the Duke of Devonshire, Lord President of the Council, on Monday, June 13, and read a first time.

A BILL

INTITULED

AN ACT FOR REGULATING THE SALE OF CERTAIN POISONOUS SUBSTANCES. A.D. 1898.

BE it it enacted by the Queen's most Excellent Majesty, by and with the advice and consent of the Lords Spiritual and Temporal, and Commons, in this present Parliament assembled, and by the authority of the same, as follows:—

Regulations as to sale of poisonous substances in schedule.

1.—(1.) No person shall sell any substance which is mentioned in the schedule to this Act, and which is not for the time being deemed to be a poison within the meaning of the Pharmacy Act, 1868, unless the box, bottle, vessel, or package in which the substance is contained, and also any external wrapper or cover, are distinctly labelled with the name of the substance, and with the word "Poison," and with the name and address of the person selling the substance.

(2.) Provided that if the substance is supplied for internal use by a legally qualified medical practitioner or by a pharmaceutical chemist or chemist and druggist, and the ingredients of the substance and the name of the person by whom it is supplied are entered in a book kept by that person, the words "To be used with caution" may be substituted for the word "Poison."

(3.) The Privy Council may make regulations as to the keeping and selling of substances mentioned in the said schedule, and all such regulations shall be laid, as soon as may be, before both Houses of Parliament.

(4.) The Privy Council may from time to time, by order, amend the said schedule by adding any substance thereto, or removing any substance therefrom, and references in this Act to the said schedule shall apply to the schedule as so amended.

A.D. 1898.

(5.) If any person contravenes any of the provisions of this Act, or of any regulation made thereunder, he shall be liable on summary conviction to a fine not exceeding five pounds, or in the case of a second or any subsequent conviction not exceeding ten pounds.

(6.) In the application of this section to Ireland, the Lord Lieutenant in Council shall be substituted for the Privy Council, and references to the Poisons (Ireland) Act, 1870, shall be substituted for references to the Pharmacy Act, 1868.

33 & 34 Vict. c. 26.

Power to prescribe regulations as to poisons, 31 & 32 Vict. c. 121.

2. The power exerciseable under section one of the Pharmacy Act, 1868, by the Council of the Pharmaceutical Society, with the consent of the Privy Council, of prescribing regulations as to the keeping, dispensing, and selling of poisons, may be exercised also by the Privy Council, and that section shall have effect accordingly.

Commencement and short title.

3.—(1.) This Act shall come into operation on the first day of January one thousand eight hundred and ninety-nine.

(2.) This Act may be cited as the Poisonous Substances Act, 1898.

SCHEDULE. A.D. 1898.

Butter of antimony.
Carbolic acid.
Chloride of zinc and its solutions.
Cresylic acid.

Hydrochloric acid, Nitric acid, Sulphuric acid — unless diluted in manner prescribed by the British Pharmacopœia for the time being in force.

Sugar of lead and other salts of lead.

Preparations of carbolic or cresylic acid or their homologues used as disinfectants and containing more than ten per cent. of any of them.

Substances sold for the purpose of poisoning insects or vermin.

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REGULATION OF THE SALE OF POISONS.

FROM the diversity of opinions expressed and suggested when the Pharmacy Acts Amendment Bill was discussed in the House of Commons last week, it may be expected that no little difficulty may be experienced in satisfying the desires of all persons interested in the regulation of the sale of poisons. That considerable interest is taken in this subject may be inferred from the discussion which then took place and from the circumstance that it was introduced in connection with a Bill which does not bear upon the sale of poisons in the least degree, or relate to that subject otherwise than by the perhaps unfortunate association existing between the practice of pharmacy and the retailing of certain articles which the Legislature has declared to be poisons, and therefore requiring to be supplied only by persons possessing adequate knowledge of their properties. But though in regard to the real object of the Bill before the House, the discussion which took place was strangely irrelevant, it was in itself very interesting, for it showed that the speakers were, in most instances, influenced by partial considerations of the subject, and in a manner that would lead to directly opposite conclusions.

Thus, for instance, while Dr. CLARK appeared to regard the existing legislative provisions by which the sale of poisons is controlled as operating in restriction of trade and constituting an objectionable monopoly in favour of a particular class of traders, Mr. CHANNING and Mr. BURNS appeared to be of opinion that, for the sake of public safety, the provisions of the law now in force should be much more stringent and that, even within the limits now recognised by the law, the facilities afforded for obtaining poison are far too great. These differences of opinion expressed by members of the House of Commons no doubt represent similar differences on the part of the public, who are very often mainly impressed by their individual experiences. A person whose friend or acquaintance has been poisoned will consider the regulations affecting the sale of poisons too lax, while another who has had some difficulty in obtaining a supply of laudanum in a strange place will be equally dissatisfied with them as being unduly obstructive. Dr. CLARK's idea that the sale of poisons should be restricted only so far as they are applied to medicinal purposes would, if acted upon, leave but little protection against accidental or criminal poisoning, and as Dr. FARQUHARSON and Mr. CHANNING pointed out, the proposal to authorise the sale of poisons on the excuse of their being wanted for agricultural purposes involves a very dangerous principle.

In addition to the discordance of opinions as to the regulation of the sale of poison, there is evidence of a great want of acquaintance with the provisions of the existing law. Thus, for example, Dr. CLARK spoke of potassium cyanide as a poison on the sale of which there is no check, and his equally erroneous statement that any person could, by giving a fictitious name, obtain as much poison as would kill every Member of the House of Commons is another indication of the same defect. Newspapers in the same way show ignorance on the part of writers on this subject, and consequent inability to comprehend its importance. For example, one of the London evening papers described the Bill before the House of Commons last week as "a measure to restrict the sale of poisons," over which the members "had a bit of fun," in consequence of its being supposed to upset the shipbuilding interest and the agricultural interest. The *Manchester Courier* regrets that the Bill has passed the third reading because it makes no suggestion towards remodelling the conditions imposed under the Sale of Food and Drugs Act (*sic*) for the dispensing of poison, or dealing with "the scandalous state of the law in this direction." An editorial note in the *Newcastle Daily Chronicle* speaks of the Bill apparently under impressions produced by what was said in the House of Commons on Wednesday, and the inference is drawn that the Bill aims at strengthening "the druggists' monopoly" by imposing further restrictions upon the freedom of other tradesmen. The opinion is expressed that recent prosecutions show a desire on the part of chemists to extend their rights at the expense of other traders. These expressions evidently show that the writer does not understand the nature of existing legislation or its objects. To describe the existing restriction of the retail sale of poison as "the druggists' monopoly" is directly opposed to fact, since that restriction was established solely in the public interest, and the demand for an extension of the poison schedule now made by Dr. CLARK and other members of Parliament is obviously based upon the assumption that the existing restriction does not in that respect go far enough to afford protection to the public.

THE GOVERNMENT POISONS BILL.

THE Bill introduced into the House of Lords by His Grace the Duke of Devonshire is a renewed expression of the opinion that—in regard to carbolic acid and the other poisonous articles included in the schedule to that Bill (see page 574)—protection of the public does not require that the sale of those articles should be restricted to persons possessing certified technical skill and knowledge. That view is to some extent opposed to the principle embodied in the Pharmacy Act, 1868, and is more in accord with Dr. CLARK's contention that restrictions should apply to poisons only in so far as they are employed for medicinal purposes. The Bill, while proposing to leave the sale of poisonous articles as it is—open to any person—imposes the regulation that such articles shall be labelled poison by the vendor, but it makes no provision for administration, nor does it specify how the penalties incurred by contravening its provisions are to be enforced. As it stands the Bill will probably fail to satisfy either those who demand increased restrictions for the safety of the public, or those who desire relaxation of the law by which the sale of poisons is now controlled.

ANNOTATIONS.

THE PHARMACY ACTS AMENDMENT BILL was introduced in the House of Lords on Thursday, June 9, after passing its third reading in the House of Commons, and on the motion of the Earl of Morley (Chairman of Committees) it was read a first time. It is now down on the paper for second reading.

THE NEW POISONS BILL, so long expected, has come at last, and its provisions should afford interesting reading to chemists and druggists. For a Government Bill it is fairly colourless, and it is open to doubt whether chemists would suffer any hardship if it became law as it stands, considering that they now voluntarily do all that it stipulates should be done At the same time it will require that serious attention which should be devoted to all measures intended to modify the provisions of the Pharmacy Acts. The general effect of the Bill, if it became law, would be to render the sale of any articles in the schedule a penal offence, unless they are distinctly labelled, as poisons in Part 2 of the schedule of the Pharmacy Act are now required to be. But the sale would not be otherwise restricted—grocers, drapers, or anyone else could sell the articles as at present, except that they must be properly labelled. To that extent the public might be better protected than at present, though it may reasonably be contended that labelling alone cannot obviate the risk of danger so effectually as restricting the sale of such articles to competent hands. It may also be suggested that the difficulty with regard to poisonous substances supplied for internal use by medical practitioners or chemists would not be met by the substitution of the words "To be used with caution" for the word "Poison," as it is essential in many cases that the patients should not be aware of the dangerous nature of the medicine they are taking.

THE SECOND CLAUSE OF THE BILL, it will be observed, is designed to empower the Privy Council to prescribe regulations as to the keeping, dispensing, and selling of poisons, to be enforced under the Pharmacy Act, 1868, such as the Pharmaceutical Society has hitherto been content to recommend. As to the Schedule, the only item in the list to which serious objection can be taken is the last—"Substances sold for the purpose of poisoning insects or vermin." For substances sold for such a purpose may not necessarily be poisons within the meaning of the Bill, and it would hardly be reasonable to deem a substance—such as camphor, naphthalin, or ordinary insect powder—poisonous when sold for one purpose and not when sold for another. But, if it be seriously intended to proceed with the Bill, considerable modification of its clauses may be anticipated. For the present, therefore, it will suffice to direct attention to those clauses and await developments.

THE LONDON UNIVERSITY BILL has passed its second reading in the House of Commons, and been referred to the Standing Committee on Law. The opponents of reform did their best to prevent the progress of the measure, but the weakness of the opposition was revealed by the fact that the task of moving the rejection of the Bill was moved by Mr. Harwood, a graduate who has hitherto taken no part in university politics, whilst no more distinguished seconder could be found than Mr. Yoxall, who made himself slightly conspicuous in connection with the Pharmacy Acts Amendment Bill, and whom the *Times* describes as "a most respectable and estimable Member of the House, who has been connected throughout his career with teaching in elementary schools," which hardly seems the best method of qualifying as a university reformer. But to return to the amendment; it received so little support that its mover and seconder did not care to go to a division, and the obstructive tactics of certain graduates of the existing University failed to produce any effect for once. If the Government will only persist with the Bill, there need be no difficulty in passing it this session, and London will then be within measurable distance of having a real University at last.

THE OBJECTIONS TO THE BILL brought forward by Mr. Harwood, Sir John Lubbock, and others, were easily disposed of by Mr. Bryce and Mr. Haldane, who, as the *Times* points out, have both a thorough knowledge of the conditions and requirements of University education. Mr. Bryce pressed the point that the members of Convocation of the University of London should not be endowed with rights of which Parliament deliberately, and for good reasons, deprived the graduates of the old Universities of Oxford and Cambridge. In Oxford and Cambridge the members of Convocation were deprived by Statute of their legal right of veto on measures which directly touched vested interests of every kind. No such interests, observes the *Times*, exist in the University of London, except a sentimental reluctance to have any change made in the examinations by which degrees are given, and, as those examinations have been repeatedly and radically changed during the past half century, the hollowness of the protest is evident.

IN THE HOUSE OF LORDS, on Tuesday, the Earl of Mayo presented a petition from the Pharmaceutical Society of Ireland, asking that, in the Companies Bill now before Parliament a clause may be inserted to the effect that no company may be registered to do acts for which a course of education and examination are required to qualify, unless each member of the company is qualified. Such a clause would be only fair and reasonable in the public interests, but whether it is likely to be inserted is not so certain.

THE QUESTION OF FOREIGN PATENTEES came up in the House of Commons on Tuesday, when Captain Philpotts asked the President of the Board of Trade whether he had considered the report made by the referee appointed to inquire into the matter of Levinstein *v.* Farbwerke vormals Meister, Lucius, and Brüning, and whether, on its consideration and on a general review of the way in which foreign patentees occasionally availed themselves of the monopoly conferred by a patent in this country, and of the difficulties with which British manufacturers had to contend in order to obtain licences under the patents of foreigners not *bonâ fide* working them in this country, he was prepared to propose any legislation on the subject or to adopt some other means of removing the grievance complained of. Mr. Ritchie replied that the report referred to is still under consideration. He was not prepared at present to make any statement as to legislation, or to admit that the existing law as to compulsory licences cannot be made to work satisfactorily, but he could assure his hon. friend that he was sensible of the importance of the question in its relation to the rights and obligations of patentees, both British and foreign, and he should carefully watch the working of the provisions of the Patent Act. Captain Philpotts further asked whether the hon. gentleman could say when the report would be presented, and in reply, Mr. Ritchie stated that the report was a very important one, and contained many suggestions which requires consideration, but he hoped its presentation by the Board of Trade would not be delayed for more than a few days.

The Library Regulations of the Pharmaceutical Society were altered last week in such a way as should commend itself to all "Associates" and "Students" of the Society. Heretofore it has been necessary for all subscribers, other than "Members" or "Associates in Business," who desire to borrow books, to present a recommendation from a member or associate in business, who was held responsible for the safe keeping and return of such books. Now, however, that restriction has been abolished, and the ordinary "associate" or "student" may borrow books, in accordance with the regulations, as freely as other subscribers, and entirely on his own responsibility. Those who have not yet taken advantage of the privilege of borrowing books from the Library have now no excuse for not doing so, the more especially as the outward carriage is defrayed by the Society in the case of all subscribers residing out of London.

The Herbarium Silver Medal, annually offered by the Council of the Pharmaceutical Society to subscribing "Students" of the Society who are under the age of twenty-one years, is awarded for the best herbarium, containing not more than one hundred and fifty specimens, collected in any part of the United Kingdom, the Channel Islands, or the Isle of Man, between January 1 in one year and July 1 in the year following. The time is rapidly approaching for collections to be sent in for this year's competition, as they must be received by the Registrar of the Society not later than Friday, July 1. Intending competitors will therefore please note.

Professor Dewar has replied in an effective manner to Dr. Hampson's charge of having utilised without acknowledgment an idea of his, conveyed through a third party, in a paper on the liquid hydrogen jet, published in 1895. "Such a suggestion," observes the Professor, writing to *Nature*, "is absolutely without any foundation in fact." His results, he contends, would have been attained had Dr. Hampson never existed, just as they have been developed, and that individual has in no way contributed directly or indirectly to the success of the hydrogen experiments. Dr. Hampson is also said to be the only inventor or investigator who has not in a straightforward way approached Professor Dewar directly in such matters. The paper of 1895, on gas jets containing liquid, appears to have been a fruitful source of recrimination, as no less than three patentees of low temperature apparatus—viz., Solvay, Linde, and Hampson—have each recognised in its contents part of the essential subject-matter of their respective patents. But the Hampson patent, according to Professor Dewar, was not published before April, 1896, and the first exhibition of the working apparatus took place towards the end of March of the same year; or some three months subsequent to the Professor's Chemical Society paper. Mr. Hampson declares in his letter that he "*was afterwards the first in this country to liquefy air and oxygen without employing other refrigerants.*" In the much-quoted paper of 1895, however, the following passages occur :—"With such a simple apparatus and an air supply at 200 atmospheres, *with no previous cooling*, liquid air begins to collect in about five minutes, but the liquid jet can be seen in between two and three minutes." "In the above experiments air is taken *at the ordinary temperature*, which is a little above twice its critical temperature, and is partially transformed in a period of time, which in my experiments has never exceeded ten minutes, simply and expeditiously into the liquid state at its boiling point—194°, or a fall of more than 200° has been effected in this short period of time." With these quotations Professor Dewar concludes what appears, on the face of it, to be a very complete refutation.

The President of the Royal Photographic Society, the Earl of Crawford, entertained a large gathering of the members of that Society and their friends at a conversazione, held on Tuesday evening, at the Grafton Galleries, London. The visitors were able to inspect the fine collection of ancient MSS. and ancient volumes in metal and ivory bindings, which his Lordship, as President of the Bibliographical Society, has arranged in the galleries for exhibition during the remainder of the month. The visitors were received by the Earl of Crawford in person, and by ten o'clock the rooms were filled with ladies and gentlemen, who enjoyed the intervals of conversation and music between studies of the well-arranged lines of cases containing the exhibits, which exceeded two hundred and fifty in number, and were carefully and completely described in the souvenir catalogues.

The Dispensers of the London Asylums have presented a petition to the London County Council, in which they urge their claim to a consideration of their position, the duties they are called upon to perform, and the remuneration offered for their services. An extract from the recent address by Dr. MacNaughton-Jones is quoted in support of the dispenser's claim to special consideration, and figures are given to show that the salaries paid to the petitioners are much below those received by dispensers at the principal London hospitals, by compounders in the Poor Law service, and by qualified assistants in pharmacies. It is urged, therefore, that in view of the responsibility of the positions occupied by the dispensers of the London Asylums, the technical nature of their duties, and the pressure under which those duties are carried out, the salaries at present paid do not afford adequate remuneration for the services rendered. Inasmuch as the satisfactory performance of a dispenser's duties requires that he should not be worried by pecuniary difficulties, the hope may be expressed that the request embodied in this petition may be met in the reverse of a mean spirit, and the attention of pharmacists on the London County Council is specially directed to the matter.

Registration of New Companies proceeds apace, and pharmacists are not free from the tendency to register their firms under the Companies Acts. Amongst firms who have just availed themselves of registration under the Acts is that of Messrs. Reynolds and Branson, wholesale and retail chemists, Leeds. The company is a private one, and the present partners take the whole of the share capital, whilst retaining the direction of the business as previously. The business was founded so far back as 1816 by Mr. Wm. West, F.R.S., was continued by Harvey, Reynolds and Co., and later by Reynolds and Branson, who in 1894 took over the business of Mr. Smeeton.

Chemists' Assistants are not too hasty in organising for self-defence, and any effort in that direction is therefore all the more worthy of commendation. Apparently such an effort is about to be put forth in London, and we gladly announce that a meeting of chemists' assistants will be held at the Horseshoe Hotel, Tottenham Court Road, on Thursday next, June 23, at 8 p.m. sharp, for the purpose of establishing an assistants' union. Any assistant who may read this announcement should accept it as a personal invitation, and make a point of being present, if possible.

The Paris Exhibition of 1900 is becoming an event of the near future, and we are requested to announce that the Royal Commission is now prepared to circulate information respecting the Exhibition. The classification and rules for exhibitors, together with forms of application for space, can be obtained by applying to the Secretary of the Royal Commission, Paris Exhibition 1900, St. Stephen's House, Westminster, S.W.

MEETINGS OF SCIENTIFIC SOCIETIES

ROYAL INSTITUTION.

On Thursday, June 9, the second and concluding lecture was delivered by EDWARD E. KLEIN, M.D., F.R.S., on

Modern Methods and their Achievements in Bacteriology.

The organs of locomotion of bacteria known as cilia or flagella were first considered, and methods of staining them with the usual dyes were mentioned. The fact was emphasised that these cilia are not always present and that some bacteria are motile, though they have no flagella, *e.g.*, the bacteria that cause foul brood in bees. Other bacteria do not move, though they have flagella. The bacterium that causes lockjaw is an example of the flagellate non-mobile variety. The power of locomotion is essential to those micro-organisms that depend on a free supply of oxygen for their existence. For this purpose the *B. coli* and the typhoid bacillus will be found floating at the surface of liquids, where oxygen is most abundant. Doubtless those bacteria that have flagella, and do not use them, required them once, but now they need them no longer for the purpose of locomotion. Whether they serve any other end is not at present known. The method of reproduction by means of spores next received attention, and it was shown how excessively resistant the spores are to hard external conditions. It is fortunate for man that comparatively few pathogenic bacteria form spores, inasmuch as they can easily be exterminated by suitable treatment. Were the most dangerous bacteria of the spore-forming class, it would be impossible, for example, to sterilise milk by merely boiling it. The lecturer insisted that no typhoid, diphtheria, or scarlet fever would be carried to human beings by water or milk if these liquids were first boiled. In fact, the typhoid bacillus is killed at a temperature below the boiling point of water. The three principal methods of exterminating bacteria are: (1) Thorough and prolonged desiccation, (2) boiling with water, and (3) the application of certain chemical reagents. In this connection the lecturer remarked that there is a great difference in the amounts of heat necessary to kill bacteria, since some spores will stand two hours' boiling, whilst others will germinate after exposure to a temperature of 140° C. for five minutes. Though, as is well known, tinned foods are subjected to the heat of boiling water for a few minutes, one occasionally meets with a quantity of bacteria that have been produced from the spores which the heat was insufficient to kill. In attacking the problem of disinfection it must be remembered that spore-forming bacteria need different methods of treatment from the non-spore forming varieties. The lecturer then discussed the study of pure cultures at some length, and pointed out that as a result two very important facts had been ascertained, viz.: (1) that the substance of which bacteria are composed may include some poisonous and highly deleterious principles, and (2) that certain bacteria in appropriate media have the power to form certain definite chemical compounds. Many bacteria, not connected with disease, when prepared in pure cultures outside the animal body contain poisonous principles. This is the case with *B. coli* and the typhoid vibrio, but not with the bacteria of anthrax and diphtheria. Many bacteria possess specific poisons. Koch, considering this subject carefully, was led to perform some experiments, which brought him to remarkable conclusions and to the discovery that certain means of diagnosing diseases difficult of detection were within the power of the bacteriologist. Thus, he made an extract of the tubercle bacillus, and injected a portion of the liquid into a tubercular patient. He found that if a patient is affected with tuberculosis, even in its earliest stages, the injection of the extract above mentioned will produce certain marked physiological changes, characterised especially by a rise in temperature and slight local swelling. Koch named this extract tuberculinum, and employed it with great success in the diagnosis of tuberculosis in men and animals. Dr. Klein said that people had expected too much from this discovery of Koch. Its success lay not so much in curing patients afflicted with the disease as in diagnosing the disease when other methods failed. It is high time that government compelled dairy farmers to apply this test to cows immediately they are bought, that tuberculosis, a disease to which cattle are particularly liable, may not be passed on to children as is now the case to an alarming extent. Similarly the bacillus of glanders in horses may be detected, and this method should prove not only a boon to the owners of horses, but a safeguard to those who tend them, since glanders is a disease which is easily communicated to human beings. On injecting the extract of the glanders bacillus, practically the same symptoms are produced as is the case with the tuberculosis bacillus, but here, again, a thoroughly healthy animal is entirely unaffected. Passing to the second important fact brought to light by the study of pure cultures, viz., that bacteria form certain chemical substances when grown in appropriate media, the lecturer mentioned that with disease-producing bacteria these chemical changes yield substances which are known as toxins. Thus we are acquainted with diphtheria toxin, tetano-toxin, typho-toxin, and many others. Take the case of the bacteria that cause influenza. They enter the body, find a suitable nutritive medium in the interior, grow and multiply, and form a chemical compound, *i.e.*, a toxin, which causes the complaint which we know as influenza. The same process goes on in the case of diphtheria and other diseases, but the toxins produced in different diseases are all different. Now, for a long time it has been recognised as a fact that the animal body, by being once attacked by any specific disease, thereby naturally acquires more or less immunity from future attacks of the same complaint. Hence investigators concluded that immunity from any specific disease might be artificially acquired by the injection into the patient of the specific toxin. This was tried experimentally and found to be successful. On introducing a toxin, the severity of the attack brought on is proportional to the quantity of toxin injected. A slight attack wards off a worse attack, and perhaps prevents any further contagion of the disease. By this means it is possible to drive up, so to speak, the immunity of the animal body from the disease in question. It has been an interesting problem to determine the cause of this immunity, whether naturally or artificially acquired. Eventually it was discovered that in the blood of an animal immune from any particular disease a substance is present which has received the name antitoxine. Take, for example, the diphtheria toxin; 0·1 C.c. is enough to kill ten guinea-pigs in the course of twenty-four to thirty-six hours. If minute portions of this solution be injected into a horse, a slight attack of diphtheria will manifest itself, but will soon pass off. By dosing the animal from time to time with larger and larger quantities, the physiological effects become less and less pronounced, until finally the animal is able to stand the injection at one time of 250 C.c. of the same solution, without suffering any injurious effects. If now a supply of blood be drawn from the horse it will be found to possess antitoxic properties. The presence of an antitoxine in the blood of an immune animal does not alone account for the immunity which that animal enjoys from a particular disease. It has been observed that certain cells of the animal body, the leucocytes, undergo a peculiar change on an attack of the disease, and acquire the property of being able to guard the body from future attacks from the same quarter. But these leucocytes do not entirely account for the phenomenon. Pfeffer has shown that a further substance, possessing immunising, *i.e.*, germicidal properties, is also present in the blood and tissues of an immunised individual. It is an extraordinary fact that blood serum obtained from animal bodies that are immune from a specific disease has the power to agglutinate the bacteria of the same disease when the serum and bacteria come in contact. It is remarkable, too, that the blood of an animal body smitten with any specific complaint is possessed of this agglutinating property from the earliest stages of the disease. This agglutination test is of extreme practical importance in the diagnosis of disease, because if a patient be suspected to be suffering, *e.g.*, from typhoid, and other means of diagnosis fail, it is only necessary to add a few drops of the patient's blood to a pure culture of the typhoid bacillus. If the culture which at first was somewhat cloudy from the presence of countless bacteria clears in parts, and produces a precipitate of the contained bacteria by agglutination, it may be taken as certain that the patient is suffering from typhoid fever. The lecturer illustrated the various points by means of numerous excellent lantern slides, and concluded by mentioning a case in which the agglutination method of diagnosis had proved triumphant, so recently as October and November of last year. An outbreak of typhoid occurred at Bristol, and many medical men failed to recognise the disease as such. The medical officer of health, Dr. Davies, found that the sufferers all obtained their supply of milk from one farm. But the cattle were all healthy and the dairy arrangements excellent. Eventually it was observed that the milk-cans and other utensils

were all washed in water which proved to be polluted with sewage. The sewage was traced to one house in a neighbouring village, from which sewage was discharged into the brook. The inhabitants of the house were not aware that they had been suffering from typhoid, but admitted that three weeks previously they had been troubled with persistent diarrhœa. This enterprising doctor then took samples of their blood and tried the agglutination test with marked success. He was thus able not only to detect the source of the contagion but also to prove that these people had been suffering from a disease which in other respects had left no traces, and to take means for preventing a recurrence of the malady.

In his lecture delivered at the Royal Institution on Saturday, June 4, on

The Temples and Ritual of Asklepios

at Epidaurus and Athens, Dr. Caton referred to the meagre accounts obtainable in the Greek authors. That the temples and groves were of considerable extent was evident from the admirable series of slides chiefly taken by the lecturer, which were used as illustrations for the lecture. Vast piles of masonry are continually being excavated, and whether it was the Stadium, or the Gymnasia, or the Abaton, or sacred ward for the sick, all received adequate explanations from the lecturer's hands.—The second lecture was delivered by Dr. Caton on Saturday, June 11. After describing the various grades of the Hierarchy, the lecturer gave an account of the preliminary ablutions and sacrifices required from each visitant to the shrine, and proceeded to describe the ceremonies which took place at night in the Abaton or ward for the sick, the evening prayers to the god, after which all the sick were encouraged by the priest to hope that Asklepios would visit them in person or appear to them in visions. The inscriptions record that both events occurred frequently. In the daytime the sick man presented himself before the Chrys-elephantine figure of Asklepios in the temple, and various solemn rites were enacted. The sacred serpents and dogs, which were regarded as incarnations of the god, were taught to apply the tongue to any ailing part, after which the patient hoped for immediate miraculous cure, and doubtless the numerous "malades imaginaires" who visited the shrine believed they actually experienced it. The occupations and amusements provided for the sick were described, as also were the valuable methods of treatment introduced in later times, such as baths, careful dieting, vigorous muscular exercises, a form of massage, and various useful drugs. Extracts were read from the engraved tablets recording miraculous and other cures. The superstition of the Greeks in regard to birth and death, which events were not allowed to take place within any sacred precinct, and the consequent cruel ejection of those sick persons who most needed rest and help from the sanctuary, were referred to, also the later provision of a home for the dying, and of a maternity department outside the precinct. The lecture concluded with an account of the transfer of a sacred serpent from Epidaurus to the Island of the Tiber, and the establishment of Æsculapian rites in Western Europe.

On Friday, June 10, a paper was read at the Royal Institution by the Right Hon. Lord Rayleigh, M.A., D.C.L., F.R.S., on

Recent Experiments with the Telephone.

By using a combination of the telephone with a sensitive flame, numerous effects were demonstrated illustrating the sensitiveness of the telephone.

ROYAL SOCIETY.

At the second conversazione of the year, held on Wednesday, June 8, there were several exhibits of special interest to pharmacists. A stand, prepared by Dr. E. Obach, F.I.C., was devoted to

Gutta-Percha.

Botanical specimens were shown of the twigs of the gutta-percha tree (*Dichops. v. Palaq. gutta*), with flowers and fruits preserved in formaldehyde, as well as parts of the trunk and dried specimens of various gutta-percha plants from Singapore and Perak. A collection of the principal "brands" of commercial gutta-percha was on view, also leaves of the tree before and after treatment. The greediness with which collectors uproot the trees for the sake of the juice bids fair, unless checked, to seriously affect the output in course of time. To obviate this difficulty Dr. Obach has devised a method of obtaining large supplies of this valuable product from the leaves, so as to save the trees. Many samples of the ordinary raw material were included in the exhibit, as well as pieces of gutta-percha obtained from the leaves by Obach's process. To illustrate an application of gutta-percha, portraits of Sir William Hooker and Dr. Werner v. Siemens in coloured gutta-percha were displayed, together with gutta-percha impressions from Jubilee medals and electrotype reproductions. Diagrams were hung on the wall illustrating gutta-percha-yielding plants, their geographical distribution, the form and position of the latex sacs, the chemical composition of specimens of known botanical origin and of typical "brands" of commercial gutta-percha and of balata. It will be remembered that the three principal ingredients of the commercial article are water, resin, and the hydrocarbon gutta. Among the many interesting experiments made were those illustrating (*a*) the great transparency of gutta-percha to X-rays; (*b*) the different behaviour towards ozone as compared with caoutchouc; (*c*) the high insulating property of well-dried gutta-percha; (*d*) the great improvement in the physical and mechanical properties of gutta-percha by subjecting it to Obach's hardening process. Ozone at once destroys caoutchouc, but has no action on gutta-percha; the insulating property of this product renders it invaluable for coating the copper core of submarine cables, specimens of which were on the table.

Mr. Walter Gardiner exhibited some photographs of

Trees which Grow in Grand Canary and Madeira,

including umbrella pines, *Euphorbia canariensis*, the Phœnix palm, and dragon trees growing in maize fields. The euphorbia stem is quite cactus-like in habit, and is so highly charged with latex that on scratching the stem a quantity of the latex is shot out with almost explosive force to a considerable distance. A specimen was handed round which even after having been collected many months, left a trail of milk-white juice on gently drawing a penknife along the surface.

Professor J. Norman Collie, F.R.S., exhibited two models to represent in space the arrangement of the

Carbon and Hydrogen Atoms in the Benzene Molecule.

In one model the carbon atoms were represented by large and the hydrogen atoms by small spheres. By rotating the carbon atoms, the hydrogen atoms were seen to approach the centre in two sets. These two sets being composed of three alternate hydrogen atoms or those united with the carbon atoms 1, 3, 5, or 2, 4, 6. In the second model the tetrahedra represented the carbon atoms. The connecting bonds were represented by elastic bonds. In this model the various planes of symmetry could be seen.

Professor W. Ramsay, F.R.S., was the centre of attraction with his interesting exhibit of the

Spectrum of Krypton.

the newly-discovered gas, which is present in the atmosphere to the extent of about 1 part in 100,000. This gas was obtained by allowing the major portion of nearly a litre of liquid air, kindly provided by Dr. Hampson, to evaporate, collecting the residue separately, and purifying it from oxygen and nitrogen. The spectrum, in which the lines of argon were still feebly visible, showed two brilliant lines, one, the yellow, nearly but not quite identical in wave length with D_3, the characteristic ray of helium; and the other, a brilliant yellow-green, which Sir W. Huggins believes to be identical with the green auroral line. The density of the gas is considerably higher than that of argon, and it has been proved, like the latter, to be monatomic. The large spectroscope showed side by side the yellow lines of sodium, D_3 of helium, and D_4 of krypton.

The last exhibit to which reference need be made is that of Sir Richard T. Thorne, F.R.S., and Dr. Copeman, illustrating the

Bacteriology of Calf Vaccine Lymph, with Special Reference to the Preparation of Aseptic Glycerinated Lymph, as now Adopted by Government.

This method was first brought out in 1891, and as yet no experimental controversion of it has been brought forward. The vaccine is obtained exclusively from the calf, to safeguard the patient from erysipelas, syphilis and other hereditary diseases to which man is liable, but from which calves are immune. Tuberculosis is the only serious complaint which is likely to be given to a patient by the use of calf vaccine lymph, but the use of this aseptic glycerinated lymph removes this danger, as the following experi-

ment will prove. To a small test tube containing aseptic glycerinated lymph was added, for experimental purposes, a considerable quantity of virulent culture of the tubercle bacillus. Sub-cultures on solidified blood-serum and glycerin agar made a month later from this mixture of lymph and tubercle microbe failed to yield any growth whatever, showing that the tubercle bacillus had been entirely killed out by the action of the glycerin. The adventitious microbes of calf-vaccine lymph were demonstrated by means of a series of test-tube cultivations of the various microbes isolated from the lymph. These microbes were shown growing on various nutrient media in separate test tubes containing blood-serum, agar-agar, gelatin, and potato. Glycerinated calf-lymph was exhibited stored in small test tubes which each contained about 3 grammes of material. Thirty test tubes contained the amount of material, after glycerination, obtainable from one calf. The lymph is sent out for use in hermetically sealed capillary tubes each containing amply sufficient lymph for a single vaccination. The method of testing the bacteriological purity of glycerinated lymph was demonstrated by a series of plate cultivations. Each plate represented the growth obtained in agar medium from a sample of the glycerinated lymph taken at a different interval from the date at which the lymph was glycerinated. It was seen that the number of groups of microbes which (after due incubation) appeared on the plates diminished week by week, until after the lapse of a month from glycerination no growth whatever took place, although the lymph remained as active as ever when employed for the purpose of vaccination.

On Thursday, June 9, at the Royal Society, the PRESIDENT, Lord Lister, F.R.C.S., took the chair at a crowded meeting of Fellows, who had assembled to hear a paper by WILLIAM RAMSAY, F.R.S., and MORRIS W. TRAVERS, on

A New Constituent of Atmospheric Air.

Professor Ramsay, who read the paper, briefly described the experiments which have been carried out during the past year in attempting to ascertain whether, in addition to nitrogen, oxygen, and argon, there are any gases present in air which have escaped observation owing to their being present in very minute quantity. In collaboration with Miss Emily Aston, the authors have found that the nitride of magnesium, resulting from the absorption of nitrogen from atmospheric air, on treatment with water yields only a trace of gas; that gas is hydrogen, and arises from a small quantity of metallic magnesium unconverted into nitride. That the ammonia produced on treatment with water is pure has already been proved by the fact that Lord Rayleigh found that the nitrogen obtained from it had the normal density. The magnesia, resulting from the nitride, yields to water only a trace of soluble matter, and that consists wholly of hydroxide and carbonate. So far, then, the results have been negative. Recently, however, through the kindness of Dr. W. Hampson, the authors have been furnished with about three-quarters of a litre of liquid air. This liquid was allowed to evaporate down to 10 cubic centimetres, the operation being conducted very slowly. About four-fifths disappeared as nitrogen at −194° C., then the 1 per cent. of argon at −187° C., and about one-fifth as oxygen at −182° C. The small residue was converted into gas, and collected in a gas-holder. It consisted of the new gas, mixed with oxygen, nitrogen and argon. After removal of oxygen with metallic copper, and nitrogen by means of a mixture of pure lime and magnesia dust, followed by exposure to electric sparks in presence of oxygen and caustic soda, there remained 26·2 cubic centimetres of a gas which showed the argon spectrum feebly, and, in addition, a spectrum which the authors believed had not been seen before. The new spectrum has not yet been disentangled from the argon spectrum; it is characterised by two very brilliant lines, one almost identical in position with D_3, and almost rivalling it in brilliancy. There is also a green line, comparable with the green helium line in intensity, as well as a somewhat weaker green line, with a shorter wave-length. In order to determine as far as possible which lines belong to the argon spectrum, and which to the new gas, both spectra were examined at the same time with the same grating. The lines which were absent, or very feeble, in argon have been ascribed to the new gas. Mr. E. C. C. Baly has made a preliminary study of the spectrum so obtained, and the figures which he has given suffice to characterise the gas as a new one. The approximate density of the gas was determined by weighing it in a bulb 32·321 cubic centimetres capacity under a pressure of 521·85 millimetres, and at a temperature 15·95° C. The weight of this quantity was 0·04213 gramme. This implies a density of 22·47, that of oxygen being taken as 16. A second determination was made in the same bulb, after sparking the gas for four hours with oxygen in presence of soda. The pressure was 523·7 millimetres, the temperature 16·45° C., and the weight 0·04228 gramme, which implies the density 22·51. The wave-length of sound was determined in the gas by the method described in the "Argon" paper. The calculations show that, like argon and helium, the new gas is monatomic, and therefore an element. From the investigations made, the authors conclude that the atmosphere contains a hitherto undiscovered gas with a characteristic spectrum, heavier than argon, and less volatile than nitrogen, oxygen and argon; the ratio of its specific heats would lead to the inference that it is monatomic, and therefore an element. If this conclusion turns out to be well substantiated it is proposed to call it "krypton" or "hidden." Its symbol would then be Kr. It is impossible at present to state positively what position in the periodic table this new constituent of the atmosphere will occupy. The number 22·51 must be taken as a minimum density. The authors hazard a conjecture that krypton will turn out to have the density 40, with a corresponding atomic weight 80, and will be found to belong to the helium series, as is, indeed, rendered probable by its withstanding the action of red-hot magnesium and calcium on the one hand, and on the other of oxygen in the presence of caustic soda, under the influence of electric sparks. A larger supply of the gas will be procured, and if possible, separated more completely from argon by fractional distillation. The density obtained is doubtless that of a mixture of krypton and other gases, principally argon. In conclusion the authors suggested that, on the assumption of the truth of Dr. Johnstone Stoney's hypothesis that gases of a lighter density than ammonia will be found in our atmosphere, it is by no means improbable that a gas lighter than nitrogen will also be found in the air. They have spent many months in preparation for a search for it, and will be able to state ere long whether the supposition is well founded.—The paper gave rise to a lengthy discussion, in which Lord RAYLEIGH, Sir WILLIAM CROOKES, Dr. ARMSTRONG, Sir NORMAN LOCKYER, Professor DEWAR, and Professor MENDELEEF took part. All were agreed in complimenting the authors on their latest discovery.—Sir WILLIAM CROOKES confessed that when first he heard of the results of these experiments he did not consider that clear proofs were given that a new element had really been discovered, but the fuller and more complete account given at the meeting had removed these doubts from his mind. He, together with Dr. Armstrong, struck an unpleasant chord in referring to the fact that this communication was first made to the French Académie des Sciences.—Sir NORMAN LOCKYER spoke of the extreme interest which centred round this gas for all connected with astronomy, inasmuch as Sir W. Huggins suggests the possibility of the identity of the green line with the auroral line.—Professor MENDELEEF, who was asked to speak in what language he pleased, made a few complimentary remarks, leaving Professor Dewar to speak for him at greater length.—The latter expressed his admiration of the work done, but at the same time stated that he felt that the ground had been cut away from under him. Referring to a paper read by himself at the Chemical Society last autumn, and another at the Royal Institution in April of this year, "On the use of Liquid Air as an Analytical Agent," he could only think that the authors had profited by his work in order to carry out their own researches.—In his reply, Professor RAMSAY pointed out that copies of his paper were sent off simultaneously to the Royal Society of London, also to Berlin and the Académie des Sciences. Had the Royal Society met as usual on Thursday, June 2, the communication would have been read first in England. One reason that influenced him in sending a copy to M. Berthelot was this: that if the paper had not been read in Paris on Monday, June 6, the ladies would not have seen the spectrum of krypton at the Conversazione on June 8. He regretted, however, that circumstances should have prevented him from making the announcement to the Royal Society in the first instance. The matter in question would be a useful object lesson to those who advocated the unity of science, and ignored the accident of nationality. With regard to Professor Dewar's objections he could only say that he had not read either of the papers referred to, and so could not possibly profit by them.—The PRESIDENT then formally tendered to the authors the thanks of the Society for their valuable communication.

Pharmaceutical Transactions.

PHARMACEUTICAL SOCIETY.

DONATIONS TO THE LIBRARY AND MUSEUM.

At a meeting of the Library, Museum, School and House Committee, on Wednesday, June 15, the Librarian and Curator presented the following reports of donations :—

To the Library (London).

Professor E. Schaer, Strassburg :—Ueber Fouquiera splendens, 1898 ; Beit äge zur chemischen und pharmacognostischen Kenntnis der Pasta Guaraná von E. Kirmsse, 1898 ; Offene Fragen auf dem Gebiete der Pharmakognosie, 1898.

Professor Arthur Meyer, Marburg :—Untersuchungen über die Wasserapparate der Gefässpflanzen, von O. Spanjer, 1898.

General Medical Council, London :—British Pharmacopœia, 1898.

Mr. H. W. Gadd, Exeter :—Synopsis of the new B.P., 1898.

Messrs. C. J. Hewlett and Son, London :—Notes on the new B.P , 1898.

The Editor of the *Pharmaceutical Journal* :—Synopsis of the B.P., 1898 ; Metric Equivalents of Imperial Weights and Measures, and Thermometric Equivalents, 1898.

Mr. P. MacEwan, London :—Pharmaceutical Formulas. second edition, 1898.

G. Watt, Esq., M.B., C.M., C.I.E., Calcutta :—The Pests and Blights of the Tea Plant, 1898.

Royal Society of Edinburgh :—Proceedings, 1895-97.

Royal Institution of Great Britain, London :—Proceedings, 1897 ; List of Members, 1897.

M. Maurice Duyk, Bruxelles, Secrétaire général du VIIIme. Congrès international de pharmacie :—Compte rendu. 1898.

F. M. Bailey, Esq., Brisbane :—Contributions to the Flora of Queensland, five amphlets.

L. Wray, jun., Esq., Perak : Perak Museum Notes, vol. 2, pt. 2.

To the Library (Edinburgh).

Mr. H. W. Gadd, Exeter :—Synopsis of the new B.P., 1898.

Messrs. C. J. Hewlett and Son, London :—Notes on the new B.P., 1898.

The Editor of the *Pharmaceutical Journal* :—Synopsis of the B P., 1898 ; Metric Equivalents of Imperial Weights and Measures, and Thermometric Equivalents, 1898.

Royal Society of Edinburgh :—Proceedings, 1895-97 ; Indian Meteorological Memoirs, vol. 7, pts. 6-7, and vol. 8, pt. 2.

To the Museum (London).

Mr. Law, British Central Africa, through Professor G. F. Scott-Elliot :—Specimen of a *Strophanthus* pod and stem.

BRITISH PHARMACEUTICAL CONFERENCE.

A meeting of the Excutive Committee was held at 16, Bloomsbury Square on Wednesday, June 8.—Present : Dr. C. Symes, (President), in the chair ; Messrs. Atkins, Martindale, and Payne (Vice-Presidents) ; Messrs. Bird, Farr, J. C. Umney, and White ; Messrs. Naylor and Ransom (Hon. Gen. Secretaries), and Mr. Nightingale (Asst. Sec.)—Letters regretting their inability to attend were read from Messrs. Ewing, W. Hills, W. F. Wells, Martin, Collier, Guiler, and McKnight.—The minutes of the previous meeting were read and confirmed.—It was moved by the President, seconded by Mr. Atkins, and carried unanimously that the Secretary be requested to send a letter of condolence to the relatives of the late Professor Dragendorff, Ph.D., M.D., of Rostock, an Honorary Member of the Conference.—Sympathetic references were also made to the deaths of the Right Hon. W. E. Gladstone, who addressed the members of the Conference on the occasion of their excursion to Hawarden in 1896, and of the Right Hon. Lord Playfair, a distinguished chemist who, in the earlier part of his career, was intimately connected with pharmacy.—An application was read from Mr. E. J. Parry for a grant of £5 towards the expenses of a further investigation of oil of sandal wood. It was unanimously agreed that this sum be granted.—A draft of the proposed programme of local arrangements for the Belfast meeting was sent by Mr. McKnight, the Honorary Local Secretary, on behalf of the Local Committee, and submitted by Mr. Payne for the approval of the Executive. Proceedings will commence on Tuesday, August 9, when an official welcome will be offered by the Right Hon. the Lord Mayor of Belfast on behalf of the citizens, and by the Rev. Thos. Hamilton, D.D. (President of the Queen's College) on behalf of the College where the sittings of the Conference will be held. The usual sessions of the Conference will be held from 10 a.m. to 1 p m., and from 2 to 4 p.m. At the conclusion of the afternoon sitting carriages will arrive to take members to the Giants' Ring and other places of interest. The reception and conversazione will be held in the Queen's College in the evening. On Wednesday, August 10, the business of the Conference will be continued in the morning and concluded at 4 in the afternoon. By invitation of the Lord Mayor and Lady Mayoress (the Right Hon. James Henderson, M.A., J.P., and Mrs. Henderson) a garden party will be given at 4.30 p.m. in the Botanic Gardens, Cork. Thursday, August 11, will be devoted to an excursion to the coast of Antrim, visiting Larne, Garron Tower, Glenariff, and Parkmore. The programme embodying the above arrangements was unanimously adopted, and the thanks of the Executive were accorded to the Local Committee who had drawn it up, and to Mr. Payne for his kindness in attending the meeting as a deputation from Belfast.—The place of meeting for 1899 was considered, and it is understood that invitations will be received from Brighton and Plymouth.—A proposed list of officers for the ensuing year was adopted for recommendation to the general meeting.—Thirteen gentlemen, having been duly nominated, were formally elected to membership.

PLYMOUTH, DEVONPORT, STONEHOUSE AND DISTRICT CHEMISTS' ASSOCIATION.

The Annual Outing took place on Wednesday, June 8, and favoured by fine weather proved an unqualified success. The party numbering eighty, started from the Guildhall Square, Plymouth, at 1 p.m. in six well-appointed vehicles. On arriving at Yealmpton light refreshments were partaken of. On resuming the journey the carriages passed through the romantic and beautiful Membland Drives, extending over nine miles. The party having been photographed, the annual tug-of-war took place between married and single members of the craft. The single team (under the captainship of Mr. P. A. Kelly) proving victorious. A move was then made for the village of Noss, where high tea was provided, after which the party resumed the journey home ; arriving about 11 p.m. The arrangements were capitally carried out by the following committee :—Messrs. J. Cocks (President), J. Barge, J. H. Bailey, P. A. Kelly, A. J. Lamble, F. Maitland, J. Maurice, O. A. Reade, J. B. Swainson, C. T. Weary, W. H. Woods, Messrs. C. J. Park and A. D. Breeze (Hon. Secs.).

LIVERPOOL CHEMISTS' ASSOCIATION.

The Council of the Liverpool Chemists' Association, taking into consideration the importance and necessity of a definite understanding between prescribers and dispensers as to the use of the new British Pharmacopœia, has consulted with the President and Council of the Liverpool Medical Institution, and with their approval, recommends the adoption of the B.P. 1898, as the standard for prescribing and dispensing on and after July 1, 1898.

BRISTOL PHARMACEUTICAL ASSOCIATION.

At a meeting of members held at the University College on Thursday, 9th inst , the Hon. Secretary reported that he had been in communication with some local physicians as to the date upon which the new Pharmacopœia should be used in dispensing. The subject had been brought before a meeting of the local medical association, and they suggested that a notice should be sent by this Association to the medical profession, stating that after a certain date all new prescriptions would be dispensed according to the new Pharmacopœia, and that July 1 was a convenient date. —It was therefore unanimously resolved that the Hon. Secretary be requested to send such notice to the members of the medical profession, enclosing a copy of the reprint of formulæ, processes, etc., from the *Pharmaceutical Journal*, as well as a circular, to all chemists in business.—A resolution was also passed stating that the Association is entirely in sympathy with the objects and aims of the P.A.T.A.

EDINBURGH AND DISTRICT CHEMISTS' TRADE ASSOCIATION.

The fifth annual excursion took place to St. Fillan's, Loch Earn, on Thursday, June 9, 1898. About twenty members and friends left the Caledonian station by special train for Comrie at 8.30 a.m. At Larbert a contingent of pharmacists representing the Glasgow and West of Scotland Association joined the train, and Comrie was reached at 11 a.m., half an hour late. Here the party was joined by another contingent representing the Forfarshire District Chemists' Association. Carriages were in waiting, and in delightful weather the company greatly enjoyed the six-mile drive through the rich valley of Strathearn to St. Fillan's, at the eastern extremity of Loch Earn. During the short interval before dinner there was time to realise the truth of Mr. Baddeley's words, "We know not what the real Arcadia may be like, but no spot in Britain

so thoroughly embodies our most cherished conceptions of it as St. Fillan's. It is the quintessence of undesigned loveliness. Every feature is attractive, both in itself and in its relation to others. The river ripples merrily and carelessly out of the still lake, and all around are hills beautiful in shape and colouring." He goes on to say, "There is nothing bare and nothing uncomely." One felt that this remark must have been penned before the disastrous wind storm four years ago, by which whole forests of trees, many being of great size, were levelled to the ground in one night. During the drive many evidences of the devastation were seen.—Dinner was served in the large new dining hall of the hotel. Mr. David MacLaren, President of the Association, presided, and Mr. George Lunan, Vice-President, occupied the Croupier's chair. Among others present were Mr. J. Laidlaw Ewing, Mr. and Mrs. John Bowman, Mr. and Mrs. D. MacKenzie, Mr. and Mrs. D. B. Dott, Mr. and Mrs. G. Coull, Mr. A. Noble, Mr. and Mrs. C. F. Henry, Mr. and Mrs. R. J. Macdougall, etc., Edinburgh; Mr. and Mrs. W. L. Currie, Mr. and Miss D. Watson, Mr. and Mrs. R. Cunningham, Mr. and Mrs. Robertson, Messrs. McKellar, Moir, etc., Glasgow; Mr. and Miss Fraser, Paisley; Mr., Mrs., and Miss Charles Kerr, C. Cumming, J. Thomson, J. W. Russell, J. L. Doig, etc., Dundee; Harley, Perth; Harley, Crieff; Bruce, Dunblane; Chalmers, Kelty; Forgie, Falkirk; Allan, Kirkcaldy; Fisher, Dumfermline; McLagan, Grangemouth, etc. Telegrams of apology and good wishes were received from Messrs. Storrar, Kirkcaldy, and Forret, Edinburgh.—After a sumptuous dinner Mr. DAVID WATSON, Hon. Secretary Glasgow and West of Scotland Pharmaceutical Association, proposed "Success to the Edinburgh Chemists' Annual Picnic," which was acknowledged by the CHAIRMAN.—The CHAIRMAN proposed "Success to the Glasgow and Forfarshire Chemists' Associations," which was acknowledged by Mr. W. L. CURRIE, President Glasgow Association, and Mr. CHARLES KERR, President Forfarshire Association. In doing so both referred with great satisfaction to the passage of the Pharmacy Bill through the House of Commons on the previous day, and the references to the Bill were received with loud and prolonged applause.—The CHAIRMAN moved votes of thanks, which were cordially awarded to Mr. Carmichael, of St. Fillan's Hotel, and to the Honorary Secretary, Mr. C. F. Henry, and both suitably replied.—The company then adjourned to the park behind the hotel, where a very successful photograph of the group was secured by Mr. Charles Brown, 10, Cornwall Street, Edinburgh, from whom copies may be had for three shillings each. The afternoon was devoted to boating on the loch and rambling about the seductive surroundings. After tea, the company drove back to Comrie, and took train for Edinburgh at 7.10 p.m., arriving at their destination about 9.30, after spending a day that will remain as a bright and happy memory till the next excursion comes round. The whole company are under a deep debt of gratitude to Mr. Henry and his Committee for the excellent arrangements, which were carried out without a single hitch.

EDINBURGH CHEMISTS', ASSISTANTS', AND APPRENTICES' ASSOCIATION.

The first summer meeting of the Association was held in the Pharmaceutical Society's House, 36, York Place, Edinburgh, on Friday, June 10, 1898, from 8.30 to 10 p.m., Mr. G. H. C. ROWLAND, President, in the chair. There was a large display of plants comprising 61 genera and illustrating 29 natural orders, and including local collections made by Messrs. McBain and Pike and a collection by Mr. Hill made at Loch Earn on the previous day. At 9 o'clock Mr. RUTHERFORD HILL described a number of the specimens which included *Quercus robur* showing:—(1) Currant galls produced by the puncture and deposited ovum of the gall wasp *Spathegaster baccarum* on the male catkins; (2) Spangle galls on the leaves produced, by *Neuroterus fumipermis*; (3) Large bud galls or oak apples, produced by *Dryoterus terminalis*, from Loch Earn, and *Lychnis viscaria*, a rare plant, from Blackford Hill, Edinburgh. The plants bore ample testimony to the unusual coldness and lateness of the season. The common ash, *Fraxinus excelsior*, was in many places still in the winter condition, without a single leaf bud open, and there was a specimen of winter cress, *Barbarea vulgaris*, with flower buds unopened. Most plants were from a month to six weeks behind the usual June condition. In view of the Association prize schemes, which will be based on the work of the summer excursions and meetings, a list of the plants shown has been kept, and may be seen at the Society's House.—The meeting closed with a vote of thanks to Mr. Hill.

LEGAL INTELLIGENCE.

PROCEEDINGS UNDER THE PHARMACY ACTS.

PHARMACEUTICAL SOCIETY *v.* RHODES.

At the Hull County Court on Thursday the Deputy Judge (Mr. H. Thomas) heard an action brought by the Pharmaceutical Society against Percy Rhodes, trading as the Cash Drug Stores, 33, Paragon Street, Hull, for a breach of the Pharmacy Act.

Mr. T. R. Grey (instructed by Messrs. Flux, Thompson and Flux, solicitors to the Pharmaceutical Society), appeared for the plaintiffs, and Dr. T. C. Jackson represented the defendant.

Mr. Grey said the action was to recover the full amount of the penalty incurred by the defendant on January 20, 1898, in selling or keeping open shop for the retailing, dispensing, or compounding of poison, to wit, morphine, contained in and forming part of the ingredients in a compound called Mrs. Winslow's soothing syrup; the penalty incurred by the defendant on January 29 for keeping open shop for the selling of the compound called Kay's compound essence of linseed; and a third penalty for having, on January 29, taken, used, or exhibited the title of chemist, all three penalties being incurred under the Pharmacy Act, 1868.

Sabina Watson and Jonathan Mitchenson gave evidence, the former as to the purchases, and the latter as to receiving the purchases, which he forwarded to the Pharmaceutical Society.

Mr. Grey then put in the Register to prove that the defendant was not a registered chemist, and said that, owing to the admissions of the defendant, that would be the plaintiffs' case.

Dr. Jackson said that his defence with regard to the two first items was that the sale did not take place on the premises of the defendant. Mrs. Watson called at the defendant's shop and asked for the goods. Rhodes told her he had not them, but she asked if he could get them, and he did so. The sale therefore took place at the premises where the goods were purchased. In other words, the relationship of the defendant was that of agent to the principal. He was instructed to go and purchase an article and hand it over to him. Rhodes was accountable to the lady as an agent, and not as a vendor. A. T. Thirsk, of 30, Londesboro' Street, was the dispensing chemist, as stated on the label.

The Judge: I think from the evidence that the label which was attached by the defendant was probably part of some old stock in trade of other people. I do not think it is a case of fraudulently pretending to be another man, but a man putting on a label is acting as a chemist. Besides, this was not a "patent" medicine.

Dr. Jackson: There is nothing to prevent a man selling these drugs.

The Judge: Surely an unregistered man is not entitled to sell sweet nitre. Supposing he sold sweet nitre as a grocer. Is not sweet nitre a drug?

Dr. Jackson: Then we are not charged with selling a drug, but with taking, using, or exhibiting the title of chemist?

The Judge: A man must be acting as a chemist in what he does. The sale of the article is some evidence of it, and if a man puts a label on, does he not adopt the label as his own?

Dr. Jackson: I think not. It is clear there is no evidence that he took the name of Thirsk, because Mrs. Watson knew him as Rhodes.

The Judge: I am not going to hold that he was A. T. Thirsk.

Dr. Jackson: The Act says he must take, use, or exhibit the name of a chemist; and I submit that he did not, on the evidence, do anything of the kind. This, continued Dr. Jackson, was a highly penal section, and must be construed as favourably as possible to the individual. The evidence was that Thirsk was a duly qualified chemist, that he sold to Rhodes, and that Rhodes thereby became possessed of labels honestly, one of which was used on a bottle by a man who had been only a very few days on the premises.

The Judge: Would there be any defence if Mrs. Watson had not paid him?

Dr. Jackson: If she had not paid the man the true remedy would have been for Rhodes to sue her for indemnification.

The defendant, in evidence, said he bought the syrup and the compound of linseed from Messrs. Lofthouse and Saltmer.

The Judge: And here we have a thing which he buys from a firm and does not disclose the name of the people from whom he buys to his own purchaser.

Mr. Grey: That is so.

Judge Thomas then delivered judgment. He said that in regard to the action to recover the penalty for retailing and dispensing on January 20, Sabina Watson had stated that she went to the shop of Percy Rhodes and ordered on one day and got supplied on another, a bottle of Mrs. Winslow's soothing syrup. That was admitted to come within the meaning of one of the schedules of poisons referred to in the Act of Parliament. He found, therefore, as a fact, that there was an actual sale by Rhodes to Mrs. Watson as a customer. He found also that Rhodes was an unqualified person and therefore he gave judgment for the full penalty claimed—£5 and cost. On the second claim there must be also a penalty for the full amount with costs. As to the third claim for taking, using, or exhibiting the title of chemist, that depended upon the construction of the Section of the Act of Parliament of 1868—Section 15. The charge upon that Section was that the defendant on January 29, 1898, did take, use, or exhibit the title of chemist, contrary to the Act of Parliament. The story was that Rhodes had, about a fortnight before purchased a chemist's business from the National Drug Company, that he had been carrying on business for fourteen days with the usual fittings of a chemist. In that shop there was a label purporting to have been sold by some chemist—A. T. Thirsk—in one case called a manufacturing chemist and in the other a dispensing chemist, of Londesbro Street, Hull. Thirsk carried on business up to two years ago, and Percy Rhodes had admitted that he got a quantity of Mr. Thirsk's labels when he bought the business, and used them. That being so, he was acting as a chemist and using, certainly, the title of chemist by the fact that he put labels upon bottles. A man could by his acts represent himself to be using the title of chemist. It was clear that Rhodes did use, take, and exhibit the title, and therefore he must give judgment in that case for the full penalty, with costs. The judgment on all the cases was for £15, with costs.

Pharmaceutical Society *v.* Jackson.

At Bacup County Court on June 14, before His Honour Judge Coventry, the Council of the Pharmaceutical Society of Great Britain, by Richard Bremridge, the Registrar, 16, Bloomsbury Square, London, W.C., brought an action against Thomas Jackson, assistant to Mr. R. Mountain, chemist, Market Brow, Bacup, for that he (Jackson), being an unqualified person, did on March 26, 1898, sell certain poison, to wit morphine, contained in and forming part of the ingredients in a compound called Mrs. Winslow's soothing syrup, contrary to the provisions of the Pharmacy Act, 1868. Mr. Grey, a barrister, of London, appeared for the Council of the Pharmaceutical Society. The defendant did not appear.

The bailiff, in answer to His Honour, said he served the summons at defendant's lodgings. Defendant was at that time ill in bed and insensible, and it was not likely that he would ever be right again.

His Honour did not think they could go on in that case.

Mr. Grey said this was the first time he had heard anything of this. He thought they ought to have been told.

His Honour: Who ought to have told you? All the Court has to do is to serve.

Mr. Grey said he had got all his witnesses present from London. They might hear the evidence.

The bailiff in the meantime went to make further inquiries, and found that defendant had been removed to Mr. Mountain's residence at Haslingden, and was still ill in bed.

His Honour: Is anyone here from Mr. Mountain's?

Mr. Goldsmith (Registrar's Clerk): Mr.. Mountain told me he should not do anything in it, but let it take its own course.

Mr. Grey said that purchases of poison had been made from two other unqualified managers in the employ of Mr. Mountain. One had paid the penalty claimed, and the other had absconded. In this case he (Mr. Grey) appeared for the plaintiffs, and it was an action for the recovery of a penalty for the sale of poison by an unqualified man. Mr. Grey indicated the provisions of the various sections of the Act of Parliament under which the proceedings were taken, and said the penalty was £5. The case was taken by the Pharmaceutical Society, who were ordered by the Statute to see that the Act was carried out, owing to information received that a great many sales by unqualified men were being made in the district, and this was one of those cases. The defendant in this case was an assistant to a Mr. Mountain, who was a qualified chemist, and who occupied three shops. It was, of course, impossible for Mr. Mountain to attend to all three shops, and he had appointed unqualified men to look after them in his absence, and allowed them to sell poisons. Unluckily they could not sue Mr. Mountain; they had to sue the person who actually sold the poison. Mr. Grey quoted the case of the Pharmaceutical Society *v.* Wheeldon, and read extracts from the judgement of Mr. Justice Hawkins in that case.

Arthur Foulds said he resided at Manchester, and was instructed by the Pharmaceutical Society to make a purchase at the shop in the Market Brow, Bacup. He went to the shop on Saturday, March 26, and there saw Thomas Jackson. He purchased from him some castor oil and Winslow's soothing syrup. He handed it over to Mr. Moon in the condition in which he received it from the defendant.

Harry Moon, clerk in the office of the Registrar to the Pharmaceutical Society, said he received the bottle and other things from the last witness. The bottle was sealed at both ends. He afterwards handed it over to the analyst.

Ernest Jno. Eastes, analyst, Fellow of the Institute of Chemistry, said he had had great experience as an analyst. The last witness handed to him a bottle of Winslow's soothing syrup. He carefully analysed the contents of the bottle, and found morphine present in an appreciable quantity. Morphine was the active constituent of opium, and one of the poisons mentioned in the schedule of the Pharmacy Act.

Mr. Grey put in the Register, and said defendant's name did not appear therein.

In reply to his Honour Mr. Moon said there were five Thomas Jacksons in the list, but none of them referred to the defendant in this action.

Mr. Grey asked for the full penalty of £5.

His Honour imposed the full penalty of £5, and said if defendant had any objection to make to it, he must make it at once.

LETTERS TO THE EDITOR.

The Dilution of Liquids from One Gravity to Another.

Sir,—In reply to Mr. Davis, I find by experiment the s.g. of liq. ammon. acet. to be 1·014 (theoretically it should be 1·0146). The lowness of my figure is accounted for by the fact that the s.g. of the liq. ammon. acet. fort. used was only 1·071. I should think therefore that the ex-official s.g. is wrong (was it meant for 1·012?). The arithmetical process given by Mr. Davis is very useful and is easily remembered by the formula—

$$\frac{a-b=c}{b-c=a}$$

where a = the observed gravity; b = the required gravity; and c = the water. This gives a fraction which when multiplied by the number of ounces, pints, etc., taken, gives the answer in like terms, but as Mr. Davis points out, it only holds good where no contraction in volume occurs.

Nuneaton, June 13, 1898. A. E. Slinn.

The Pharmacy Bill.

Sir,—Every well-wisher to the cause of pharmacy will rejoice at the turn in the tide that promises a speedy consummation of the labour so freely bestowed by the originators of the Bill. Former opponents, if they do not become friends, will have no alternative but to submit to the provisions of the Bill as by law established. The anti-climax has been brought about through the "Seedsman's" opposition, who has really been "hoist with his own petard," and although subjected to restrictions, he will have the opportunity of doing good if even unwillingly. There still, however, remains an unredressed evil—the indiscriminate sale of several dangerous poisons by irresponsible persons. Foremost, carbolic acid—now produced at so cheap a rate (9*d.* per gall.) as to offer an inducement to the shopkeeper to promote its sale in very accommodating quantities; supplied in drinking vessels, pickle, ale or ginger-beer bottles, etc., to children without any precaution—sugar of lead, white vitriol (impure zinc sulph.), white (carbonate of) lead, spirits of salt, aqua fortis, sulphuric acid (diluted as vitriol), strong liquor of ammonia, etc., all fraught with danger to the careless or to the unsuspicious. It is to be hoped that Government, proceeding on the lines of the Pharmacy Acts Amendment Bill, will introduce a more comprehensive measure; thus tending to the protection, not only of the public, but also to consolidate and extend the influence of the Pharmaceutical Society throughout the land.

June 13, 1898. Sirius (135/10).

EXEMPTION OF CHEMISTS FROM JURY SERVICE.

Sir,—In the interesting account in this week's Journal of the life of the late Mr. Sandford, it is stated, in reference to the Juries Bill of 1862, that "the reason given in the House of Lords for not extending this privilege (of exemption from jury service) to all chemists and druggists was that they had no statutory qualification by which they could be distinguished as persons entitled to exemption." I need not point out that this statutory qualification was conferred by the Act of 1868, and thus an additional reason is furnished for something being now done towards the exemption of all chemists on the Register.

Edinburgh, June 14, 1898. CLAUDE F. HENRY.

SEVUM PHOSPHORATUM.

Sir,—The following may be of interest:—In two different samples of sevum phosphoratum (Martindale), after keeping some time (in one case perhaps two months), the phosphorus was found to have separated out in distinct small grains.

June 13, 1898. PHOS (135/12).

A DISPENSING PROBLEM.

Sir,—During the past few weeks I have had to dispense the following prescription:—

℞ Tinct. Ferri Mur.	ʒii.
Spt. Æther. Nitric	ʒss.
Mucilag. Acaciæ	ʒi.
Syrup ad	ʒiii.

And I found when I first dispensed it that the result was very unsatisfactory. It separated in clots and when prepared in the bottle was so stiff that it could not be poured. I find that the same mixture is referred to in the 'Art of Dispensing,' and no doubt from its difficulty this is, as is usual with such mixtures, "going the round." It is recommended in the work mentioned to divide several ingredients into three batches and dilute with the syrup, giving a larger portion of syrup to the mucilage than to the other ingredients. This makes a more homogeneous preparation, but cannot be poured from the bottle, and no doubt should be dispensed in a wide-mouth, glass-stoppered bottle, with an orifice sufficiently wide to admit of an ordinary medicine teaspoon, but it would certainly not be advisable to send it out in a covered pot, as suggested by such an eminent pharmacist as Mr. Ince, because of the volatility of the spirit. As an alternative plan for the dispensing of this mixture, I have tried the addition of a few minims of dilute hydrochloric acid, B.P., and this has the effect of rendering it more fluid, so that it can be easily poured from an ordinary medicine bottle. No objection was raised to this addition by the writer of the prescription, but whether such an alteration would be permissible in the ordinary routine of a dispensing establishment is a point I would like to have the opinion of your readers upon.

Headless Cross, Redditch, June 13, 1898. MINNIE FARR.

ANSWERS TO QUERIES.

PETROLEUM EMULSION.—See reply to "Petroleum" in our issue for April 23 last. [*Reply to* J. J. A.—11/35.]

BOTANICAL.—They are *Scrophularia vernalis* and *Arenaria peploides*. [*Reply to* D. S. N.—12/1.]

CERATUM GALENI.—This is usually understood to mean cold cream. [*Reply to* L. L. M.—11/30.]

MINOR EXAMINATION.—We should imagine not, but it would be as well to be familiar with the main points of difference, as shown in the *P. J.* Synopsis. [*Reply to* STUDENT.—11/34.]

SHAMPOO POWDER.—Borax, 3; powdered soap, 6; powdered extract of quillaia bark, 1; dried sodium carbonate, 3; perfume, *q.s.* Oil of *Myrcia acris* is generally liked as a perfume for this preparation. [*Reply to* NEPETA.—11/10.]

SCHOOL OF PHARMACY.—We do not know of any such school at Leeds, but there are special classes in chemistry, botany, and materia medica, at the Yorkshire College and at the Leeds School of Science and Technology. Perhaps those may meet your requirements. [*Reply to* LIVINGSTONE.—12/3.]

PLATE SPEEDS.—There is no actual ratio between the three systems, but 60 H. and D. is equal to about 75 Watkins, and about 48 Wynne. [*Reply to* J. J. M.—11/19.]

TONIC DROPS.—Nux vomica and quinine appear to be amongst the ingredients, and possibly they are the only ones, but we do not advise you to guess at the composition of medicine prescribed by a medical man. [*Reply to* QUASSIA.—11/21.]

HAND CAMERA.—You must let us know a little more fully what you wish to do. Do you require a camera for general all-round work, or for hand camera work pure and simple; with dark slides or with magazine? Please write more fully. [*Reply to* R. K. K.—11/20.]

ANTIPYRETIC.—You should make a point of supplying what is actually asked for. The name of the article you mention is registered as a trade-mark, and applies only to the product of a particular manufacturer. [*Reply to* DOUBTFUL.—11/28.]

CABINET-MAKERS' POLISH.—We presume this is what you ask for, but your query is so illegibly written that it is impossible to decipher it with certainty. If this be so, the following may suit you:—Seedlac, 2 ozs.; pale resin, 2 ozs.; dissolve in methylated spirit, 20 fl. ozs. It should be laid on warm, and, if possible, the work should be warmed too. [*Reply to* REX.—10/14.]

COLORATION OF URINE.—The colour of the sample of urine is most probably due to the patient having taken some aniline dye, such as methylene blue, which is frequently administered in capsules or coated pills, so that the patient does not observe the enormous colouring power of the material he is taking. Most of the dye is eventually excreted in the urine, and you will probably find on inquiry that the above is the correct explanation of the phenomenon. The determination of the exact composition of the dye taken would obviously be a matter of considerable difficulty. If you cannot trace the administration of any aniline dye, communicate with us again. [*Reply to* H. G. W. D.—11/27.]

POLARIMETER FOR THE OFFICIAL TESTS.—You can obtain an excellent half-shade English-made instrument of the Laurent type from Messrs. Watson and Co., High Holborn. You should specify that you require a 100 Mm. tube, as the ordinary tube is 200 Mm., but the former is generally used for essential oils, and the official figures are for a tube of that length. This instrument must, of course, be used with the sodium light, the requisite lamp for which is supplied with it. There are also some small "portable saccharimeters" in the market which can be used with ordinary light, but although cheap and convenient, they are not so delicate as the instrument recommended above. In certain cases, the difference in the reading obtained with the monochromatic sodium light and that from other sources is very material. [*Reply to* T. H. D.—11/6.]

OBITUARY.

CORNELIUS.—On June 4, James Cornelius, Pharmaceutical Chemist, Camden Road, N.W. Aged 67. Mr. Cornelius had been a member of the Pharmaceutical Society since 1864.

SIMPSON.—On June 6, John Wm. George Simpson, Chemist and Druggist, Maidstone.

DONALD.—On June 7, at his residence, 24, Connaught Road, Stroud Green, London, N., Francis Arthur Donald. Aged 42. Mr. Donald was for twenty-seven years on the staff of Messrs. Burgoyne Burbidges and Co., and at the time of his death was in charge of the export department of their office. Mr. Donald was highly respected by the whole staff, and his genial, kindly presence will be greatly missed.

FERN.—On June 11, Isaac Fern, Chemist and Druggist, Macclesfield. Aged 69.

HOBLEY.—On June 11, Joseph Hobley, Chemist and Druggist, Llanberis. Aged 75.

COMMUNICATIONS, LETTERS, etc., have been received from Messrs. Bayley, Bullivant, Crook, Elsdon, Everett, Ferry, Harley, Lawson, Lee, Lenfestey, Maddison, Martin, Martindale, Mawson, Moore, Napier, Parry, Patterson, Pickering, Raimes, Slinn, Standage, Street, Turner, Williams, Wright.

Pharmacy and the Allied Sciences.

A REVIEW OF CURRENT WORK.

Bermuda Arrowroot. Hitherto no authentic account has been given of the interesting arrowroot industry carried on in Bermuda. One reason for the superior character of Bermuda arrowroot is the scrupulous care taken in every stage of the manufacture. The mode of culture is very similar to that of the common potato. The roots, after being collected, are washed, and their outer cuticle completely removed. This process requires care, for the cuticle contains a resinous matter which imparts colour and a disagreeable flavour to the starch, and cannot be removed by subsequent treatment. The pared roots are then well washed, and crushed to a pulp between powerful rollers. The pulp is thrown into perforated cylinders, where it is agitated by revolving wooden paddles, while a stream of pure water carries off the fecula from the coarser fibres of the pulp, and discharges it through the perforated bottom of the cylinder. Thence it is conveyed in pipes, and passed through fine muslin strainers into reservoirs, in which it is allowed to settle, and the supernatant water drawn off. After repeated washings, it is again allowed to settle for some time, when the surface is skimmed with palette knives of German silver. The rollers and cylinders are made of brass and copper. The drying is conducted with equal care and cleanliness. The substance, spread in flat copper pans placed on rollers, is covered with white gauze and run under glass-covered sheds when there is danger from rain or dew. When dry it is packed with German-silver shovels in new barrels lined with paper, which is stuck in with arrowroot paste. The barrels are exported on the decks of vessels under cover, since, if placed in the hold, the arrowroot might be tainted by the effluvia of other freight.—*Kew Bulletin*, No. 135, pp. 50-51.

Germination and Deoxidation. At a recent meeting of the Linnean Society Professor J. B. Farmer and W. G. Freeman demonstrated the action of germinating peas, cress, and barley in causing the deoxidation of a watery solution of methylene blue to a colourless liquid on shaking up the solution with air, while on adding a drop of hydrogen peroxide the blue colour was restored. Green plants placed in the solution were found to act in a manner precisely similar to the seedlings, though the action may be modified by assimilation in sufficient light.

Artificial Indigo. Though the artificial synthesis of indigo was accomplished by Baeyer, of Munich, eighteen years ago, the product has only recently been available in large quantities for manufacturing purposes. Early in the present year the Badische Anilin and Soda Fabrik, Ludwigshafen, offered pure indigo-blue (indigotine) at the price of 17*s.* per kilo., which is about the value of pure indigo-blue contained in commercial indigo. Thus in spite of the reduced value of the natural article, the production of artificial indigo assumes a threatening importance to the indigo grower. Sigismund Lang, in the *Chemiker Zeitung*, points out that the price of artificial indigo is still too high, inasmuch as the cost of pure indigo-blue contained in the leading sorts of commercial indigo varies from 12*s.* 6*d.* to 16*s.* 6*d.* He further calls attention to the importance of the 2 to 10 per cent. of indigo-red (indirubin, indipurpurin) contained in the better class of natural indigo, and which is said to be absent in the artificial. It appears that the presence of indigo-red causes the proper fixing of indigo-blue on the fibre. This explains why Java indigo, which contains little or no indigo-red, is unsuitable for vat-dyeing. In some of the synthetical formations of indigo-blue a red colouring matter is obtained as a bye-product. If, as is suspected, this should prove to be identical with the natural indigo-red, a means will be available for remedying the existing defect in the artificial indigo.—*Kew Bulletin*, No. 135, pp. 33-35.

Coagulation of Latex. R. H. Biffen has examined the latex of various plants with a view to determine the phenomena that attend its coagulation when exposed to the action of air, water, alcohol, acids, alkalies, and other substances. Rubber-yielding plants were largely chosen on account of the abundance of latex, and because the various processes used in the preparation of crude rubber seemed likely to throw some light on the subject. Para rubber is prepared by exposing a thin layer of latex of *Hevea brasiliensis* and other species of *Hevea* to the action of the smoke of burning Attalea nuts. Coagulation is immediately brought about, resulting in the formation of a soft curdy mass of rubber which on drying becomes tough and elastic. The explanation that this is due to the evaporation of water is inaccurate, because no loss of weight follows. On burning the nuts and condensing the smoke, two layers of liquid were collected, the upper consisting mainly of acetic acid, the latter of creosote and pyridine derivatives. On adding acetic acid to the crude latex, coagulation immediately occurred; this must be due to the action of the acid. The same latex is itself alkaline, and the addition of a solution of ammonia preserves it indefinitely from spontaneous coagulation. On the other hand, in the acid latex of *Castilloa elastica*, a tree which grows in Mexico and Nicaragua, alkalies cause coagulation. For this purpose the Indians use a decoction of the stems of the moonflower (*Ipomœa bona-nox*). In the case of *Hancornia speciosa*, in order to produce "mangabeira" rubber, common salt is added; in the preparation of "balata," from *Mimusops globosa*, in Venezuela and Trinidad, coagulation is effected by boiling. As the milkiness of latex is due to the presence of innumerable small particles of caoutchouc, in themselves soft and sticky, it was separated by a centrifugal machine, rotating 6000 times per minute. The separated particles were shaken with water and again separated. On diffusing them again through water and adding an alkali no coagulation occurred. From the failure of the chemical reagents employed to bring about the clotting of the washed particles, the author infers that no chemical change occurs in the rubber itself, and that the cause of the phenomenon must be looked for in the medium in which they are suspended. J. R. Green has found albumin, globulin, albumose, and peptone in several rubber-yielding latices. Biffen proves the presence of proteids in the clear solutions, by the xanthoproteic reaction, after separation of the rubber particles. Thus in *Hevea brasiliensis* an albumin, present in the latex, is clotted by heat and acetic acid; a globulin in *Manihot glaziovii* is coagulated on heating to 74 to 76° C.; the acid latex of *Castilloa elastica* contains an acid albumin which is precipitated on neutralisation. These coagula gather up the rubber, and possibly the starch particles, just as white of egg gathers up suspended particles when clotted for the purpose of clearing jellies.—*Annals of Botany*, vol. xii., No. xlvi., pp. 165-71.

New Theory of Alternation of Generations. W. H. Lang has cultivated the prothalli of a number of species of ferns under slightly abnormal conditions, and considered their bearing on the problem of the nature of alternation. He brings forward a theory as a provisional hypothesis, founded on facts different from those which led Bower to elaborate the antithetic theory. It is briefly as follows:—

With the spread of algal organisms to the land, where, in the absence of any vegetation causing shade, some would be exposed to a more intense illumination, the flattened form would probably be assumed. Prolonged drought and the influence of direct sunlight, inducing a change to a cylindrical form, might be accompanied by the substitution of a reproductive organ forming dry reproductive cells (spores) for those adapted to an aquatic existence. The acquisition of more highly absorbent organs (primitive roots) would further the existence and growth of this modified gametophyte. This spore-producing stage would at first follow the sexual stage in any individual exposed to dry conditions. The association of the asexual with the sexual individual might come about by the absence of water preventing the liberation of motile spores from the zygote. The latter would be obliged to germinate *in situ*, and the fact that it did so under dry conditions would tend to shorten the sexual stage and hasten the assumption of the sporophytic form and mode of reproduction. From the spore, which would always separate from the parent, a sexual individual would arise, since germination could take place only in a damp spot. As soon as, with increase in size and complexity of the spore-bearing plant, a vegetation capable of affording shade came into existence, the conditions suitable for the persistence of the more primitive, alga-like, sexual stage in the life-history would be present. The latter has, of course, also been modified in various ways.—*Annals of Botany*, vol. xii., No. xlvi., pp. 251-6.

Orientation of the Plant Egg. C. MacMillan discusses the ecological significance of the orientation of the plant egg, and concludes that the phenomenon is at bottom one of adaptation. Three principal types of egg-orientation are recognised: the primitive or bryophytic, characteristic also of Equisetum and Angiopteris; the semi-inverted, characteristic of Isoetes and the leptosporangiate ferns; and the inverted, characteristic of Lycopodinæ and Spermatophyta.—*Bot. Gazette*, xxv., 301.

Crystallised Carbon Dioxide. Profcssor A. Liversidge states that when solid carbon dioxide is examined under the microscope, it presents along its edges projecting wire-like crystals, which have branching filaments issuing from them, apparently at right angles, resembling somewhat the groups of minute crystals seen in crystallised iron, gold, and ammonium chloride.—*Proc. Australasian Association.*

Chlorination of Acetylene. M. A. Mouneyrat has found that a mixture of acetylene and chlorine, exposed to diffused light, always combines to form acetylene tetrachloride without explosion, in the absence of free oxygen or any gas that might produce oxygen. If, however, such a gas be present, an explosion occurs, which the author attributes to the formation of acetylene monochloride, which takes fire directly it comes in contact with air.—*Bulletin de la Soc. Chim. de Paris* [3], xix.-xx., No. 11, pp. 448-52.

Preparation of Iodoform by Electrolysis. An improved method is suggested by F. Foerster and W. Meves. A dilute solution of alcohol, containing soda and potassium iodide, is taken at a temperature of 65-70° C. and subjected to a current of 1 ampère. The reaction ensues according to the equation—

$$C_2H_6O + 5I_2 + H_2O = CHI_3 + CO_2 + 7HI.$$

By employing a current of 3 or more ampères, as recommended by Elbs and Herz, a certain amount of potassium iodate is produced. —*Journ. f. Prk. Ch.*, through *Bull. de la Soc. Chim. de Paris* [3], xix.-xx., No. 11, pp. 456-7.

COCAINE HYDROCHLORIDE.

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

It is some years since that, in the course of an inquiry into the quality of cocaine hydrochloride and of cocaine products generally, the conclusion was arrived at that Maclagan's test was the best and most ready test for the purpose of distinguishing a pure salt of cocaine (B. H. Paul, *P. J.* [3], xviii., 781). Maclagan's test, as is now well known, consists in dissolving 1 grain of cocaine hydrochloride (0·064 gramme) in 2 fluid ounces (56½ C.c.) of water, adding two drops of ammonia solution and well stirring (*P. J.*, *ibid.*, and [3], xvii., 686). According to this test a good sample of cocaine hydrochloride should give a perfectly crystalline precipitate after a few minutes' stirring of the solution with a glass rod. At the time when the earlier experiments referred to above were made, the commercial cocaine hydrochloride was of indifferent quality, having been prepared for the most part from the total alkaloids of the coca leaves, either by dissolving the alkaloids in hydrochloric acid and evaporating the solution to dryness or with the better class of salt by crystallising the mixed hydrochlorides.

From experience gained in the course of many analyses of the crude total alkaloids of the coca leaf, as now imported from South America and Java, and which is the only material now used in the manufacture of cocaine salts, it is not to be expected that even a crystalline hydrochloride obtained from this "crude cocaine" should necessarily be cocaine hydrochloride, considering that the total alkaloids of the coca leaf consist of varying proportions of cocaine. In some samples of "crude cocaine" not more than seven-tenths of it is pure cocaine, whilst several of the other cocaine alkaloids yield cystalline hydrochlorides.

Since from Liebermann's and Giesel's work on the synthetic preparation of cocaine from ecgnonine it is now possible to eliminate all the other alkaloids and to prepare pure cocaine, there is no reason that cocaine hydrochloride of undoubted purity should not be obtainable. Cocaine hydrochloride made from synthetically prepared cocaine readily answers Maclagan's test, which, in our opinion, is still the best test for readily ascertaining the purity of commercial cocaine hydrochloride.

In order to ascertain the purity of the cocaine hydrochloride now commercially supplied samples were obtained and submitted to Maclagan's test, using ammonia of 960 specific gravity.

Sample A. A crystalline precipitate almost at once.
" B. " " " "
" C. " " not so readily.
" D. No precipitate for some time, and then it was clotty and amorphous.

The German Pharmacopœia, iii., and the United States Pharmacopœia, 1890, tests for cocaine hydrochloride, known as the permanganate test, consist in dissolving 0·10 gramme of the salt in 5 C.c. of water acidulated with 3 drops of dilute sulphuric acid and adding 1 drop of weak potassic permanganate, when the colour should hardly disappear in half an hour. This test is essentially a test for cinnamyl cocaine, which we first showed to be a natural constituent of several varieties of coca leaves (*P. J.* [3], xx., 166), and have since found almost invariably present in "crude cocaine." Applying the permanganate test to the samples described above, the following results were obtained:—

A. Retained its colour for 30 minutes.
B. " " "
C. Colour less permanent.
D. Colour disappeared at once and required four times the stipulated amount of potassium permanganate to give a permanent colour for 30 minutes.

It is evident, therefore, that by Maclagan's test, as well as by the permanganate test, samples A and B are pure cocaine hydrochlorides. Sample C is a fairly good sample, whilst sample D is certainly not to be accepted as a sample of good commercial quality.

It has lately been stated (F. Günther, *Pharm. Centralh.*, xxxix., 1) that Maclagan's test is dependent on chance, and is therefore not to be relied upon, that it is not known what impurities can be detected by it; moreover, that a distinction is not shown in the physiological action between one that answers this test and one that does not. The answer to these contentions naturally suggests itself. As it has been found that Maclagan's test is only answered by pure cocaine hydrochloride, and that the other products of the coca leaf do not satisfy the test, then it is certainly in favour of Maclagan's as being a satisfactory one for determining the purity of commercial cocaine hydrochloride. In our opinion a sample of cocaine hydrochloride that does not answer Maclagan's test is not of sufficient purity for medicinal purposes.

LIQUOR STRYCHNINÆ HYDROCHLORIDI.

BY GEORGE LUNAN.

It has not been, so far as I have seen, particularly noted that the new solution of hydrochloride of strychnine (B.P., 1898) is considerably weaker in alkaloid than the 1885 preparation. The new edition of the 'Extra Pharmacopœia' states that it is one-tenth weaker.

The 1885 formula, under careful manipulation, including very gentle heat and allowing for the contraction upon mixing the spirit with the distilled water, produced a solution containing one grain of alkaloid in about 108 minims; the 1898 formula produces a solution of the hydrochloride of the alkaloid containing one grain in about 110 minims (a fraction less in minims in each case).

The molecular weights of strychnine and hydrochloride of strychnine, calculated by the corrected atomic weights given in 1898 B.P., are 331·75 and 403·7 respectively, so that the hydrochloride contains 82·17 per cent. of the alkaloid. But a further reduction in alkaloidal value is due to the fact stated above, the 1898 containing 1 grain of hydrochloride in 110 minims—the 1885 1 grain of alkaloid in 108 minims. This is seen by comparing the formulæ, the new having $17\frac{1}{2}$ grains hydrochloride in 1920 minims, the old 18 grains strychnine in about 1940 minims (doubling the latter formula).

Calculating that $17\frac{1}{2}$ grains of hydrochloride contain 14·379 grains of alkaloid as follows: $\frac{82{\cdot}17 \times 17{\cdot}5}{100} = 14{\cdot}379$, it is found that 1 grain of alkaloid is contained in nearly 134 minims of new B.P. solution; thus $\frac{1920}{14{\cdot}379} = 134$, and by superposing $\frac{108}{134}$ you arrive almost at the exact comparative alkaloidal strength of the two solutions, *i.e.*, 80·6 minims of old liquor are equal to 100 of new, and that for practical purposes the new B.P. solution is one-fifth weaker than old, that is, 4 minims 1885 equal 5,1898.

This result may be verified by finding reduction in strychnine value caused by $\frac{108 \times 82{\cdot}17}{110} = 80{\cdot}6$. If the compilers of the B.P. had wished the preparation to contain 1 grain of alkaloid in 110 minims, the quantity of hydrochloride required would have been $21\frac{1}{4}$ (21·29) grains for the four ounce formula.

It is undoubted that the new preparation, in being weaker having percentage of title stated, in being made with the neutral salt and to a definite volume, will be more satisfactory from a pharmaceutical point of view, but it remains for dispensing chemists to warn medical practitioners that the new solution has only four-fifths the strychnine value of the old.

PHOTO-MICROGRAPHY.—III.

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

(*Continued from page 568.*)

Commencing now to describe each part separately in detail, there is little more to say about the camera and its slide, seeing I have fully described them. It is not difficult to understand how the mahogany rails between which the camera moves to and fro are fixed on the base-board of the apparatus, but we should like to say a word about the ground-glass screen-holder. It is made so that the ground glass itself can be slipped out with great ease and another of finer or coarser grain placed in its stead. This is done very simply by the use of two brass buttons.

Turning these on one side the glass falls out, turning them back again another can be fixed. With respect to the kinds of ground glass employed, there are three varieties:—The ordinary coarse-grained one, another of finer texture, and a third made specially for me by Ross, Ltd., which is so fine as to hardly be worthy of the name of ground glass at all. When commencing to take a photograph either the first or second is used, and after illuminating the field equally, in a manner to which I shall presently refer, one proceeds to focus; if that can be done on the coarse or medium glass I am always more satisfied, but if with extremely difficult objects the ability to do so is not certain, I change to the finest type or even use a piece of plain glass. The objection to using plain glass, or the finest of the ground glasses in the first instance, is that the general appearance of the field is entirely lost. You see nothing with the naked eye but light streaming from the eye-piece, and, therefore, any inequality of the illumination is sure to escape notice. But for the more accurate focussing that is required with the secondary markings of diatoms or the flagella of bacilli I have to resort to it accompanied by the use of a focussing glass (FG), which is shown in the diagram near the foot of the camera (see p. 567). Much difference of opinion exists as to what kind of magnifying glasses it is better to use.

Dr. Bousfield, the eminent photo-micrographer, advocates the use of a lens with as low a power as possible. Others prefer a spectacle lens mounted in a frame much like an ordinary pair of spectacles, having about an inch focus, whereas not a few prefer the ordinary photographic hand-magnifier, which has already been referred to, providing it is achromatic. Personally I have a predilection for this type, and use one made by Dallmeyer, which he terms his "Low-power focussing hand magnifier." Before using a hand magnifier it should be carefully focussed on the same ground glass upon which it is to be employed. This is not quite so easy a matter as one would think, for it requires a little practice to know when the glass-grinding marks are really strictly in focus. It is a good plan to draw a pencil mark on the ground glass, and then applying the magnifier to its plain surface, to hold both to the light, and to keep altering the focussing screw of the magnifier until the grains of the lead are seen on the glass. No pains should be spared in getting this focus accurately, for it is needless to point out, if carelessly done, it will affect the final use of the magnifier. This is the only trouble of using three kinds of ground glass, lest one should vary in thickness and so upset the focussing arrangement of the magnifier. Of course, the only way out of such a trouble is to procure three pieces of the same thickness.

One word concerning the length of the piece of wood marked 3 in Fig. 1 of the second article (see p. 432). I have found that it is very convenient for it to have a somewhat greater length in the front than that given in the last article, when applied for the purpose now under consideration. The object of so doing is this, when using the additional "front" to the camera for the purpose of gaining

more magnification a weight can be put upon the projecting portion, which gives greater solidity to the whole apparatus. If it be too much trouble to make another piece of wood (piece 3, Fig. 1, first article) a very good substitute is to change the holes of the screws of the same piece in such a fashion that about 2 inches project in front of the camera, at a loss of that which lies underneath it, as, indeed, is shown in the diagram.

It remains now to give a diagram (Fig. 4) and dimensions of the

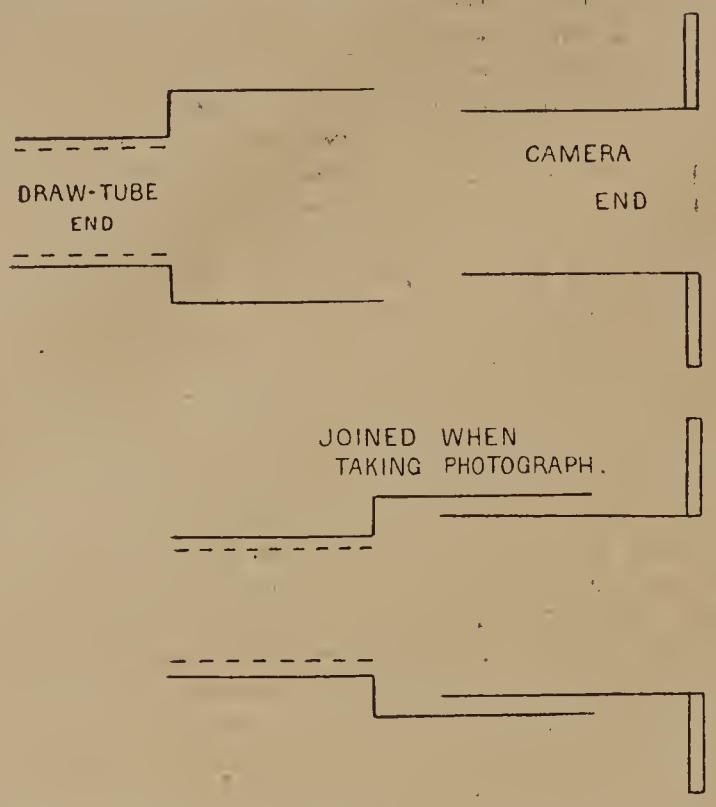

FIG. 4.—DIAGRAM OF DRAW-TUBE AND CAMERA ENDS.

tubes which are respectively attached to the microscope and camera to exclude the light at the juncture of the two. That portion attached to the camera is $1\frac{1}{2}$ inch wide and $1\frac{1}{2}$ long. It is joined on to a flange, which fits on to the ordinary sliding front, whilst that fixed on to the draw tube of the microscope is $1\frac{3}{4}$ inch in diameter at its free portion, into which the other passes, but

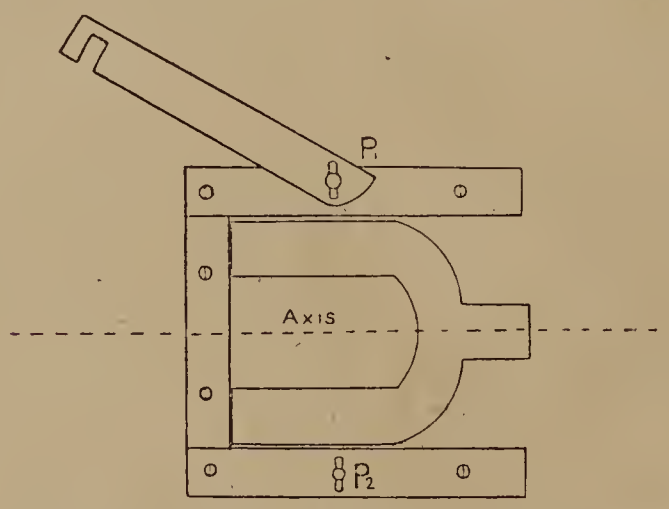

FIG. 5.—DIAGRAM OF BASE-BOARD OF APPARATUS.

reduced in diameter at its other extremity to fit the draw tube, allowance being made for a cork lining to prevent it scratching the lacquer.

The microscope must be firmly held in position on the table. There are many ways of doing this, but as these articles are to be essentially practical, here is the simple plan I adopt. Three pieces of wood are made about one-sixteenth of an inch thinner than the foot of the horseshoe stand of the microscope. They are fitted together and screwed into the large base-board of the apparatus, as shown in the accompanying diagram (Fig. 5). A fourth piece of wood covered with velvet is also shown there, which turns on a screw-down pin at P, a washer one-sixteenth inch thick being interposed between it and the piece beneath, and passing over the foot of the instrument, is held by the thumb-screw figured at P2. The axis of the microscope should correspond to the axis of the camera.

We now proceed to particulars, and the first of these is to mention the arrangement for changing the objectives. The ordinary method is that of affixing to the end of the tube what is commonly called a revolving nose-piece. These are made to hold two, three or four objectives, and if they could be made so true that when an object is found with a half inch it would be equally in the centre of the field when the eighth is brought into

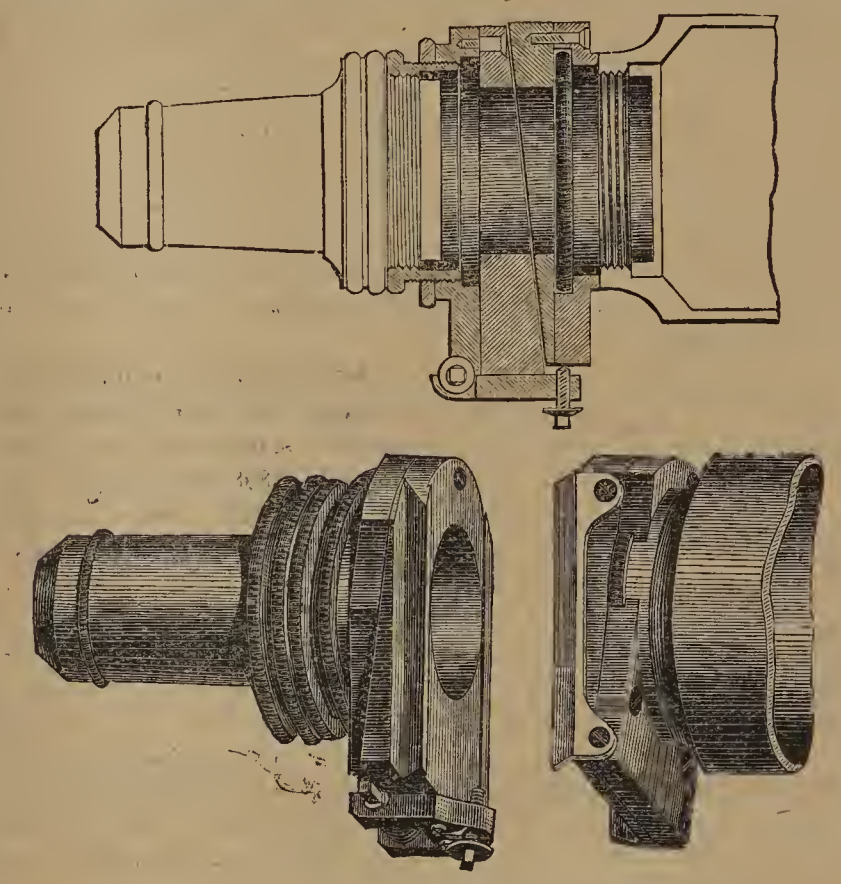

FIG. 6.—ZEISS SLIDING OBJECTIVE CHANGER.

position it would be satisfactory; but this it seems impossible to do, inasmuch as each objective always requires an adjustment peculiar to itself. It is to meet this difficulty the firm of Zeiss have introduced what they term their "Objective Changer" (Fig. 6). It consists of two parts, one attached to the microscope itself, which is never removed, and another which is fixed to every objective.

When a change is desired it is only necessary to slide one objective out and another in. The portion separately attached to each objective is supplied with two adjusting screws, which enable the microscopist to move the objective from side to side or from above downwards. This adjustment is done once for all, provided the objective be not removed from the holder, when perhaps readjustment may be necessary. The convenience of such an appliance must be experienced to be appreciated, but a word of caution is necessary in centreing objectives with these changers, and it is this: Seeing that each objective can be moved from side to side or from above downwards in its holder to a sensible amount, it is quite possible so to shift the objective that the object is unconsciously viewed almost entirely through its outer zones only, instead of along its optical axis. The consequence of this is that the perfection of defi-

nition may be seriously interfered with; just as if with an ordinary photographic lens and camera a photograph was taken with the lens pushed up or down in the sliding front, and the photograph taken with the marginal rays instead of the central ones (Fig. 7). The way to avoid this mistake is to adopt the

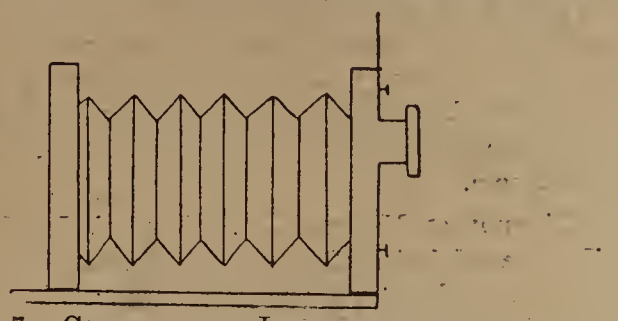

Fig. 7.—Camera with Lens pushed up.

following plan. Let us suppose the microscopist is desirous of centreing several objectives for the same microscope. Having secured a sensibly sized diatom—one preferably with a well-defined edge and centre, such as one of Arachnoidiscus type—let it be placed on the stage of the microscope, and a ½ inch objective (as it comes from the maker) screwed into the nose piece of the microscope tube in the ordinary fashion. The diatom is then fidgetted about on the stage until it is practically central in the field of view

This power is then removed and the highest objective of the battery placed in its stead, say, for instance, a 1/12th immersion. Having again focussed the diatom, its central position is brought accurately into the middle of the field and the objective removed. The "body portion of the changer" is now affixed to the microscope tube and the other portion of it to the 1/12th, and the two united by sliding them together. The diatom by our previous experiment was placed central with the axis of the tube, and it only now remains to see whether it is still so placed. If not, it must be centred by the adjusting screws on that portion of the changer attached to the objective, and not by moving the diatom. Each objective must be centred by its own changer in the same way the diatom remaining untouched throughout. To make my meaning clear, the first portion of the description deals with the method of getting the diatom in the axis of the tube of the microscope, the second shows how to make the axis of each objective central also. It is very obvious that the lenses will now perform at their best, for every object will be axially viewed by each objective.

NOTES ON MICROSCOPY.

Localisation of Amygdalin and Emulsin in Eriobotrya.—M. L. Lutz states that the distribution of these two substances corresponds in *Eriobotrya japonica* to that found in other genera of Pomeæ. Amygdalin occurs in the hypocotyl, plumule, and radicle, and in the cotyledons; emulsin in the cotyledons alone. The presence of amygdalin was detected also in cells dispersed through the parenchyme of the cotyledons, and in the parenchymatous cells of the phloem of the vascular bundles.—*Bull. Soc. Bot. de France*, 1897, p. 263.

Production of Gum in the Sterculiaceæ.—According to M. L. Mangin, the production of gum in trees belonging to this order is normally limited to canals and lacunæ imbedded in the parenchyme of the pith or of the cortex. The gum does not usually escape outside the stem or branch, but this does not sometimes happen. The formation of the gum is brought about by a special mechanism. The walls of the cells which border the gum-passages become gradually thickened and transformed into gum, while the outermost cell-wall retains its original structure without alteration.—*Comptes rendus*, cxxv., 1897, p. 725.

MEASUREMENT OF QUANTITY OF HEAT.*

Heat of Fusion.

In the determination of heats of fusion by the calorimeter the method is very similar to that for specific heats. Thus to find the heat of fusion of ice, or the latent heat of water as it is termed, a known weight of ice at 0° is put into the water of the calorimeter at about 20°, and the fall in temperature caused by its complete melting is observed. The number of degrees multiplied by the number of grammes of water taken (plus the water equivalent of the apparatus) gives the number of calories that have been used up in melting the ice, and in raising the temperature of the water so formed from 0° up to the final temperature. The quantity used in the last-named change is known, since the weight of the water is the same as the weight of the ice from which it was formed, and every gramme requires 1 cal. to raise its temperature one degree. Deduct the number of calories so found from the number that have been withdrawn from the water originally taken, the remainder is the number used up in melting the ice, from which the quantity required to melt 1 gramme is at once found.

If the experiment is now repeated, but starting with ice below 0°, the specific heat of ice (which is not the same as that of liquid water) is found. For we ascertain directly the total amount of heat that disappears, and we calculate how much of it is used in melting the ice, and how much in heating the water so formed; the remainder is the amount of heat required to raise the temperature of the known weight of ice from what it was originally up to 0°, and from this the specific heat of ice is obtained directly.

The method by which the heats of fusion of bodies other than ice are found is similar; for bodies that are solid at ordinary temperatures it is usually more convenient to take them in the liquid state and measure the heat given out in solidifying. The substance is enclosed in a small platinum flask, into which a thermometer is also inserted; the influence of the flask and thermometer is, of course, allowed for, being found by calculation or previous direct experiment. Three determinations are necessary; in one the solid substance is taken and its specific heat in that state ascertained. Next, the liquid substance is taken and a determination made of its specific heat in that state. Finally, measurement is made of the heat given out by starting with the liquid and cooling it beyond the point at which it solidifies. From the two earlier results the amounts of heat given out by it in cooling in the liquid state down to the solidifying point, and in the solid state from that point down to the final temperature, are respectively calculated; the remainder of the heat given out is due to the change of state, and from its amount the heat of fusion is at once found.

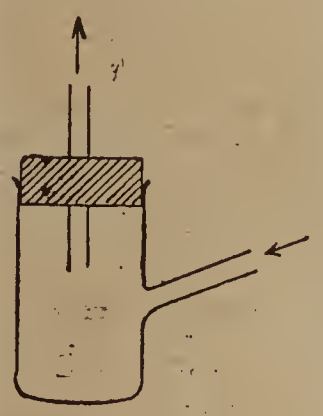

Fig. 1.

Heat of Vaporisation.

To find the heat of vaporisation of a substance its specific heat in the liquid state is first determined in the usual way. Next, a quantity of the vapour at the temperature of condensation (or boiling-point) is led into a condenser in the calorimeter, and the

* Previous articles on physico-chemistry have treated of weighing or the measurement of mass, and the correction of apparatus (*P. J.* [3], xxv., 889); the method of interpolation, graphic representation, and the specific gravity of liquids and solids (*P. J.* [3], xxv., 1141); the specific gravity of gases, vapour density, and specific volume (*P. J.* [4], ii., 304); melting-points and boiling points (*P. J.* [4], 328); latent and specific heats (*P. J.* [4], iii., 293).

change of temperature noted. The weight of vapour is given by the increase in weight of the calorimeter. The amount of heat given out by this weight of the liquid in cooling from its boiling-point to the final temperature is deducted from the whole amount of heat that has been measured; the difference is the heat given out in the condensation of the vapour, which is, of course, the same as the heat used up in its formation; the numerical value of the heat of vaporisation is found directly from this. It is important that the vapour that is led into the calorimeter should not carry any particles of liquid with it, the tube conveying it should therefore have an upward slope, and may with advantage carry a small trap like that shown in Fig. 1, in which such particles of liquid are deposited.

The heat of vaporisation of a substance depends to some extent on the temperature at which the vapour is formed. A liquid gives off vapour long before it reaches its boiling point, and the amount of heat used in forming this vapour is not in general the same as the amount of heat required to produce an equal weight of vapour at the boiling-point. The heat of vaporisation of a substance below the boiling-point is found thus:—Some of the liquid is put in a small distilling-flask in the calorimeter, the temperature being somewhat above that required. A glass tube drawn out to a very fine opening passes through the neck of the flask and dips below the surface of the liquid, as in Fig. 2, and the side tube is connected to an air-pump by which the pressure is reduced. Vapour is gradually formed and carried away, well-dried air of a constant temperature being allowed to pass through the tube A, and the temperature of the water in the calorimeter falls. The amount of heat withdrawn is calculated in the usual way from this fall of temperature (the flask, etc., and the contained liquid being of course also considered), and the heat of vaporisation found from these data is taken to be that for the mean temperature of the experiment.

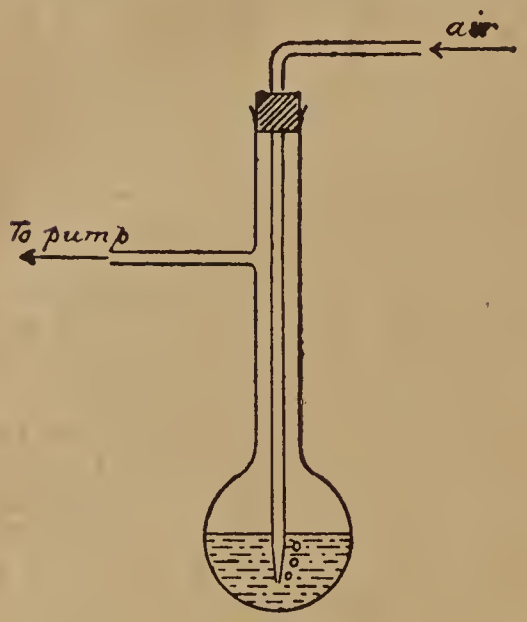

FIG. 2.

METHOD OF COOLING.

In addition to the direct measurement of quantity of heat by the calorimeter as described above, it may also be measured indirectly; specific heat capacities are sometimes determined by these indirect methods, and one or two of them will now be described.

If equal quantities of two substances at the same initial temperature are allowed to part with heat by radiation, the surfaces from which radiation occurs and all other conditions being alike in both cases, the one that contains more heat will take the longer time to cool, and the times occupied in cooling through the same range of temperature will be directly proportional to the heat capacities of the two substances. The method is most suitable for liquids; the substance under experiment is put in a metal cylinder like the inner vessel of the calorimeter described above, but much smaller, and furnished like it with a lid, thermometer, and stirrer; but the outer surface, instead of being polished, is covered with lampblack. This vessel is hung by silk threads in an air space inside a water jacket, and the surface of this, which is towards the inner vessel, is also covered with lampblack. The lampblack on the two surfaces is to promote radiation and absorption respectively, and the water-jacket is to prevent accidental fluctuations of temperature. The time required for the substance to cool through a definite (not too small) range of temperature is accurately ascertained. The experiment is then exactly repeated with an equal weight of water, making the observations for the same range of temperature. The specific heat of the liquid in question is then found by a simple division sum.

METHOD OF MELTING ICE. BUNSEN'S ICE CALORIMETER.

The heat of fusion of ice having been accurately determined, the specific heat of any body may be measured by finding how much ice can be melted by the heat given out when a known weight of it is cooled through a known interval. The most convenient apparatus for this purpose, when small quantities of material are employed, is Bunsen's ice calorimeter. This is represented in Fig. 3, and consists of the following parts: A is a glass tube resembling a test-tube, sealed into a glass jacket, B. This tapers off rather abruptly to a narrow tube, which is bent twice at right angles, and communicates by a ground joint with a capillary tube, C, graduated in millimetres. The capillary is removed, a little water put into B, and boiled there; when it has boiled a little while the open end of the tube is dipped below the surface of water which has been boiling for some time in a beaker, and the heating is stopped. As soon as the water vapour in B condenses, the water from the beaker rushes in, and the jacket is thus filled with air-free water. The open end of the tube is dipped below mercury while the water cools, and some mercury is thus drawn in; if necessary, more mercury is afterwards allowed to take the place of some of the water by suitably inclining the apparatus, so that the volume of mercury is about one-tenth of that of the water. Finally, the capillary is inserted so that it is partially filled with mercury. The calorimeter is now filled once for all, and never needs to be emptied. To use it the water in the jacket is frozen by putting alcohol cooled below 0° into A; the freezing is stopped before the cylinder of ice quite reaches to the outer wall of the jacket, and the whole is then brought exactly to 0° by surrounding it for a long time with melting snow. The substance to be experimented on, and whose temperature and weight are known, is put into A. If it is a solid, a little air-free water at 0° is also put in, to assist in the transference of heat; A is now closed by a cork. The heat that is given out by the substance is entirely used up in melting a part of the ice, the whole apparatus and its contents still remaining at 0°. The water that is formed occupies less space than the ice, consequently the mercury rises in the jacket and falls to a corresponding extent in the capillary, and the extent of the fall is proportional to the amount of ice melted, and therefore to the amount of heat given out. The value of the divisions on the capillary is ascertained by performing an experiment with a known substance, such as water. To avoid errors in reading, the end of the capillary may be bent downwards and dip into a weighed vessel of mercury; by again weighing the latter when movement has ceased, the amount of mercury drawn

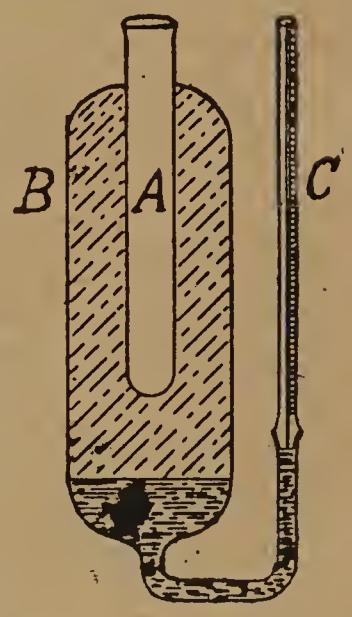

FIG. 3.

in is found, 1 gramme corresponds to 65 calories. The special advantages of this calorimeter lie in its suitability for small quantities of substances, and in the fact that since the temperature is constant, heat exchange between the apparatus and its surroundings may be reduced to zero, and slow thermal effects can then be measured without increasing the liability to error.

Atomic Heats.

Very important relations exist between the specific heats of bodies and some of their other properties. It has long been known that the specific heats of elementary bodies, determined for the substances in the solid state, are inversely proportional to their atomic weights; in other words, that the specific heat of a solid element multiplied by its atomic weight gives as product a constant number. The numbers actually so obtained are not absolutely the same, but nearly so, the average value being 6·4. This quantity, specific heat × atomic weight, is called the atomic weight of an element. The slight variation in the value admits of a ready explanation. The specific heat of a solid body is not the same at all temperatures, usually having a higher value as the temperature approaches the melting point. The solid elements differ very widely in their melting points and other physical properties, and hence it is not to be expected that determinations of their specific heats at approximately equal temperatures should give quite comparable results. The observed facts are, nevertheless, very striking; and the constant value of the atomic heat has more than once been utilised in deciding between different multiples of a number to represent the atomic weight of a little known element, that number being chosen which, when multiplied by the specific heat of the solid element, gives a product most nearly equal to 6·4. Another interesting fact is that the specific heats of the elements are the same whether the element is free or in combination with others. This has been established as a generalisation by Kopp, but it is not without real or apparent exceptions.

EXAMINATION OF POWDERED VEGETABLE DRUGS.*

BY HENRY KRÆMER.

Powdered drugs and "pressed herbs" will, no doubt, at a not very distant day, be the form in which most of the vegetable drugs will be bought and sold by the apothecary. It seems reasonable to suppose, however, that a few drugs, as licorice root, slippery elm bark, chamomile flowers, rhubarb, orris root, Canada snake root, senna leaves, manna, etc., will always be obtainable in a more or less crude condition, as most of these require that they be broken as little as possible for some of the purposes for which they are used. But even these may be ground and compressed into forms, as "rhubarb fingers," that may be in keeping with more elegant pharmacy. Some of the manufacturers, at least, of powdered vegetable drugs and "pressed herbs" have overcome probably nearly every objection that might be raised against their products. They have done, moreover, the art of healing an immense amount of good, inasmuch as their products are sold in proper containers or are wrapped so as to insure against the maximum amount of deterioration.

It is well known that the average pharmacist pays very little attention to the preservation of all his stock of crude vegetable drugs. The number of suitable containers are generally few, and the stock is necessarily in much greater excess of these. Those that have no proper receptacles, as well as the over-abundance of drugs purchased for which no suitable containers are provided, are wrapped in what is by no means impervious paper and stored away either on top of each other or side by side, or both, in an "out-of-the way" place.

Some of the advantages in the buying of powdered drugs are:—

(1) That they are ground by the manufacturer of pharmaceutical products to the fineness specified by the U.S. Pharmacopœia, or, when the drug is not official, to that which is generally used.

(2) The pharmacist is saved the expense for apparatus, as a drug-mill, sieves, etc.

(3) He furthermore saves time in grinding the crude drugs or attending to the same.

(4) The powdered drugs which he purchases are in impervious containers, and of such a form that he does not hesitate to place them on his shelves or his "out-of-the-way" place, be it the hottest part of his store (over the cases) or the most humid part.

(5) No additional expense may be felt by the pharmacist for securing other containers than those in which his products come to him.

Some of the disadvantages in the purchasing of powdered drugs are:—

(1) That the drug in this condition costs from 5 to 50 per cent. more.

(2) The apprentice does not obtain the kind of practical experience in grinding drugs that will be always of inestimable value to him in determining either their identity or quality.

(3) The product which has been ground by someone else is likely to be more uncertain than one ground by the pharmacist himself from crude drugs of which he can so readily test the quality.

(4) There is at present no easy method for the average pharmacist to determine the purity of the powdered drugs he purchases.

Now, some pharmacists have the idea that a large sum of money must be expended in order to be able to grind one's own drugs—that, for instance, steam power is necessary, an expensive mill must be provided and a special room set apart for doing this kind of work. The fact of the matter is that such an expensive and elaborate plant is impracticable as well as unnecessary. Comparatively little money need be expended to purchase a good hand-mill and the necessary sieves. With but very little outlay the retail pharmacist can grind his own drugs and overcome the disadvantages above noted. It is not the object of this paper, however, to discourage the buying of powdered drugs or even to compare the expense of grinding either commercial drugs or those of one's own collecting with that of commercial powdered products, but to consider the qualitative and quantitative investigation of powdered drugs.

Qualitative Examination.

We are indebted particularly to the labours of Flückiger, Wigand, Vogl, Arthur Meyer, Moeller, Tschirch, Schrenck, and others, who, during the past ten years, chiefly have given to us in their publications the characteristic structures of many of our crude drugs. All this has been necessary and is a preparation for the study of powdered drugs. While much has been done, even in the study of powdered products, there still remains much to be done in the study of both crude (particularly American) and powdered drugs. Several things are necessary for the study of powdered drugs:—

(1) Suitable methods for the rapid discrimination and study of the characteristic tissues and contents of the powder. While sections of the fine particles can be made (by holding the particle between the forefinger and thumb and drawing the razor through the specimen), still this is laborious and requires considerable practice, time, and confidence. It is therefore necessary to devise means and employ reagents which shall make the specimen transparent and not destroy either the tissues or contents that

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* From the *American Journal of Pharmacy*.

need to be seen. The most satisfactory reagent for general purposes in the hands of the writer has been the employment of the following solution :—

CHLORAL-GLYCERIN SOLUTION.

Glycerin (C. P.) } Equal parts.
Distilled Water }
Chloral—sufficient to saturate the solution.

A few drops of this solution are placed on the slide and from 0·002 to 0·008 gramme of the powder added. The cover-glass is put on the specimen and the preparation is heated gently over either a spirit lamp, gas flame, or oil lamp until it begins to boil. This is then allowed to cool and examined. If not sufficiently transparent it is heated again. This is generally not necessary, as with but one heating the tissues are transparent and contents may be examined. It is true that this treatment causes a slight swelling of the cell wall, and is not applicable in testing for starch ; but this reagent has the advantages of clearing the specimen and preventing it, without further treatment, from drying out.

When examining specimens containing starch another solution is used, as follows :—

CHLORAL-GLYCERIN SOLUTION + IODINE.

Chloral-glycerin solution—any convenient quantity.
Iodine—a sufficient quantity is added to saturate the solution.

This solution is placed on the slide and the same quantity of powder used as before, but heat is not applied. The starch grains, with all of the characteristic markings, will be brought out and may be studied.

When lignified cells are sought, the powder must first be moistened with a drop or two of the following solution of anilin hydrochloride, and then after a few minutes a few drops of the chloral-glycerin solution may be added :

ANILINE HYDROCHLORIDE SOLUTION.

Aniline hydrochloride	5 Gm.
Hydrochloric acid (C.P.)	25 C.c.
Alcohol (95 per cent.)	25 C.c.
Distilled water	50 C.c.

The anilin hydrochloride is dissolved in the alcohol, and to this solution the water containing the hydrochloric acid is added. When this solution is used of course crystals of calcium oxalate or calcium carbonate are destroyed.

The author is at present at work upon other solutions having the same principal in their composition as the above ; but those mentioned are all that are necessary generally, and have been used with success.

(2) All investigators should record the size of the tissues or their contents in microns. The length of bast or wood fibres, size of pores, crystals, starch grains, stone cells, etc., are all more or less characteristic for the drugs we have to consider. It is not sufficient to say that drawings were made by the use of a 1/5th-inch objective and a 1-inch ocular. The objectives and oculars of the various makes of microscopes not only magnify differently, but the question of tube length is also important in this connection. But even if all of these data were given, it must be conceded as being tedious to the reader to calculate the size of the elements, which might be so easily done by the author. Even for an investigator to say that his drawings are magnified so many diameters does not give us the true and scientific idea of the elements which the author has seen and we are to use in the study of powdered drugs. We need records in microns of the size of tissues and constituents of drugs from many sources for comparison, so that another investigator may readily get at the facts. This is the only scientific method for the prosecution of this kind of work, and must be rigidly pursued by all.

(3) A scheme for the logical qualitative determination of a powder is necessary. It will be somewhat difficult to work out a scheme that will be of practical benefit, because it is necessary to begin with the consideration of the characteristics of all drugs and adulterants that may be used. It will not be possible, for instance, to separate the leaves from roots, etc., as is done in the study of crude drugs. Many points, such as colour, taste, odour, as well as constituents and structural characteristics must be considered. The author is at present engaged in a work having for its object the identification of a powder and quality of it, and hopes to have it completed during the coming year.

(4) Furthermore, it is necessary for all those who have to do with the training of the apprentice, and buying and selling of powdered drugs, to engage in the study of the same until the most satisfactory methods for determining the identification and quality be ascertained. In our educational institutions there is little or nothing being done, apparently, in this direction. It seems that the time is ripe for some time to be given to the study of powdered drugs in connection with that of crude drugs. This will undoubtedly be of the most practical benefit, as powdered drugs are already handled by most pharmacists to some extent, at least.

This subject of the investigation of powdered drugs is one of great importance to-day. The older method of teaching pharmacognosy in this country must be supplanted by the new, having for its object the study of the powdered commercial drugs. This knowledge ought to be demanded by our State boards of pharmacy. It is in keeping, too, with the desires of the profcssional pharmacist, as it will tend to keep out the competing "merchant" and "grocer." Our "pure food laws" will require the pharmacist to know the value of the drugs and foods he sells. This may be required also of the grocer, but he can buy and sell in original packages. The pharmacist is hardly in the same position, as he cannot always dispense in original packages, and he is responsible for the purity of the goods that he possesses and sells. The conscientious pharmacist wants this knowledge, desires stringent examinations and just laws, and will in his everyday dealings live up to what he knows. He has nothing to lose ; it is only the incompetent or dishonest dealer in drugs and foods who will suffer.

(*To be continued.*)

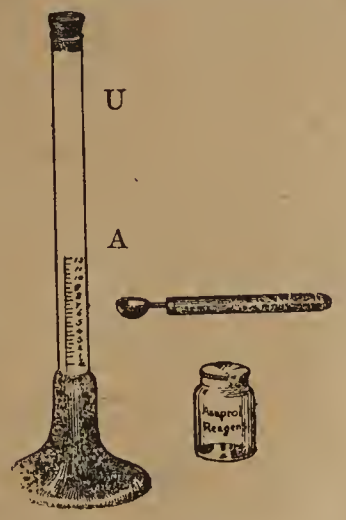
PREPARING HISTOLOGICAL SPECIMENS.—Dr. A. Hebebrand condemns the system now in vogue of preparing microscopical specimens of vegetable substances, particularly the maceration of sections or powders of drugs in strong alkalis or acids for the purpose of "clearing." These are, he states, destructive to the more delicate elements of the tissues, thus causing the more resistant parts to appear in larger quantities than they exist in the original substance. The following modification of the usual process for preparing vegetable substances is recommended by the author : Mix a large bulk of the substance, powder a small part finely, and again take a small portion of this and powder it finer still, rub through a 1/2 Mm. sieve. Mix as much of the fine powder as will go on the point of a knife with a 10 to 15 C.c. of 7 per cent. sodium carbonate solution, and pass chlorine gas through the mixture for two to ten minutes, during which time the solution must remain alkaline, then dilute with water. The bleached tissues are allowed to settle, and are ready for microscopic examination. The preparation will be found in excellent condition for the purpose. The counting of the various elements is greatly assisted by the use of an eye-piece micromteer.—*Forsch. Ber.*, 1897, 308.

NOVEL APPLIANCES,

PHARMACEUTICAL AND CHEMICAL.

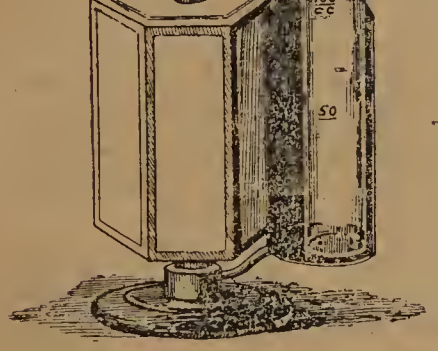
Regler's Albuminimeter.

The principle of the instrument is similar to that of others at present in use for the volumetric measurement of precipitated albumin in urine. In the present case the reagent consists of asaprol, which is dissolved in citric acid and water in the following proportion:—Asaprol, 8; citric acid, 8; distilled water, 200. Or, if preferred, a mixture of asaprol and citric acid in equal parts may be employed in powdered form for convenience in transport. To use the instrument the reagent is filled to the mark A, or in the case of the powder this is measured out in the spoon and introduced into the tube dissolved in water sufficient to fill to mark A. The urine is then introduced to mark U, the whole is shaken up and allowed to stand twenty-four hours, when the volume of the precipitate is read off from the graduations, which represent parts per mille of albumin.



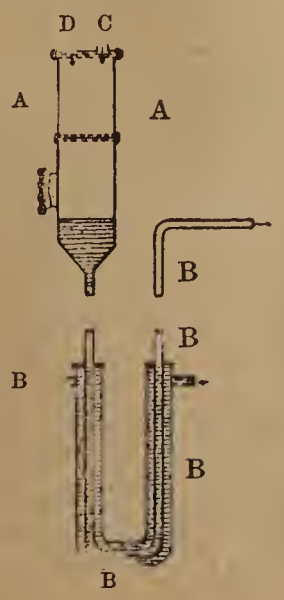
Apparatus for Colorimetric Analysis.

To obviate the necessity of making control colours and consequent waste of time, Konig has introduced a colorimeter, consisting of a rotating apparatus with six different shades of colours, each of which represents a definite quantity of the substance to be matched. The flask containing the fluid to be tested is placed in front of the screen fixed at the side, and the apparatus turned until the colour is reached which most nearly resembles that of the fluid. The test cylinder should always be filled up to 100° C.c. The proportion of the colouring body in 100° C.c. fluid corresponding to each colour is printed on top of the plate; by multiplying by 10 the amount contained in 1 litre is obtained. If the shade of the fluid lies between two colours, it is diluted with one-fourth or one-half until the exact shade is obtained. Although the results obtained by this device may not be always scientifically accurate, they at least compare favourably with the usually employed colorimetric methods, such as Nesslerising, and the saving of time that they effect is very considerable.—*Chem. Zeit.*



Arrangement for the Separation of Gases and Fluids under Pressure.

In the apparatus, of which an illustration is here shown, the gases and the fluid are led under pressure into the separator A through the tube D. The fluid is there separated from the gases by means of its own gravity. The fluid is drawn off by means of the U tube B at the lower end of the separator, and carried to such a height so that the counter pressure of the fluid column enables the pressure in the apparatus to be maintained. The gases escape by means of the tube C fixed in the lid of the separator. This apparatus would appear to have a wide application where gases are handled under pressure accompanied by water or other fluids.—*Chemik. Zeit.*



SELECTED FORMULÆ.

APPLICATION FOR WARTS.

Glacial acetic acid, 10; precipitated sulphur, 20; glycerin, 50. To be applied daily.

CASTOR OIL POMADE.

Castor oil, 150; spermaceti, 20; oil of bergamot, 3·5; oil of cassia, 0·5; oil of cloves, 0·5; oil of lavender, 1.

POUDRE DE RIZ.

Wheat starch, 250; French chalk, 150; carbonate of magnesia, 50; powdered orris root, 50; oil of lemon, 2·5; otto, 0·5.—*Pharm. Zeit.*, lxxi., 523.

LANOLINE ROSE CREAM.

Mix together lanoline, 25; almond oil, 60; powdered soap, 8; stir in gradually water, 15, and rose water, 30; and perfume as desired.—*Pharm. Zeit.*, lxxii., 515.

TO FASTEN PAPER LABELS ON GLASS.

Evaporate a solution of sodium silicate to a syrupy consistence with constant stirring, with a mixture of 25 per cent. of sugar and a little glycerin.—*Pharm. Zeitung*, lxxii., 515.

KOLA MALT EXTRACT.

Dried extract of kola, 10; dissolve in warm distilled water, 10; malt extract, 80. Evaporate in vacuum to 100.—*Pharm. Centralh.*, xxxix., 92, after *Ph. Ztg.*, 781.

GODINEAU'S ELIXIR.

According to Aufrecht, this is composed of:—Sodium chloride, 0·46 gramme; pepsin, 5·62; sugar, 24·5; water and colouring matter, 65·5 grammes. This preparation is sold as a remedy for anæmia and impotence.—*Pharm. Zeit.*, xlii., 402.

SULPHUR CANDLES FOR DISINFECTING PURPOSES.

Melt 25 parts of nitre until decomposition begins, then incorporate 75 parts of sublimed sulphur. The melted mass is run into moulds holding the wick. If the candle does not burn well at first, dust a little chlorate of potassium round the wick.

MENTHOL COLLODION.

This is recommended by Namé for contusions. It is a mixture of 3 to 10 grammes menthol and 20 to 24 grammes collodium; its action is pain alleviating, and healing. The bruised parts are well washed with ether and then painted with the menthol collodium.—*Zeit. d. Allg. oest. Apoth. Ver.*, li., 797.

BICYCLE ENAMEL.

Ebert gives the following formula:—Linseed oil, 4 ozs., are heated to boiling point, and 8 ozs. amber added, also 1½ oz. of asphalt, and 1½ oz. of colophony. After complete solution, remove the mixture from the fire and add gradually 8 ozs. of turpentine. —*Pharm. Woch.*, xv., 3.

LINIMENTUM EXSICCANS.

Munzberger recommends the following formula for this preparation:—Tragacanth powder, glycerin, alcohol (90 per cent.), of each 3; distilled water to 100. The tragacanth powder is mixed with the glycerin and alcohol, and the water added after the mixture has been thoroughly agitated.—*Zeit. d. Allg. oest. Apoth. Ver.*, lii, 30.

VINUM PEPTOTHYROIDINI.

The following process is due to Maurange:—100 grammes thyroid glands are finely chopped and digested with 500 grammes of water, 2 grammes of pepsin, 15 grammes of tartaric acid for six to eight hours at about 45° C. A few drops of nitric acid are then added to a portion, which should not give a precipitate when peptonisation is complete. The liquid is then filtered carefully, neutralised with sodium bicarbonate, and evaporated to a syrupy consistence *in vacuo* at a temperature not exceeding 45° C. The syrupy liquid obtained is diluted with 7·5 litres of wine, and again filtered after standing two days.—*Pharm. Centralh.*, xxxviii., 854, through *Wiener Med. Press.*

REVIEWS AND NOTICES OF BOOKS.

THE WONDERFUL CENTURY. By ALFRED RUSSEL WALLACE. Pp. i.-x., 1 to 400, with 12 diagrams. Price 7*s.* 6*d.* London: Swan, Sonnenschein and Co., Ltd. 1898.

It is needless to say this is an interesting book, for Darwin's co-discoverer possesses in a marked degree the faculty of imparting interest to any subject of which he treats. In this record of the successes and failures of the nineteenth century, an attempt has been made to give brief descriptive sketches of those great material and intellectual achievements which especially distinguish the century from the preceding ones, and to show how fundamental is the change they have effected in our life and civilisation. Naturally, our own time is held to be superior to any past epoch, and it is also claimed by the author to constitute the beginning of a new era of human progress. But successes have not been unaccompanied by failures, or what the author regards as failures, and both sides of the shield are here presented as they appear from his point of view.

The successes are dealt with under the heads of modes of travelling, labour-saving machinery, the conveyance of thought, fire and light, photography, spectrum analysis, theoretical discoveries in physics, minor applications of physical principles, the importance of dust as a source of beauty and essential of life, great problems of chemistry, astronomy and cosmic theories, geology, evolution and natural selection, and, lastly, popular discoveries in physiology. Each chapter is a thoughtful essay on the branch which the author has attempted to summarise, and few of the important achievements of science are inadequately treated, whilst nothing that is stated should be beyond the comprehension of any ordinary reader. There is a concise account of the relative positions of Darwin and the author in connection with the theory of natural selection, and a generous appreciation of the work of the deceased naturalist.

The failures of the century are considered in the second part of the work which, curiously enough, much exceeds the first part in bulk. But when it is found that this section deals with those matters concerning which the author feels most strongly—so much so, indeed, as to have secured for him the title of "faddist"—all cause for surprise vanishes. The neglect of phrenology, which Dr. Wallace thinks will yet prove itself to be the true science of mind, is held to be cause for regret; hypnotism and psychical research are upheld with a zeal which many people will consider worthy of a better cause, whilst vaccination is held to be a delusion and its penal enforcement a crime. It is to be regretted that so much space should have been devoted to the last-mentioned subject, but the essay may prove useful as an authoritative digest of the best arguments and facts than can be advanced by anti-vaccinationists.

Militarism is, not without reason, dubbed the curse of civilisation, the whole world being regarded as being at present "but the gambling table of the six great Powers," and many of the more terrible aspects of modern life are rightly attributed to the demon of greed. But, in concluding his statements of facts and expressions of opinion, the author inclines to the view that the balance, as between success and failure, is on the right side. "The flowing tide is with us. . . . and as this Century has witnessed a natural and intellectual advance wholly unprecedented in the history of human progress, so the Coming Century will reap the full fruition of that advance—in a moral and social upheaval of an equally new and unprecedented kind, and equally great in amount." Rampant socialism stamps its impress on the drastic remedies for popular grievances proposed by Dr. Wallace, but many people find it difficult to conceive how they are to be properly redressed except by root and branch methods. And however the author's social theories may appeal to the majority, no one can make a mistake in reading this, his latest book.

A MANUAL OF BACTERIOLOGY, CLINICAL AND APPLIED, WITH AN APPENDIX ON BACTERIAL REMEDIES, ETC. By RICHARD S. HEWLETT, M.D., M.R.C.P., D.P.H. (London). Pp. i.-viii., 1 to 439. Price 10*s.* 6*d.* London: J. and A. Churchill, 7, Great Marlborough Street. 1898.

The increase of text-books in any particular subject leads, sooner or later, to the necessity of a reason being given for the publication of a new work. Such a reason is supplied by almost every page of Dr. Hewlett's manual, for of all the practical works on the subject yet published this is of a certainty most free from the reproach of being a mere compilation. The subject matter, of course, is not new, nor is there anything strikingly novel in the manner in which the facts are presented, but no one who has devoted any time to bacteriological work can refer to the book without the conviction that the working directions are the outcome of wide practical experience.

The plan of the book is clearly explained in the preface, where it is stated that attention has been limited to those portions of bacteriology, or micro-biology as it may more exactly be termed, which are of especial interest in clinical medicine and hygiene. The preparation of tissues, methods of culture, descriptions of pathogenic organisms and their detection, the examination of water, etc., are therefore given at some length. In addition, at the end of the sections dealing with pathogenic organisms which attack man, directions are given for bacteriological clinical diagnosis and examination, such as will render the book of great service in the laboratory. The introduction is a brief but useful survey of the rise and progress of the study of micro-organisms, and is naturally followed by a very clear account of the nature, structure, and functions of bacteria—their classification, general biology, and chemistry, as well as the relation of bacteria to disease. No better summary of the subject could be desired.

The methods of cultivating and isolating organisms are then described, the most suitable forms of apparatus being indicated, whilst detailed instructions are given for the preparation of culture media. An exceptionally useful chapter is that on the preparation of tissues and organisms for staining and mounting; the various methods are described at length, and care is taken to direct attention to precautionary measures that may advantageously be resorted to. Such information imparts to the work a special value which cannot be over-estimated, and it is in this particular direction that the book will be found so much superior to any other manual of its size and scope.

The investigation of microbial diseases, the inoculation and dissection of animals, and the optical outfit required, receive brief but careful consideration, and the two subsequent chapters deal respectively with immunity—antitoxins and antitoxin treatment, and with suppuration and septic conditions. Anthrax, diphtheria, tuberculosis, and other diseases with which micro-organisms are associated next receive very full treatment, and attention is then given to the bacteriology and bacteriological examination of water, air, soil, sewage, milk, and foods. Antiseptics and disinfectants have a chapter devoted to them, and the appendix includes equivalents of the more common metric and Imperial weights and measures, a list of solubilities of aniline stains, and several pages dealing with the use of antitoxins in medical practice. Altogether, the work is most excellent, and there is little doubt that it will prove the most useful book of its kind for pharmacists.

PHARMACEUTICAL JOURNAL.

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PHARMACY LEGISLATION.

BOTH the Pharmacy Acts Amendment Bill and the Poisonous Substances Bill continue to be the subject of numerous comments in the newspapers, and in most instances such a want of acquaintance with the facts of the case is manifested, similar to that mentioned in last week's Journal, as to raise some doubt as to the value of the newspaper press as a means of educating public opinion. The *St. James's Gazette* speaks of the Pharmaceutical Society as having been, until quite lately, somewhat lax in the performance of those duties of safeguarding the public which fell to its share. Even the *Globe*, which is more generally correct in this respect, speaks of the administration of the pharmacy law as being more defective than the law itself. The *Standard*, in dilating upon the consequences of the unregulated sale of carbolic acid, is especially unhappy in representing that the Pharmaceutical Society has hitherto been singularly inert in performing its duty to the public by enforcing the law relative to the sale of poisons. Although reference is made to the circumstance that the Privy Council has from time to time refused to add carbolic acid to the list of poisons in the Schedule of the Pharmacy Act, the writer in the *Standard* does not appear to be aware that as far back as 1881 the Council of the Pharmaceutical Society decided that carbolic acid should be added to the Poison Schedule, and that its addition was recommended. That recommendation, which has been repeated several times since, was the utmost extent to which the power vested in the Council could be exercised, since the Pharmacy Act provides that the action of the Council is to be subject to the control of the Privy Council. So far, therefore, as concerns carbolic acid, there is no ground for the statement that the Pharmaceutical Society has been inert in performing its duty to the public. Nor can that statement be justified as regards the enforcement of the law relative to the sale of poisons. The performance of the duty imposed upon the Council in this respect is limited to such articles as are included in the Poison Schedule, and the efficiency with which its powers have been exercised is shown by the circumstance that the sale of secret nostrums and proprietary medicines containing scheduled poisons has now been brought under the operation of the law as the result of costly litigation instituted by the Council of the Society. In addition to this, the provisions of the Act relating to the sale of poisons by unqualified persons have been enforced year by year to the extent of several hundred cases. These facts are sufficient to refute the charge of laxity in the administration of the pharmacy law, so far as the Pharmaceutical Society is charged with that duty.

The beneficial effect of the action taken by the Council as the executive of the Pharmaceutical Society is shown by the recent returns of the Registrar-General, according to which it appears that, in regard to the risk of poisoning generally, whether by accident or design, the public interest is remarkably well served so far as scheduled poisons are concerned, the number of deaths caused by them being very much less than those caused by substances which are not included in the Poison Schedule. The evidence afforded by these returns for many years past is strongly in favour of an extension of the Poison Schedule as providing the most effectual check upon the misuse of poison. But this useful result has not been so generally appreciated as it deserved to be, and the action taken by the Council in enforcing the provisions of the law has, on the contrary, been denounced in some quarters as an attempt to establish a trade monopoly by which various branches of industry would be prejudicially interfered with. It is from that point of view Mr. CROSS would desire to have the sale of preparations used for destroying vermin or weeds and for dressing sheep or crops, etc, exempted from the operation of the Pharmacy Act, although they may contain some of the more virulent poisons in considerable amount. The chief argument put forward in support of that demand is to the effect that preparations of the kind referred to have no connection with medicine or pharmacy. That does not, however, do away with the objection to be made to such a mode of rendering poisons easily procurable. If there were any sufficient reason for considering that argument at all, it would still seem necessary to place such sale of poisons for agricultural purposes under special control by requiring the vendors to be licensed for that purpose, as other persons are licensed to carry on trades affecting the interests of the public. A similar condition might also be necessary if the contemplated provisions of the Poisonous Substances Bill were carried out.

The mention made of the Pharmacy Act Amendment Bill by newspapers is marked by as much want of correct information as that relating to the regulation of the sale of poisons. The *Manchester Courier* says the Bill seems to be thoroughly misunderstood by the majority of people and, in attempting to describe its object, gives proof of the fact by suggesting that the membership of the Pharmaceutical Society should be reserved to those who have passed the Major examination, on the mistaken assumption that membership of the Society has a distinctive value as a qualification. It is also stated that, as a consequence of making Minor men members of the Society, Major men will have to fall back upon their qualification as pharmaceutical chemists, and that this is an "obvious injustice." A more complete misr presentation could not be made, since the title of pharmaceutical chemist—a voluntary qualification—is the only indication of having passed the Major examination. The compulsory qualification obtained by passing the Minor examination is the one which, since the passing of the Pharmacy Act, 1868, should entitle its possessors to membership of the Society consistently with the Society's charter and the object of associating together all persons legally qualified for the practice of pharmacy. The higher title and qualification of pharmaceutical chemist will still remain intact and it is also quite independent of membership of the Society.

ANNOTATIONS.

THE STANDARDISATION OF DRUGS as required by the new Pharmacopœia, more especially of the more important alkaloidal tinctures and extracts, behoves pharmacists to exercise care that standardised preparations really represent the contents officially prescribed. It is almost too much at present to expect that the ordinary pharmacist should possess the skill of a trained analyst, and he has therefore to depend entirely for the safeguard of his interests on a warranty from the manufacturers that the preparations answer the requirements of the Pharmacopœia. Rather than leave the question to be raised eventually by the public official, who will be keen enough to appreciate the possibilities of error that are likely to arise, it would be advisable that manufacturers should set their house in order and obtain skilled control of preparations that require to be standardised, both for their own reputation and that of pharmacists in general. Manufacturers in this country are unfortunately too apt to regard scientific control of manufacturing operations in a "penny-pie" fashion in contradistinction to the methods adopted by their continental rivals.

THE QUALIFICATION OF DISPENSERS has recently been the subject of correspondence in the London press, and, judging from letters on the subject which have been published, it would appear that some confusion exists with regard to the assistant's certificate issued by the Society of Apothecaries of London. That certificate is granted on the result of an examination conducted in accordance with the provisions of the Apothecaries Act, 1815, which provides that "it shall not be lawful for any person or persons . . . to act as an assistant to any apothecary, in compounding or dispensing medicines, without undergoing an examination." The penalty specified in Section XX. for breaking the law in this respect is that "every person so offending shall for every such offence forfeit and pay the sum of £5," but so far as can be ascertained the clause relating to that penalty has never been enforced in recent years, though offences of the kind referred to must have been very numerous. It is difficult to see therefore what reasonable ground now exists for continuing to grant the certificate, if those who do not hold it and yet act as assistants to apothecaries are not proceeded against for infringement of the Statute.

THE ASSISTANT'S EXAMINATION, as conducted at the Apothecaries' Hall, consists of two parts, practical and oral. No candidate is admitted for examination under the age of seventeen years, and a fee of three guineas must be paid seven days previously. The subjects of the first part of the examination are the compounding and dispensing of medicines, whilst candidates are examined orally in chemistry, materia medica and pharmacy, and the translation of prescriptions. In chemistry a knowledge is required of the general principles of the science; the meaning of chemical symbols and formulæ; the distinctive properties of acids, bases, and salts; the preparation and properties of oxygen, hydrogen, nitrogen, chlorine, bromine, iodine, carbon, sulphur, phosphorus, arsenicum, and their more important compounds with oxygen and with hydrogen; the chief mineral acids and their action upon metals, etc.; the chemical composition of water and air; the preparation, properties, and tests of the commoner salts of about a dozen metallic elements; alcohol, ether, acetic ether, chloral hydrate, chloroform, iodoform, glycerin, quinine and strychnine; hydrocyanic, acetic, tartaric and citric acids and their commoner salts. In materia medica and pharmacy all that is required is to show a knowledge of the chemical and physical characters, composition and doses of the articles and preparations official in the British Pharmacopœia, and to recognise some fifty to sixty chemical compounds, etc., and less than fifty crude drugs.

THE SCOPE OF THE EXAMINATION, therefore, is not excessive, and as an indication of some slight intimacy with the interior of a pharmacy or a dispensary, the certificate granted on passing the examination may prove consoling to persons, who for any reason are unable or unwilling to pass the Minor examination of the Pharmaceutical Society. If Section XX. of the Apothecaries Act were still enforced some definite inducement might exist for anyone to enter for the apothecaries' assistant's examination; as things are, however, candidates who offer themselves for the examination appear to waste the amount of the fee they pay, for the certificate is no evidence of any qualification and is worth little, if any, more than the paper it is printed on. It is, we believe, an attractive specimen of the printer's art, and doubtless its handsome appearance has been partly accountable in time past for the number of registered chemists and druggists who, flushed with their victory at Bloomsbury Square, have rushed off to Blackfriars to secure the extra three-guinea decoration for their future pharmacies, possibly also with the idea that some suggestion of medical qualification may be conveyed thereby. Seriously, however, the whole thing is an anachronism, and even the recognition of the certificate by the Local Government Board is not sufficient excuse for a corporate body continuing to "raise the wind" by distributing ornamental pieces of paper to individuals who may or may not have spent one or two years, with some slight increase of technical knowledge, in a pharmacy or a dispensary.

THE SALE OF POISONS BY CHEMISTS should be carried out strictly in accordance with the regulations prescribed by the Pharmacy Act, 1868; if they neglect to take all the necessary precautions they will only have themselves to blame if they involve themselves in serious trouble. It would be both absurd and unfair if chemists could interfere with the illegal sale of scheduled poisons by other traders and yet be under no obligation to carry out the requirements of the law in their own business. An instructive case against a chemist was recently heard at the South-Western Police Court. It seems to have been instigated by what may be termed class revenge on the part of a professional photographer, but the moral is none the less obvious. The photographer purchased some potassium cyanide at the chemist's shop and the sale was not registered; the purchaser thereupon communicated with the police, a prosecution under Section 17 of the Pharmacy Act followed, and the chemist was fined in due course. Defendant pleaded that it was his qualified (? unqualified) assistant who effected the sale and forgot to make the required entry, but the magistrate said he could not be allowed to relieve himself of responsibility in that manner. The informer's satisfaction at the result must have been somewhat damped by the refusal of the magistrate to grant his expenses, but he has the consolation of knowing that he performed a public duty.

NEW CONSTITUENTS OF THE AIR continue to increase in number, the discovery of Krypton by Professor Ramsay and Mr. Morris Travers having been quickly followed by the announcement by the same investigators that air contains two other previously unknown constituents, which they name Neon and Meta-argon respectively.

According to a report in the *Standard*, when a quantity of Argon was liquefied it formed a colourless fluid from which a solid substance separated, whilst a gas remained unaltered. The gas—Neon—has a characteristic spectrum and its density is less than 15 and probably not more than 11, in which case it will conform to the periodic law, occupying a place in the interval between Argon and Helium. Meta-argon, as the solid substance has been named, has a very complex spectrum, and it appears to occupy the same relative position with regard to Argon that nickel does to cobalt, having the same atomic weight, but different properties. Curiously enough, no trace of Krypton was found during this investigation which has resulted in the discovery of two other presumably elementary bodies, but to detect it a much larger quantity of material would require to be operated upon, and, moreover, Krypton probably exists in the gaseous state at the temperature of boiling air, whilst Meta-argon is solid at that temperature.

The Companies Bill will once more be successfully strangled in the House of Lords Select Committee, for the Committee has not met for some time now, and no day is fixed for a resumption of proceedings. Towards the end of the month it should, in accordance with precedent, meet for the purpose of reporting that it cannot finish its labours this Session, and the Bill will thereupon pass into "*Cler. Parliamentor's*" official *ewigkeit*. After four years' waiting this prospect is not encouraging.

The Petroleum Problem still remains unsolved, but on Wednesday the Committee appointed to deal with the question re-assembled to consider certain recommendations formulated by the Chairman, Mr. Collings. The object of the recommendations is to amend the existing law with regard to the storage and transport of petroleum, and their effect would be to bring petroleum generally under legislative control, to make the present flash point—73° Abel test—the dividing line between petroleum oil and petroleum spirit, and to prevent petroleum oil or spirit, except in small quantities, being kept on other than licensed or registered premises. It is also proposed to regulate the conveyance and hawking of the oil and spirit, and to provide an efficient system of testing. The *Times* points out that in formulating his conclusions with regard to the flash point, Mr. Collings has drawn special attention to the confusion which exists concerning the terms "flash point" and "raising the flash point." Some of the witnesses examined by the Committee were not aware that the present legal flash point has not and never has had any reference whatever to the use of petroleum as an illuminant, and that petroleum of any flash point can be used for lighting purposes. From the evidence it is clear to Mr. Collings that the object of adopting a legal flash point at all, in the Acts of Parliament now in force, was to fix a dividing line between petroleum which should, as regards storage and handling, be subject to legal control, and that concerning which no legislative precautions were then thought necessary. When, therefore, anyone speaks of "raising the flash point" of petroleum as an illuminant, he speaks of raising what does not exist. But what is doubtless intended is that there should be a new law, fixing a certain high flash point, and that the use of all petroleum with a lower flash point shall be prohibited for lighting purposes.

The Petroleum Committee at its meeting on Wednesday, made some further progress with the detailed consideration of Mr. Collings' draft report. So much time was occupied, however, in discussing the leakages which have taken place concerning the proceedings of the committee last week that very little actual business was done, and the anticipated decision respecting the flash point recommendation had not been taken when the hour of adjournment arrived. It is stated that especial annoyance was expressed at the publication by the *Times* of the names of the members who voted in the division upon the question whether the chairman's draft report or that submitted by Mr. Ure should be read a second time, paragraph by paragraph. Seeing, however, that the information in question will become public property when the minutes of the committee's proceedings are laid upon the table of the House, the objection would appear to be sentimental rather than real.

The Pharmacy Acts Amendment Bill is still down for second reading in the House of Lords, but no difficulty is anticipated in proceeding with the measure, the Earl of Hardwicke having undertaken to move the second reading at an early opportunity. The Duke of Devonshire will move the second reading of the Poisonous Substances Bill on Friday night, this week. Several letters dealing with that measure will be found in this week's Journal, and we are asked to announce that the Committee of the North-East Lancashire Chemists' Association has ordered a special general meeting for Tuesday, the 28th inst., "To consider the Government Poisons Bill now before the Lords."

The Death is Announced at Vienna of Professor Anton Kerner, Ritter von Marilaun, the eminent botanist, at the age of 67. Professor Kerner was educated for a doctor, and was indeed for two years on the medical staff of the Vienna General Hospital, but soon abandoned medicine for the pursuit in which he was to acquire fame. He wrote many works on botanical subjects, and was made member of the Vienna Academy of Sciences in 1872, while he received the order of knighthood in 1876.

Another Strychnine Poisoning Case, which is involved in some degree of mystery, has occurred at Haworth, where Mr. J. E. Hill, Deputy Coroner, on June 21, resumed an inquiry into the death of John William Place (11), son of Francis Place, 3, Earl Street, Haworth, which occurred on May 27 after taking a worm powder. The analyst engaged in the case detailed the results of his examination, which he said revealed traces of strychnine. He had also analysed a powder sent to him in a registered packet by Dr. Walker, but found no strychnine in it. This powder was one made up by the druggist at the request of the police-sergeant, and said to be identical with the one supplied to the boy. Mr. Tidswell, the druggist in question, volunteered to give evidence, and, after the usual caution, he stated that half an hour after hearing of the boy's death he saw the bottles containing poison in their usual places in his pharmacy, and they were all distinctly labelled. The jury consulted in private, and arrived at the conclusion that death had occurred by misadventure, the cause being strychnine poisoning, but how the poison had been administered there was no evidence to show.

The Photographic Tourists' Guide can still be procured from the publishers of the Journal at a nominal cost, and chemists who have not yet laid in a stock should do so at once. Every copy of the book distributed will benefit not only the individual who sells it or gives it away, but also every other chemist who is interested in the photographic trade. It should be borne in mind that except in the case of towns where no chemist is known to have a dark room, all the names given in the gazetteer included in the book are those of registered chemists. Whoever, therefore, helps himself in this matter at the same time helps his fellows in the craft.

PHARMACEUTICAL SOCIETY.

MEETING OF THE EXECUTIVE OF THE NORTH BRITISH BRANCH.

A meeting of the Executive of the North British Branch was held in the Society's house, 36, York place, Edinburgh, on Friday, June 17, at 10.30 a.m. Mr. J. LAIDLAW EWING in the chair. Present: Messrs. Bowman, Coull, Currie, Ewing, Fisher, Johnston, Hardie, Henry, Kermath, Lunan, McLaren, Mitchell, Moir, and Strachan. Apologies for absence were received from Messrs. Kerr and Storrar.

The minutes of last meeting were read and approved.

The ASSISTANT-SECRETARY read the report of the Scrutineers on the voting for the new Executive, and the report was approved of for submission to the Annual Meeting. He also reported that Dr. Keppie Paterson had applied to him on behalf of the Edinburgh Medical Missionary Society for a loan of cases or specimens for the Medical Missionary Loan Exhibition to be held in Heriot's Hospital, Lauriston, during the visit of the British Medical Association to Edinburgh, in July. It was remitted to the Chairman and Assistant-Secretary, with powers to give such assistance as might be possible in connection with the exhibition.

Mr. COULL drew attention to the wording of the instructions on the voting papers, and suggested that it might be more definite. The question of the form of the voting paper was left over for further consideration. The meeting then closed.

The Annual Meeting.

The annual meeting of Members and Associates in Business residing in Scotland, was held in the Society's House, 36, York Place, Edinburgh, on Friday, June 17, 1898, at 11 a.m.—Mr. J. LAIDLAW-EWING in the chair.

Address by the Chairman.

The CHAIRMAN said it was satisfactory to observe that they had again a considerable number of men who were willing to serve the Society in Scotland as members of the Executive. The number of voting papers returned this year was larger than on any previous occasion, and he thought that might be taken as an indication that a greater interest was being taken in pharmaceutical affairs. It was unnecessary that he should detain them now with any lengthy reference to the work of the Executive during the past year. That would be already familiar to them from the Annual Report. which appeared in the *Pharmaceutical Journal* on May 7, 1898. It was much to be regretted that the examinations continued to show a far from satisfactory percentage of passes. Last year he mentioned that the results were worse than before, and this year again showed worse still. He would very earnestly commend to all interested the carefully drafted Report on Examinations presented to the Council by the Board of Examiners in Scotland in February last. He had been much surprised to find in some quarters an impression that the Board had been harsh and unsympathetic in the language used in that report. As one of those responsible for it he could truly say it was conceived and executed in the most kindly and considerate spirit possible, and with no other object but that of assisting those who were coming up for examination. He was glad to say they had had many testimonies from those who had really studied the report that they had got great help and much guidance from the perusal of it. He felt sure the same experience would be the fortune of anyone who would give it careful and fair consideration. During the year the Executive had been able to carry out almost the whole of the alterations in the Society's House referred to last year, and now they had an establishment in Edinburgh which they could feel proud of and show to their friends with satisfaction. He felt they ought to take every opportunity of expressing to the Council of the Society their deep sense of gratefulness to them for the handsome way in which they had enabled the Executive to carry out these alterations. During last winter they had a very successful series of evening meetings. An effort was made to secure attendances by having the meetings on fixed dates announced beforehand. The third Wednesday of each month was fixed upon but the result was not so good as was expected. Either the night is not a suitable one or the multiplicity of societies and meetings in Edinburgh interferes. This multiplicity of meetings has for some years been increasingly felt in Edinburgh, and a movement has been on foot for some time to try to secure an adjustment of programmes to remedy the evil. Whatever may be done in that direction there are several reasons that may induce the new Executive to arrange these meetings for some other night. They might readily be made a useful monthly reunion of pharmacists for the discussion of professional as distinct from purely trade matters, the latter being already admirably provided for by the energetic District Chemists' Trade Association. Last year he referred to the movement for a Pharmacy Bill specially dealing with extension of the membership of the Society. To-day they could all rejoice that after a very tedious and arduous time of parliamentary activity they had so far succeeded as to have carried the Bill, without any amendment, through the House of Commons and past the first reading in the House of Lords. It seemed reasonable to hope that no long time would elapse before that small, but in his judgment highly important, Bill found a place in the Statute Book. The Hon. Mr. Smith, M.P., who had had charge of the Bill in the House of Commons, deserved the best thanks of all pharmacists for the patient, unremitting, and able way in which he promoted the passage of the Bill. He had the honour of meeting Mr. Smith at the House, and he was a most courteous, gentlemanly, and painstaking man, and it was a great advantage to have had so able a representative. The Bill had also thrown a great amount of anxious and arduous work upon their much esteemed President, and his assiduous devotion to the interests of the Society called for their hearty and grateful acknowledgment. In the short discussion which took place in the House of Commons, pharmacists had nothing to regret. It was made abundantly plain that legislators are not in a mood to allow any relaxation in the law relating to the sale of poisons. As to changes in the *personnel* in the Board of Examiners, there had been two changes, Messrs. Fraser and Sutherland having retired by rotation and the vacancies have been filled by the return of Mr. Jack and the appointment of Mr. Lunan. The Executive was also losing the services of Mr. Lunan, who had been a useful city member, and Mr. Paterson, Aberdeen, was retiring after several years' service.

The ASSISTANT-SECRETARY then read the report of the Scrutineers as follows:—

Scrutineers' Report.

At a meeting held on April 29, 1898, the Executive appointed June 17, 1898, as the date of the election for the ensuing year.

Four hundred and eleven nomination papers were issued by the Assistant-Secretary on May 21, 1898.

The nomination papers returned showed that fifty-six Members and Associates in Business had been nominated, of whom the following twenty-seven signified their willingness to act if elected:—

Ayre. George Martin, 75, High Street, Perth.
Boa, Peter, 119, George Street, Edinburgh.
Bowman, John, 3, Duke Street, Leith.
Burley, William, 35, George Street, Edinburgh.
Coull, George, 17, Smith's Place, Leith Walk, Edinburgh.
Cumming, Charles, 49, Reform Street, Dundee.
Currie, William Little, 223, Byres Road, Dowanhill, Glasgow.
Dow, William, High Street, Kinross.
Ewing, James Laidlaw, 9, Princes Street, Edinburgh.
Ferrier, David Hynd, 2, Hilltown, Dundee.
Fisher, John Hutchison, 66, High Street, Dunfermline.
Graham, Alexander, 79, Main Street, Lochgelly.
Hardie, James Miller, 68, High Street, Dundee.
Harley, Thomas, 21, High Street, Perth.
Henry, Claude Francis, 1, Brandon Terrace, Edinburgh.
Kermath, William Ramsay, Greyfriars Garden, St. Andrews.
Kerr, Charles, 56, Nethergate, Dundee.
M'Adam, Robert, 34, Virginia Street, Glasgow.
M'Laren, David, 42, South Clerk Street, Edinburgh.
Macpherson, Collin Allen, 97, Dalry Road, Edinburgh.
Mitchell, Donald, 30, Union Street, Inverness.
Moir, James, 447, Victoria Road, Crosshill, Glasgow.
Russell, James Anderson, 212, New City Road, Glasgow.
Strachan, Alexander, 138, Rosemount Place, Aberdeen.
Swan, William, 92, Morningside Road, Edinburgh.
Thomson, John Hutchison, 102, High Street, Lochee, Dundee.
Watson, David, 558, Cathcart Road, Govanhill, Glasgow.

A voting list was accordingly drawn up, and on June 8, 1898, four hundred and twelve voting papers were issued. The Scrutineers met last night at 7 o'clock and proceeded to examine the voting papers. The result was found to be as follows:—

Voting papers issued	412
,, ,, returned	201
,, ,, informal	0

There were thus two hundred and one votes to be recorded. The following gentlemen have a majority of votes:—

Ayre, George Martin, 75, High Street, Perth.
Boa, Peter, 119, George Street, Edinburgh.

Bowman, John, 3, Duke Street, Leith.
Coull, George, 17, Smith's Place, Leith Walk, Edinburgh.
Currie, William Little, 223, Byres Road, Dowanhill, Glasgow.
Ewing, James Laidlaw, 9, Princes Street, Edinburgh.
Fisher, John Hutchison, 66, High Street, Dunfermline.
Hardie, James Miller, 68, High Street, Dundee.
Henry, Claude Francis, 1, Brandon Terrace, Edinburgh.
Kermath, William Ramsay, Greyfriars Garden, St. Andrews.
Kerr, Charles, 56, Nethergate, Dundee.
M'Adam, Robert, 34, Virginia Street, Glasgow.
M'Laren, David, 42, South Clerk Street, Edinburgh.
Mitchell, Donald, 30, Union Street, Inverness.
Moir, James, 447, Victoria Road, Cross-hill, Glasgow.
Russell, James Anderson, 212, New City Road, Glasgow.
Strachan, Alexander, 138, Rosemount Place, Aberdeen.

The voting papers and all other documents connected with the election are submitted herewith.

JAMES L. EWING, Chairman.
R. L. Hendry. Rea I. McDougall.
James Paton. John Robertson.

The actual result of the poll was as follows :—

Currie	180	Russell	116
Ewing	177	Moir	115
Kermath	173	Ayre	69
Henry	170		
Strachan	169	Harley	67
Bowman	162	Swan	64
Kerr	158	Watson	62
Boa	157	Macpherson	61
McAdam	153	Burley	59
Fisher	152	Cumming	53
Coull	145	Ferrier	53
McLaren	139	Dow	47
Hardie	134	Graham	45
Mitchell	131	Thomson	38

One voting paper was received too late for enumeration.

Mr. TOCHER (Peterhead) said he had very great pleasure in moving the adoption of the Scrutineers' report. He was very pleased indeed to hear of the large number of votes recorded at this election, because it betokened an increased interest in the affairs of the Society among members north of the Tweed. Speaking of the alterations on the Society's House, he said he had examined the building the other day and he very much admired it. He agreed very much with the remarks made by Mr. Ewing with regard to the Pharmacy Bill, and he wished to congratulate the North British Branch on the fact that it had passed the third reading in the House of Commons last week. Those members of the North British Branch who had taken an active interest at the inception of the measure must feel very pleased that after a rather fitful career it had emerged from the conflict intact. Since it had gone so far, he for one placed greater value on the privileges conferred by the Pharmacy Act of 1868 than he did prior to that discussion. The fact that members of the Legislature were exerting themselves to get the law relating to poisons practically repealed, together with the fact that the Privy Council had a measure in view which, in effect, ignored the application of skill in retailing poisons—these facts did not point to an immediate realisation of their aspirations, or, indeed, to a greater degree of security to the public. But it seemed to him, as Mr. Ewing had said, that there was a greater anxiety on the part of members of Parliament to see the Poisons Law stringently enforced. This is as it should be, and they owed a debt of gratitude to Mr. Cross for his action in the matter. Whatever his intentions were it had had the effect of clearing the air considerably. Chemists and druggists should be encouraged by what had taken place, and he, at least, hoped to see the day when their true status as pharmacists would be recognised by the State, as it was in other European countries. He sincerely trusted that the Executive of tho North British Branch and the members of the Council proceeding on the recommendations made to Colonel Brookfield, M.P., would firmly adhere to the view that the sale of poisons should be conducted by competent persons, and endeavour to get the regulations for dispensing —which were very far from being confined to pharmacists—put on the same footing as obtained in Ireland and on the Continent. With regard to the Bill itself, he thought chemists and druggists were now completely enfranchised, and could have no ground for complaint against the Society, which it was now entirely in the power of all to take advantage of. But they must not expect too much. The purpose in view would still be defeated if chemists and druggists were apathetic in availing themselves of the open door. The Council, and indeed chemists generally throughout the country, had no interests to serve in this matter but to secure the privileges of membership to their fellow craftsmen.

Mr. LAING (Stenhousemuir), in seconding the motion, said he had been very pleased at the general progress that had been recently made in the North British Branch and in pharmaceutical matters generally. He sympathised much with the Chairman's observations last year regarding certain sheriffs in the country. It would be a nice thing to bring more pressure upon them, but unfortunately the pharmaceutical press did not bring much pressure to bear on sheriffs or the public generally. With regard to the new Bill, he thought this was a fitting time and place to say that it was only the beginning. He was greatly pleased at the reception it met with in Parliament. He also thought the Cross gentleman did them a world of good in bringing forward his position, because it enabled them to get the views of men of intelligence in regard to the poison laws, and also enabled them to see that there was great sympathy in Parliament with even more stringent regulations than they had now. He considered this little Bill was simply the preliminary to a greater Bill that would secure to pharmacists much greater privileges than they now enjoyed. He thought it would be foolish to talk of Parliament giving them a monopoly. They had earned their monopoly, and all those who took the same measures had an equal right to it. It was not a close monopoly. It was in the interests of the public, and unless pharmacists could have some security and some impulse towards progress and education they would not devote their time to these things in a way commensurate with the dignity of pharmacy. Therefore if co-operative stores and such like were to have so great liberties as they had now it would not be to the interests of the public generally, and it could not promote that education in pharmacy that the Society wished and that the State also wished. He was hopeful that these views were very generally shared by many members of Parliament at present and that the higher officials in the Commons sympathised greatly with them. In the future they ought to have a strong Bill promulgated in the interests of all concerned. He had very great pleasure in seconding the adoption of the Scrutineers' report.

The report was unanimously adopted.

The CHAIRMAN then declared that the first seventeen candidates on the foregoing list, together with the President of the Society (Walter Hills), the Vice-President (G. T. W. Newsholme), and John Johnston, Aberdeen, and David Storrar, Kirkcaldy, *ex-officio* members, would constitute the Executive for the year 1898-9.

On the motion of the CHAIRMAN a vote of thanks was unanimously awarded to the Scrutineers, and a similar vote of thanks having been awarded to the Chairman on the motion of Mr. R. L. HENDRY, the meeting closed.

PHARMACEUTICAL TRANSACTIONS.

EDINBURGH CHEMISTS', ASSISTANTS' AND APPRENTICES' ASSOCIATION,

The first botanical excursion of the season took place on Friday, June 17, 1898, to Cramond Brig, by Caledonian train at 8.7 p.m. A short walk by the side of a stone and lime dyke, on which were many specimens of wall rue, *Asplenium ruta-muraria*, brought the company to the valley of the River Almond. The ramble extended about a mile and a-half westward along the southern wooded bank of the stream, then across an old bridge to the "Grotto," an old summerhouse, dated 1745, and beautifully decorated with shells, and then back again to the Queensferry Road by the northern bank of the river. The district was new to most of the members, and it proved a very rich one, and many interesting specimens were gathered and described by Mr. Rutherford Hill, who conducted the excursion. Among specimens gathered were *Ranunculus acris* and *R. repens*, illustrating the erect habit of the former contrasted with the procumbent habit and runners of the latter; *Caltha palustris*, *Cardamine impatiens*, *Lychnis vespertina*, and *L. diurna*, the latter illustrating the starved-like, paler-flowered male plants and the more vigorous, deeper pink-flowered female plants; *Arenaria trinervis*, very like chickweed, but distinguished by the entire petals and distinctly tricostate leaves; *Acer pseudo-platanus*, *Geranium robertianum*, *Vicia sepium*, illustrating climbing by tendrils; *Galium aparine*, climbing by hooked hairs; and *Lonicera periclymenum*, climbing by twining stems; *Geum rivale* and *G. urbanum*, with all the gradations of the *G. intermedium*, some showing mostly the features of one parent and some the other; *Saxifraga granulata* in abundance; *Œnanthe lachenalii*, *Galium cruciatum*, *Arctium lappa*, *Doronicum pardalianches*, *Ilex aquifolium*, very large trees showing great abundance of blossom

and a promise of many Christmas berries. *Fraxinus excelsior* on tree was noted without a single open leaf-bud—an unusual circumstance so late as the middle of June; in a marshy hollow there was found a great bed of *Scrophularia aquatica*, the rich green colour contrasting with the brownish-green of the plants of *S. nodosa* here and there interspersed, the winged stem of the former and the tuberculated root of the latter were also noted. As a further evidence of the lateness of the season, it was noted that neither of these species of *Scrophularia* were in flower. Several beds of *Nepeta glechoma*, *Allium ursinum*, *Myosotis sylvestris*, *Luzula sylvatica*, *Symphytum officinale*, and *Mercurialis perennis* were also met with in this rich loamy hollow. Darkness began to fall before the exploration of the Dell had nearly concluded, and it was generally felt that another hour could have been very profitably spent had there been light. The weather was fortunately fine, and a smart six miles' walk brought the party back to town about 11 o'clock.

SCHOOL OF PHARMACY.

On Saturday, June 11, to the delight of the chemistry class, Prof. Collie showed round a tube of the new gas—krypton, and subjected it to sparks produced by a Ruhmkorff's coil. A spectroscope was provided in order that the spectrum might be observed. —The PROFESSOR gave a brief history of the search for krypton, and described the methods adopted in discovering it. Not a man present went away without an inward feeling of pride partly in himself, inasmuch as he was kept well abreast of the times, and still more in his Professor, who has in the past, in conjunction with Professor Ramsay, done so much to clear up the mystery of the constitution of the atmosphere. There were few, if any, in the class who expected to see two more new elements in the course of a week, and great was the enthusiasm when on Saturday, June 18, the Professor produced two other tubes and announced that Professor Ramsay had wrested two more elementary gases, which he named neon and meta-argon, from the air we breathe. After a short description of this most recent research Professor Collie invited his students to examine the spectra of those elements, neon and meta-argon. Considering that these two gases had previously been seen by the Fellows of the Royal Society alone, the students of the School of Pharmacy may well be gratified by Professor Collie's thoughtfulness.

SCHOOL OF PHARMACY STUDENTS' ASSOCIATION.

The last meeting of the session was held on Friday, June 10, the PRESIDENT, Profcssor Greenish, in the chair.—After the minutes of the last meeting had been read and confirmed, the annual report of the Executive Committee was read. The success of the Association had been very marked, all meetings (both social and ordinary) having been unusually crowded. An average number of thirty-eight members had attended, showing the interest taken in the excellent papers presented, which were all by members themselves, and to some extent involving practical work and the ensuing keen discussions. The audited accounts showed a slight deficit on the year's working, but a substantial balance still remained in hand.—After some discussion the report was adopted by the meeting.—Mr. BATTLE then proposed a vote of thanks to Mr. Harold Wilson, who had for two years shared the secretarial duties of the Association, and who was now leaving the School.—Mr. LESCHER seconded and Mr. SMITH supported the motion, which was then put to the meeting and carried by acclamation.—Professor GREENISH then made a few complimentary remarks, and Mr. WILSON having expressed his gratitude for their kindness, the meeting adjourned.

WESTERN CHEMISTS' ASSOCIATION (OF LONDON).

The summer outing this year takes the form of a river excursion for the members of the Association and their friends (including ladies), and will take place on Thursday, July 21 next. The party will leave Paddington Station at 8.45 a.m., arriving at Henley at 10.15 a.m., from which place an electric launch will convey the party up the river as far as time will allow. Cold luncheon and tea will be taken on board the launch, which will return to Henley in time to catch the train arriving at Paddington at 10 p.m. The price of the tickets, including return railway fare from Paddington to Henley, luncheon and tea on board, is fixed at 16*s.* each (exclusive of wines). Application for tickets should be made as soon as possible, and not later than July 14, as the Committee is compelled to limit the number of guests to about sixty. It will greatly help the Committee in carrying out the arrangements if members will kindly give the names of the guests for whom the tickets are intended. Tickets can be obtained from the President, Mr. J. H. Mathews, 68, Queen's Gardens, W., or either of the Hon. Secretaries, Mr. Herbert Cracknell, 17, Craven Road, Westbourne Terrace, W., or Mr. J. F. Harrington, 45, High Street, Kensington, W.

DUBLIN CHEMISTS' FEDERATION.

On the evening of Monday, the 20th instant, a meeting of pharmaceutical chemists and chemists and druggists was held at the house of the Pharmaceutical Society of Ireland, 67, Lower Mount Street, Dublin, for the purpose of forming a Dublin Chemists' Federation. Amongst those who attended were Mr. Downes, President of the Pharmaceutical Society of Ireland, Messrs. William Allen, Wells, jun., Brown, Conyngham, Kelly, Turner, Hunt, etc. The chair was taken in the first instance by Mr. Downes, who referred to the meeting held in Dublin last December, at which Mr. Glyn-Jones, of the Proprietary Articles Trade Association, delivered an address explanatory of the objects of that Association, and at which resolutions were passed approving of it and in favour of the establishment of a Dublin Chemists' Federation, also appointing Dr. Walsh convener of a meeting to be held for that purpose. He (Mr. Downes) need not put before the present meeting the benefits that might result from their joining together to look after their trade interests.—Dr. WALSH explained the steps he had since taken in furtherance of the resolutions of the meeting held in December last, and mentioned that he had sent out eighty-four circulars to pharmaceutical chemists, chemists and druggists, and proprietors of wholesale houses in Dublin and its vicinity.—The CHAIRMAN said they were very much obliged to Dr. Walsh for the trouble he had taken. The first business now was to elect a President of the new body.—On the motion of Mr. WELLS, seconded by Mr. ALLEN, Dr. Walsh was unanimously elected President of the Federation, and took the chair accordingly.—On the motion of Mr. TURNER, seconded by Mr. BROWN, Mr. John Smith was elected Honorary Secretary.—On the motion of Mr. DOWNES, seconded by Mr. WELLS, the following were appointed a committee with power to add to their number: Messrs. Brown, Ray, Turner, and O'Sullivan.—Mr. GEORGE BROWNE was elected Treasurer, and the annual subscription was fixed at 2*s.* 6*d.*—Mr. DOWNES then called attention to the Bill lately introduced in the House of Lords by the Duke of Devonshire entitled "An Act for Regulating the Sale of Certain Poisonous Substances," and invited the meeting to protest against it on the ground that it was badly drawn, imposed unnecessary restrictions upon pharmaceutical chemists in respect of the labelling, etc., of "poisonous substances," created an injudicious distinction between "poisonous substances" and "poisons," and was intended to recognise the sale of poisonous substances by an unqualified class of persons, to the prejudice of qualified chemists in Ireland who alone were competent to perform that function with safety to the public.—Messrs. KELLY and WELLS condemned the Bill, and on the motion of Mr. DOWNES, seconded by Mr. KELLY, a resolution was passed requesting the Committee of the Federation to consider the Bill, and either take action on it or report to a future meeting of the Federation.

DETERMINATION OF PEPTONE IN URINE.—E. Friend states that it is possible to obtain urine perfectly free from nucleo albumin and protalbumoses by the addition of small volumes of lead acetate solution. Urines containing less than 0·1 per cent. of albumin only require 2 drops of 10 per cent. solution for every 10 C.c. If more albumin is present the following process is adopted:—The urine is boiled up after 1 drop of 20 per cent. acetic acid has been added, then neutralised with 1 or 2 drops of 20 per cent. potash solution, and precipitated with 2 to 3 drops of 10 per cent. lead acetate solution. The clear filtrate does not become turbid either with acetic acid and potassium ferrocyanide or on boiling. It is also free from the colouring matter of urine, and is well adapted for the direct application of the biuret reaction. If a turbidity should still result with potassium ferrocyanide the treatment should be repeated with a smaller volume of lead acetate solution. —*Pharm. Centralh.*, xxxix., 94, through *Wiener Klinische Rundsch.*, 37.

LEGAL INTELLIGENCE.

PROCEEDINGS UNDER THE PHARMACY ACTS.

Pharmaceutical Society *v.* Langford.

At the Lambeth County Court on Thursday, June 16, before His Honour Judge Emden, the Council of the Pharmaceutical Society sued John Langford, 30, Lucas Road, Kennington, for the amount of the penalty incurred on April 13, 1898, in selling poison, to wit, a preparation of opium called "laudanum," contrary to the provisions of the Pharmacy Act, 1868 (31 and 32 Vict. cap. 121), viz., £5.

Mr. T. R. Grey, instructed by Messrs. Flux, Thompson and Flux, appeared for the plaintiff Society. The defendant, an unqualified assistant, appeared in person.

Mr. Grey said the case to be heard by His Honour was one brought by the Pharmaceutical Society against the defendant John Langford for selling poison, he not being a registered qualified chemist as required by the Pharmacy Act, 1868. The defendant in this case had sold one of the poisons mentioned in the Schedule —laudanum—at 30, Lucas Road, Kennington, to an agent of the said Society. Over the door of the shop was the name of a qualified chemist who is now deceased. Whether the defendant was simply the assistant or the owner of the business the Society did not know. If he should prove to be the owner of the business, he would be liable to be prosecuted for keeping open shop for the sale of poison and for exhibiting the title chemist, but if he was only the assistant he was still liable for selling poison. Mr. Grey then read the provisions of the various sections of the Act dealing with the sale of poison, and quoted the case of the Pharmaceutical Society *v.* Wheeldon.

John Partridge, commission agent, said he was instructed by the Registrar of the Pharmaceutical Society to go to 30, Lucas Road, Kennington. On April 13 he went to that address and saw over the door the words "R. C. Turton, Chemist by Examination." He entered the shop, where he saw the defendant, and asked him for twopennyworth of laudanum. He also made several other purchases, amongst which was a bottle of Collis Browne's chlorodyne. He put the date of purchase on the packages and afterwards handed them to Mr. E. J. Eastes.

Ernest John Eastes, F.I.C., said he was an analyst and that he received from the last witness the bottle produced in Court. He carefully analysed the contents and found it to be laudanum—a tincture of opium. It contained 2 grains of morphine, which was a dangerous poison.

Mr. Grey then put in the official Register of Chemists and Druggists, pointing out that it did not contain the name of the defendant.

The Defendant, in reply to a question by His Honour as to what he had to say to the charge, said he was an assistant at the shop mentioned by the witness Partridge, and was engaged by Mr. J. Beddard, brother-in-law to the late proprietor of the shop, and was employed by him. He admitted that on the occasion of April 13 he did sell the poison stated.

His Honour: And when you did that you knew you were not a registered chemist. Did you not understand the Pharmacy Act?

The Defendant: I did not properly understand the Act. I only did what many other unqualified men do.

His Honour: Many others! That only makes the case worse. Have you ever served in a chemist's shop before?

The Defendant: Oh, yes! I have been over thirty-four years in the business.

His Honour: If you have been over thirty-four years in the business you must have known that you were doing wrong by supplying this poison.

Mr. Grey said it was clear that if the defendant had for thirty-four years been serving in chemists' shops he would know perfectly well that he was doing wrong in selling laudanum. On this occasion the defendant also sold to a man he did not know a bottle of Collis Browne's chlorodyne, which was a poison. If His Honour believed the evidence, the penalty was fixed by the Act, and there could be no possible reduction; there must be the full penalty or nothing. He asked for judgment for the £5.

The Defendant said he was not in a position to pay. He was very sorry he had broken the law, but he only did what many assistants did in other shops, especially in the large stores, where there was only one qualified man—the manager.

His Honour said the evidence the defendant gave was very serious, as it showed that the Act is not being sufficiently enforced. The case had been made out against the defendant. There could be no doubt whatever that the Act should be rigidly enforced, but it seemed clear that the law was being very much broken at the present time, and if that was so it really made him feel justified in giving judgment for the £5 claimed. It was very clear that the Act was so being overlooked as to encourage such people as the defendant in supplying the public with poisons. There must, therefore, be judgment for the plaintiffs. Continuing, His Honour said it was a great pity that Beddard was not before the Court. R. C. Turton's name was over the door, and notwithstanding that the man had died, his name was still kept up. He thought the Pharmaceutical Society should have gone further into the matter.

PARLIAMENTARY NOTES.

The Annual Exodus of minor Bills has set in at an exceptionally early date with unprecedented severity, and private members are abandoning their legislative offspring in quite a wholesale manner. Of the two hundred and ten items upon this Session's list of public Bills, no fewer than eighty-one have now been dropped or withdrawn, and the moribund remanets are in so precarious a situation (unless they happen to be "starred") that no combination of sane individuals would undertake the insurance of their parliamentary lives. Chief among the now departed measures was Mr. Kearley's proposal for an amended Adulteration Act. The honourable and energetic member for Devonport has been dreadfully unfortunate in not getting a second reading for his Bill, and in having failed also to "draw" Mr. Chaplin on the subject of the remedy promised by the Government in the speech from the Throne. Mr. Kearley cannot ameliorate the unchecked evils in connection with the sale of food, food products, and drugs, and the Government will not. Thus the merry game of fraudulent substitution and adulteration goes on for another twelve months, whilst the uncertainty of chemists, analysts, vestries, and magistrates will not be dispersed for many a day.

Registration Projects, too, have crumbled up badly. It was fondly hoped by the zealous promoters individually concerned that accountants, architects, boilers, plumbers, midwives, and firms would this year be severally placed upon registers and become duly regulated in their respective spheres of activity. But the fond hope has been rudely dispelled, for not a single registration measure has survived the annual sacrifice. The public must, therefore, take its chance of alighting upon incompetent Betsy Prigs and her homologues in the before-mentioned callings, just as it has submitted to that risk without much prejudice since the days of the Conquest.

Camlachie is also among the hapless fathers of slain Bills. He brought in two little measures for hastening the millennium in Scotland, and might have passed them if he had not, in an evil moment, assumed the position of implacable obstructor to the Pharmacy Acts Amendment Bill. In the result Mr. Cross failed to stop the Society's Bill, but his own innocents were never allowed to reach a second stage, and now we have to chronicle their disappearance altogether. The honourable gentleman might have done better if he had not thought too deeply of the personal considerations of the case.

Early Closing has practically made no progress, and none need be expected this year. True, the two Shops Bills of Sir John Lubbock and Sir Charles Dilke are still on the active list of the business of the House, but both are blocked by Mr. Sydney Gedge, of Walsall, and cannot have the shadow of a chance now that the Government has "bagged" all the Wednesdays of the Session. Mr. Gedge, who is a solicitor (Gedge, Kirby and Millett, 11, Gt. George Street) and a Governor of Christ's Hospital, is understood to oppose the measures "more in sorrow than in anger," and simply as a matter of principle.

The Poisonous Substances Bill is to be read a second time in the Upper House on Friday, 24th instant, and the whole calling of pharmacy will be anxious to hear what His Grace of Devonshire, as Lord President of the Privy Council, has to say in support of a proposal which is an inversion of the education-of-the-vendor

principle, and bases the safety of the public upon the flimsy foundation of a label. We hope to present a full report of the proceedings of the House of Lords in respect to the Bill next week.

THE PHARMACY BILL is still awaiting second reading in the Lords, but no alarm need be felt at the delay, which is not due to any unforeseen opposition. It is expected that the Earl of Hardwicke will move the second reading next week.

EXTRACTS FROM CONSULAR REPORTS.

CHEMICALS IMPORTED INTO GHENT during 1897 amounted to 38,907 tons as compared with 45,510 tons in 1896. The chemical imports include carbonate of soda, caustic soda, chloride of lime, sulphate of ammonia, sulphate of soda, etc., all from the British Isles; and phosphate rock and nitrate from Florida and Peru respectively. The decline of 6603 tons during 1897, according to Vice-Consul Hallett, turns upon nitrate imports; for while chemicals from British ports increased, and also phosphate rock from Florida, there was a falling off in nitrate imports of 9938 tons.

THE SALE OF MATCHES, their importation and manufacture, in the Panama Republic, has now become a monopoly, and all matches received since October 7 last have been treated as contraband.

THE VALUE OF MEDICINES, CHEMICALS, DRUGS, ETC., imported to Panama during the year 1897 amounted to £19,873, as compared with £18,918 in 1896. Of the first amount Great Britain supplied goods to the value of £5121, France £5265, Germany £1324, United States of America £7854, other countries £309.

ARTIFICIAL HONEY is a bye-product of the German beetroot sugar distilleries, and although high duties were imposed by the German Customs tariff upon foreign honey in order to protect the genuine home product, the rapidly increasing competition of the artificial article has given it the severest blow. Genuine honey, according to Consul-General Ward, was very scarce throughout all Germany in 1897, and in consequence large supplies had to be imported from foreign countries, the total importation (by sea) being 2,140,500 kilos. as against some 1,760,000 kilos. in 1896.

IMPORTATIONS OF BEESWAX to Hamburg during the last five years are reported to have increased considerably. In 1893 the total importations were 278,100 kilos, while last year 970,000 kilos were received. The largest increase was in Mozambique and Zanzibar wax, but German East Africa now sends annually larger quantities of beeswax to Hamburg. Carnauba wax, which at one time was shipped *vid* England, has recently been taken direct in larger amounts than formerly, viz., 315,000 kilos in 1897 as against 145,000 kilos the previous year. Of Japan wax, which was subject to considerable fluctuations in price, the importations reached 480,000 kilos, compared with 245,000 kilos in 1896.

ONE OF THE IMPORTANT BRANCHES of chemical industry in Germany is the manufacture of explosives, in particular dynamite and all kinds of gunpowder. Tho factories in the neighbourhood of Hamburg alone exported something like £465,000 worth of dynamite, gunpowder, and gun-cotton in 1896, the largest proportion being destined for South Africa. Besides this quantity a considerable amount of explosives was sent by rail and river to the interior of Germany.

NITRATE IMPORTED INTO HAMBURG during 1897 amounted to 378,000 tons, as against 536,000 tons in the preceding year. It was anticipated that an improvement would take place in the nitrate business during the year, but contrary to expectations matters were less favourable for importers than the year before. An attempt was made in Chili by the "Salitreros" to limit production and to keep up prices, but the effort is reported to have failed, owing partly to the large stocks existing in Europe and partly to the fact that after determining to fix the future output according to the production of a given period, the "Salitreros" themselves forced the production during that period to an unreasonable degree, thus tending to defeat their own object. In addition to this, the appearance of new producers in the nitrate market at the same time, caused the "ring" to collapse, and prices which stood in January, 1897, at 7 marks 95 pf., for February-March, 1898, delivery fell to 7 marks 10 pf. in December of the same year.

LETTERS TO THE EDITOR.

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

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

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

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

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

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

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

THE NEW POISONS BILL.

Sir,—Your issue of June 18 certainly contained no news of greater interest for pharmacists than the text of the "Poisonous Substances Bill," introduced into the House of Lords on June 13. Clause 2 would authorise the Privy Council to provide regulations as to the keeping, dispensing, and selling of poisons. It refers to Section 1 of the Pharmacy Act, 1868, as conferring upon the Pharmaceutical Society, with the consent of the Privy Council, the power to prescribe such regulations. A reference to the Act will show that this power is permissive and that it is vested in the Society itself (not in its Council). Section 1 of the Act of 1868 certainly imposes no compulsion upon the Society in this matter. It provides a method by which the Society may deal with the question of keeping poisons and vary such regulations from time to time. This power was analogous to that conferred by Section 2 upon the Council (not the Society here) of proposing alterations in the schedules of poisons. In each case the elasticity was reasonably provided, as saving the need for further legislation. My memory may require furbishing a little as to some points of the discussion of this subject which occurred thirty years since, but I keep a grip upon their main features. A gloss which was put upon Section 1 in certain quarters asserted that the exercise of the power was compulsory, and the explanation was given that private and unlawful bargaining had been used in negotiations with the permanent officials of the Privy Council. If this plea should be raised now, I appeal to the Society's minutes for any evidence. One thing is certain, viz., that the members of thirty years ago would not have purchased a Pharmacy Bill at the price of authorising the Privy Council to remove from the Register every man who offended any regulation that might be made for keeping poisons. It may be well to remind a new generation that this is the penalty which the new Bill will make operative, whilst the regulations creating offences are to be framed by persons ignorant of the technicalities of our calling. A modern writer tells us of seeing a large procession demonstrating for some supposed "rights," and in its rear gloomily walked the great men of the party. When challenged they explained that they were there compulsorily, for they were the leaders. Will history repeat itself? *Nous verrons.*

Leeds, June 22, 1898. RICHARD REYNOLDS.

Sir,—Would it not be a wise and opportune step for the Council to propose that the recommendations passed in 1871 for the storage of poisons be now compulsory? If the new Poisons Bill becomes law some regulations will be in force sooner or later, and for that reason alone the Council would not meet with the same opposition from the Society which it had before to encounter. It would be much better for such regulations to be framed by the Council than by an outside body, which might formulate some inconvenient or impracticable requirements. In the experience which chemists

have had, for instance, with the Board of Inland Revenue, this has already been shown. For example, lately it was proposed that the formula for Gregory or other such pills should be printed on every small label. There are many other points in the Bill which will necessitate most careful consideration. Its ambiguity is evident even in the first clause, which says, "No person shall sell," etc., and "labelled . . . with the name and address of the person selling the substance." Is the assistant to be deemed the seller, and, if not, what about limited liability companies? As they are no doubt included within the scope of the Bill, it is evident that such a company is now at last to be considered a "person."

Edinburgh, June 18, 1898. CLAUDE F. HENRY.

Sir,—The Privy Council's Poisons Bill must have our most strenuous opposition. Clause 1, is entirely contrary to the principle of the Pharmacy Act, 1868, viz., that for the protection of the public the distributors of poisonous substances shall be certified to possess competent skill and knowledge. Sub-Clause 2 is absurd; it even requires that a bottle of medicine containing 1 part of carbolic acid in 1000 of water shall be labelled "To be used with caution!" If this grotesque production may be taken as an example of the intelligence of the Privy Council, one wonders what would be the result of the operation of the second clause of the Bill, intended to give the Privy Council an independent right to amend the Schedule and to institute regulations for "keeping, selling, and dispensing poisons." The Pharmaceutical Society should certainly not surrender the powers it now possesses in relation to these matters. Surely, if the sale of any poisonous substance is found to be a public danger, its distribution should be restricted to responsible and trained vendors; nor is it unreasonable that the public should pay such vendors for this measure of protection. Commercial competition is now-a-days quite sufficiently keen to prevent that payment becoming excessive.

35, Clifton Road, Maida Vale, W. R. H. PARKER.

The Determination of Sex.

Sir,—The mystery of life is a never-failing subject for the physiologist, but all research to ascertain the *causa causarum* has failed and must fail—the writing on the wall that bars inquiry: "Thus far shalt thou go and no farther," puts a stop to the inquisitive mind, and the man is referred back to study phenomena. Every now and then a gifted individual starts a new theory, which for a time sets the whole world talking about and speculating regarding its truth or the reverse. After considerable discussion and argument pro and con, the interest subsides. "Our little systems have their day—they have their day and cease to be." The latest "effort to snatch a secret from Nature," as the author says, is to be found in a book by Dr. Leopold Schenk (*P. J.*, 18th inst.). His object is a praiseworthy one, viz., the production of a greater number of men children. For with the awful destruction of begetters now going on in many parts of the world, the whole system of society seems to be threatened with subversion, and a result, polygamy or concubinage looms in the near distance. Dr. Leared humorously describes an old chief in Morocco who demanded an aphrodisiac. The number of this veteran's children was so great that he could not count them. But the question is the practicability of increasing our male population, and Dr. Schenk thinks he has discovered the secret. If he had studied an extensively read book on physiology it is possible that some light might have been borrowed from Dr. George Combe, who in the year 1828 produced that most valuable work 'The Constitution of Man in Relation to External Objects.' My copy is of the fourth edition, but I am informed that the modern editions are minus several important chapters. Dr. Combe reports the experiments of M. Chas. Girou de Buzareingnes, who divided a flock of sheep into two equal parts; the result was in one instance 53 males and 84 females, in the other 80 males and 55 females. Imagination too has much to do with the determination of sex; instances recorded in Scripture speak of faith, as in the case of Abraham and Hannah. I was acquainted with a gentleman—the father of eighteen children—and he stated that he could and did correctly predict whether his wife would give birth to a son or a daughter. Such instances being tabulated might prove useful.

Kew, June 18, 1898. R. GOODWIN MUMBRAY.

A Dispensing Problem.

Sir,—The Illinois prescription (1885) containing iron, sweet nitre, mucilage and syrup has been again discussed, proving the survival of the unfittest. It is an example of trick skill in dispensing which ought never to have been sanctioned by a Board of Examiners. A writer in the *Pharmaceutical Journal* (June 18, 1898, p. 584), has experienced the usual difficulty, and commenting on the subject remarks that "it would certainly not be advisable to send it out in a covered pot, as suggested by such an eminent pharmacist as Mr. Ince, because of the volatility of the spirit." The "eminent" gentleman alluded to never even hinted at such a proceeding. He remarked in a public lecture, "that made in most ways it assumes the form of a thick jelly, which may be sent out in a covered pot"; a mere statement of fact, being precisely what happens, as indeed the writer of the note has discovered, thus: "It separated in clots and when prepared in the bottle was so stiff that it could not be poured." Knowing the value of the protective agency of simple syrup, I tried its effect on this badly constructed formula, in equal proportions on the three ingredients, and failed in the result. But recognising the exact relation to incompatibility of the tincture, the spirit and the mucilage, an accurate distribution of the syrup was made, from which resulted a bright pourable mixture, much resembling in viscosity and colour freshly prepared oxymel of squills. So presented, the formula was rescued from the covered pot—the one and only method of exhibition was to put it into a wide-mouth stoppered bottle, carefully avoiding the introduction of a metallic spoon, the use of which in the case of iron compounds, accentuated by the presence of spirit of nitrous ether, is not to be advised. The mixture can be thinned as desired in proportion as the mucilage is replaced by simple syrup.

Shepherd's Bush, W., June 18, 1898. JOSEPH INCE.

Sir,—With reference to the prescription mentioned by Miss Minnie Farr in your issue of June 18, viz.:—

℞ Tinct. Ferri Mur.	.....	℥ii.
Sp. Ether. Nitrosi	.....	℥ss.
Muc. Acaciæ	.....	℥i.
Syrup	.....ad	℥iii.

I consider that it was the evident intention of the original prescriber to administer the drugs in a gelatinous form. So far as my experience goes, I have found the above (dispensed somewhat according to the method given in the 'Art of Dispensing,' and mentioned by your correspondent) to result in a perfectly satisfactory jelly, palatable and without undue acidity. Of course, the addition of dilute hydrochloric acid, although giving fluidity, makes it much more acid, and this, I believe, would not be sanctioned by the majority of prescribers. In my opinion, it should be dispensed as written, without addition of any kind, and sent out in a wide-mouthed bottle.

Lewisham, S.E., June 17, 1898. GRAHAM BOTT.

Sir,—The prescription printed in your last issue under the above heading is one of those frequently occurring cases in which the prescriber, either from ignorance or inadvertence, orders an impossible combination. The pharmacist's duty in such a case is to so modify the vehicle as to ensure the correct dose of all the ingredients in as presentable a form as possible and without any illegitimate addition. In the present instance the prescription, dispensed as written, forms a thick mass of dirty looking jelly which will not run out of the bottle. The addition of about 30 minims of dilute hydrochloric acid (as cleverly suggested by your correspondent) works a marvellous tranformation; the semi-solid reddish mass being converted into a bright lemon coloured syrup. But a more simple and certainly more legitimate method of overcoming the difficulty consists in the addition of an equal bulk of distilled water, the mixture being made a six ounce instead of a three ounce one (the dose, of course, being increased from one to two teaspoonfuls). In this way a clear and permanent solution is effected (the clots of jelly which form when first mixed disappearing after repeated agitation). By such means, and without the addition of any foreign ingredient, justice is done to all parties concerned; the doctor's intentions are carried out to the full, the patient gets medicine he can imbibe with comfort, and the chemist sends out a mixture that does him credit. It only remains for the latter to endorse the prescription for the guidance of future dispensers.

Brighton, June 20. C. S. ASHTON.

ANSWERS TO QUERIES.

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

MICROSCOPY.—Get a copy of Cross and Coles' 'Modern Microscopy' (Baillière, 3*s.* 6*d.*) [*Reply to* QUAESITUM.—12/5.]

LATIN FOR GRAMME.—Neuter noun, third declension. Thus: *Gramma, grammatos*; plur. *grammata*. [*Reply to* J. W. J. T.—12/7.]

PARTNERSHIP.—The answer to your questions should be supplied by the deed of partnership, as such matters ought to be agreed upon before commencing operations. [*Reply to* Y. Z.—12/9.]

WALNUT STAIN.—Write to Williams and Co., of Hounslow, for samples of their spirit soluble stains, which are cheaper and better than anything you can make yourself. [*Reply to* SPES.—12/15]

DISPENSING.—The 'Art of Dispensing,' published at 42, Cannon Street, London, price 3*s.* 6*d.*, should serve your purpose well. [*Reply to* A. H. P.—12/14.]

ORIGIN OF NAMES OF SUBSTANCES.—We are obliged for your suggestion, but do not consider the subject of sufficient general interest. [*Reply to* H. C. S.—135/12]

TEST FOR SPUTUM.—The abstract quoted does not give the strength of the alkaline phenol-phthalein solution employed by Dr. Bracker. [*Reply to* SPUTUM.—11/31.]

RUBBER SUBSTITUTE.—We fear we cannot help you in your desire for a rubber substitute possessing the properties you name. If such a substance existed it would be worth a considerable sum. [*Reply to* G. W. E.—12/2.]

BOTTLING MACHINE.—Write, asking for particulars, to Bratby & Hinchcliffe, 146, Minories, London, E.C.; Barnett and Foster, 26, Eagle Wharf Road, London, N., or Hayward Tyler and Co., 90, Whitecross Street, London. [*Reply to* E. J. B.—12/22]

SALE OF BRUNSWICK GREEN.—The Arsenic Act only applies to the sale of "arsenious acid and the arsenites, arsenic acid and the arseniates, and all other colourless poisonous preparations of arsenic." [*Reply to* J. W. J. T.—12/6.]

PULV. AMYGDALÆ AMAR.—(1.) No. (2.) The acid is formed when water is brought in contact with the powder. (3.) It appears to contain a trace of fixed oil, but that, of course, will not contain free prussic acid. [*Reply to* MEMINISSE.—12/12.]

VARNISH FOR DRAWING.—You should first "size" the drawing with a clear size made by boiling parchment cuttings in water. When dry apply the following varnish with a soft brush:—Sandarac, 20 parts; mastic, 8; camphor, 1; methylated spirit, 50. [*Reply to* C. F. J.—11/29.]

METRIC WEIGHTS AND MEASURES.—You will be able to purchase stamped weights and measures shortly. Maw, Son, and Thompson's list includes particulars of counter scales and weights of every description. Stone's balances for dispensing purposes are well-made and not expensive. [*Reply to* COUNTRYMAN.—12/8.]

EMP. BELLADONNÆ LIQ.—Try the B.P.C. formula: Alcoholic extract of belladonna leaf, 960 gr.; rectified spirit, 9 fl. oz.; pure ether, 9 fl. oz.; camphor, 130 gr.; pyroxylin, ½ oz. Dissolve the extract in the spirit, add the ether, decant after standing 12 hours, then add the camphor and pyroxylin. Finally, make up to 20 fl. oz. by adding a sufficient quantity of a mixture of spirit and ether, in equal volumes. [*Reply to* W. F.—12/21.]

BOTANICAL.—(1) It does not appeal to students, but to practical botanists with extended experience. Published monthly, 1*s.* 8*d.*, Dulau and Co., Soho Square, London. (2) John's 'Flowers of the Field' (S.P.C.K., 6*s.*), Henslow's 'Dictionary of Botanical Terms' (Groombridge, 4*s.*). [*Reply to* DULCIS.—12/4.]

BACTERIA.—1. From nitrogenous substances in the medium in which they grow, as in the case of the yeast plant and most other vegetable organisms. 2. No. 3. They are single bacteria, spiral in shape. 4. In the form of readily decomposable nitrogenous compounds. [*Reply to* H. R. M.—11/32.]

COLOURS FOR LEATHER.—For the brown tint probably a methylated spirit solution of Bismarck brown will answer, and suitable spirit soluble aniline tints for the other tints. For black heelball use a mixture of carnauba wax, 5; beeswax, 5; and lampblack, 2. The colour of this may be modified by substituting oil soluble aniline colours for the lampblack. [*Reply to* QUERIST.—11/15.]

SHOW COLOURS FOR BOTTLES.—*Blue*: (1) Dissolve Prussian blue, 1 oz., in sufficient oxalic acid and water, dilute to the desired tint. (2) Copper sulphate, 2; sulphuric acid, 1 fl. pt.; water, *q.s.* *Red*: Iodine, 1; potassium iodide, 1; water to produce the desired tint. Distilled water only should be used for these colours. [*Reply to* R. W.—11/14.]

FIXATION OF NITROGEN.—Apart from the nodule bacteria, nitrogen is fixed by *Clostridium pasteurianum*, a fission fungus belonging to the group of butyric acid bacteria. It occurs in the form of rods, 1·2μ broad and about 5μ long, each of which produces an endospore. The organism is strictly anaërobic, and is therefore obliged to rely on the co-operation of aërobic fission fungi, which remove the oxygen from its sphere of influence and leave it surrounded by nitrogen. [*Reply to* HUMUS.—12/19.]

THICK SAUCE.—Brown sugar, 16; tamarinds, 16; onions, 4; powdered ginger, 4; salt, 4; garlic, 2; cayenne, 2; soy, 2; fl. pts.; ripe apples, 64 parts; mustard powder, 2; curry powder, 1; vinegar, *q.s.* Pare and core the apples, boil them in sufficient vinegar with the tamarinds and raisins until soft, then pulp through a fine sieve. Pound the onions and garlic in a mortar and add the pulp to that of the apples. Then add the other ingredients and vinegar, 60; heat to boiling, cool, and add sherry wine, 10, and enough vinegar to make the sauce just pourable. If a sweet sauce is desired add sufficient treacle before the final boiling. [*Reply to* R. W.—11/14.]

OBITUARY.

THOMAS.—On June 11, Robert Thomas, Chemist and Druggist, Liverpool. Aged 66. Mr. Thomas had been a member of the Pharmaceutical Society since 1869.

LOW.—On June 12, Robert Low, Pharmaceutical Chemist, Arbroath. Aged 26. Mr. Low had been a member of the Pharmaceutical Society since 1894.

DUTTON.—On June 16, John Dutton, Pharmaceutical Chemist, Birkenhead. Aged 79. Mr. Dutton had been a member of the Pharmaceutical Society since 1847. He commenced his career as pupil to a medical man in Nantwich, but after two years in that capacity he went as apprentice to a chemist in the same town, afterwards going to London as assistant to the late Mr. Deane, of Clapham Common, from whom he went to Mr. Morson, of Southampton Row. In 1845 he went to Birkenhead, for which town he was Local Secretary of the British Pharmaceutical Conference at the time of its first visit to Liverpool, in 1870. Mr. Dutton has not taken an active part in business for the last fifteen years, but has lived a country life at Tarporley, Cheshire. His wife was a daughter of the late Mr. Thomas Moore, J.P., of Colchester.

TANSLEY.—On June 16, Arthur James Tansley, Chemist and Druggist, Kidsgrove, near Tunstall. Aged 47.

THOMAS.—On June 16, William John Thomas, Chemist and Druggist, Wrexham. Aged 29.

COMMUNICATIONS, LETTERS, etc., have been received from Messrs. Bishop, Bonn, Count, Cracknell, Crouch, Currie, Forster, Foster, Freeman, Gifford, Haigh, Harrington, Henderson, Henry, Horsfield, Lunan Macdonald, Pearce, Reynolds, Symes, Wilkinson, Young.

NEW IDEAS & TRADE NOTES

Messrs. Evans, Gadd & Co., Exeter, send specimens of their office calendars for 1898. Like the publications of previous years, they are of a very useful character, with detachable monthly tables in large type and a complete calendar in smaller type by the side, while on the back the usual postal information is given, together with a complete table of dates for 1899.

Mr. W. Wilkinson, Ph.C., Cheetham Hill, Manchester, sends a very pretty, perfumed pocket calendar for 1898, containing postal and other useful information, such as "Hints for the Sick Room," etc.

Messrs. Ayrton & Saunders intimate that a full line of their samples can be seen in the show rooms of Messrs. J. C. Langley & Co., 456, Collins Street, Melbourne, Australia, who also hold a full line of all their articles and are able to supply from stock.

NEWS IN BRIEF

General Index.—Orders for the proposed General Index to the Journal should be sent in at once to the Editorial Department, 17, Bloomsbury Square, W.C. An order form will be found on the last page of this inset.

The Windsor and Eton Scientific Society was entertained at the Albert Institute on Wednesday, December 22, by Mr. A. C. Seward, M.A., of Cambridge, one of the Pharmaceutical Society's Examiners, with a lecture on "Fossil Plants," the Rev. Albert Lee in the chair. Mr. Seward observed that the subject he had to speak on was one which did not lend itself particularly well to popular treatment, and that in one short lecture it was difficult to deal with the question thoroughly. He then proceeded to explain how rocks are formed, and incidentally mentioned that the rocks in the neighbourhood of Windsor contain numberless plants. The lecturer then went on to make a few remarks concerning coal. The latter, he said, consisted largely of carbonised remains of plants, and occasionally one could see on the surface of a piece of coal a distinct trace of some plant. Occasionally, too, it was possible to pick off from a piece of coal little round or oval bodies which are just visible to the naked eye. On subjecting these to a more minute examination they are found to be the remains of plants. A far more important fact with regard to coal was, however, that in the cold seasons—at all events in the north of England—one often found in coal hard masses of ironstone-like substance, which very frequently contained a large number of plant fragments. The lecture was graphically illustrated by means of a lantern skilfully manipulated by Mr. W. Oldham, pharmaceutical chemist, of Eton. The slides, which were taken from a painting made under the direction of a well-known Continental fossil botanist, giving the audience a very clear idea as to what kind of forests the coal supply originated from. In conclusion, the lecturer said the field of the fossil botanist was a wide one, and offered much promise to anyone who had the opportunity and desire to follow such study.—The Rev. Albert Lee thanked Mr. Seward in the name of the audience for his most admirable lecture. He was sure they were most deeply indebted to him for giving it.

Glasgow and West of Scotland Pharmaceutical Association.—The last meeting of the year was held on Tuesday, December 21, in the larger hall at 94, West Regent Street, Mr. W. L. Currie presiding.—There was a large attendance of members and their lady friends to hear Mr. Alex. Scott, of Callander, lecture on the beauties of Scottish scenery: "From Doune to Killin, *viâ* Callander, Trossachs, and Lochearnhead," illustrated by over 150 lime-light views. The lecturer, in an attractive manner, gave a description, historical and legendary, of each picture thrown on the screen, and dwelt specially on the romantic beauty of some of the scenes, which the lecturer said surpassed many of the much-lauded scenes in Switzerland. The "worthies' in the various districts passed through did not escape the ordeal of Mr. Scott's camera taking a snap-shot, and the humorous sketches the lecturer gave of interviewing these "worthies" added much to the enjoyment of the evening, which seemed to pass too quickly. The Chairman moved a hearty vote of thanks to Mr. Scott for his able and interesting lecture, Mr. Robb seconded, which was heartily responded to. Mr. Scott, in reply, said it gave him great pleasure to come amongst his brother pharmacists in Glasgow, and although unable to attend the meetings of the Association he nevertheless took a great interest in what was being done. This brought a most enjoyable meeting to a close about 11 p.m.

Dr. F. W. Passmore has been taken into partnership by Mr. H. Helbing, of Queen Victoria Street, E.C., and the firm will henceforth be known as Helbing & Passmore, analytical and consulting chemists.

Mr. G. S. Mumford has taken into partnership his two sons, Edward Selby Mumford and Sydney Mumford, and in future the business will be carried on under the style of G. S. Mumford & Sons, Newcastle Granary and Mills, Farringdon Road, E.C.

Messrs. Dakin Brothers, 87a, Leadenhall Street, E.C., intimate that they have taken into partnership Mr. Eugène Herbert Nicoll, who has been engaged with the firm for a period of twenty-two years.

Coming Pharmacy Balls.

Thursday, January 6.

Midland Chemists' Assistants' Association Ball, at the Edgbaston Vestry Hall, Birmingham. Hon. Secs.: F. Casson, High Street, Harborne, and E. W. Mann, 97, Bristol Road, Birmingham.

Friday, January 7.

Plymouth, Devonport, Stonehouse and District Pharmacy Ball, at the Town Hall, Stonehouse. Hon. Sec.: F. Maitland, 31, Chapel Street, Stonehouse.

Wednesday, January 19.

Chemists' Ball, at the Portman Rooms, Baker Street, London, W. Hon. Sec.: W. Warren, 24, Russell Street, Covent Garden, London, W.C.

Thursday, January 20.

Midland Pharmaceutical Association Ball, at the Grosvenor Rooms, Grand Hotel, Birmingham. Hon. Sec.: H. S. Shorthouse, 159, Stratford Road, Birmingham.

Edinburgh Chemists' Ball, at the Freemasons' Hall, George Street, at 9 p.m. Hon. Sec.: Rea I. McDougall, 1, Gladstone Place, Leith, from whom tickets (15*s.* each) can be obtained.

Wednesday, February 9.

Junior Pharmacy Ball, at the Portman Rooms, Baker Street, London, W. Hon. Sec.: W. J. Henson, Beulah Hill, London, S.E.

PARTNERSHIPS DISSOLVED.

(From the London Gazette.)

B. W. Pugh and F. H. E. R. Pugh (trading as A. Riddle & Co.), Lime Juice Manufacturers, 38, Commercial Street, E. Debts will be received and paid by F. H. E. R. Pugh.

Geo. T. Cooper and Wm. Hesketh (trading as Mark Cooper), Manufacturing Chemists, Drysalters, and Oil Merchants, Henry Street, Church, Lancaster. Debts will be received and paid by Geo. T. Cooper, who will continue the business under the same style as before.

Percival Turner and Frederick G. Kemble (trading as Turner & Kemble), Medical Agents and Accountants, 4, Adam Street, Adelphi, W.C.

RECEIVING ORDERS IN BANKRUPTCY.

(From the London Gazette.)

Ernest Wm. H. Sall, Surgeon, 8, Gloucester Terrace, Southsea.

Oscar Wall, Chemist, residing at 61, Duke Street, Rusholme, Manchester, and lately in business at 35, Renshaw Street, Chorlton-on-Medlock, Manchester.

LATE ADVERTISEMENT.

MARKET REPORT and Prices Current

Specially compiled for the Pharmaceutical Journal

LONDON REPORT.

The quotations here given are in all cases the lowest cash prices for bulk quantities, and often the articles quoted have to be sorted in order to suit the requirements of the retail pharmacist. The cost of freightage from the chemical and drug works to the various distributing centres must also be considered. It is important that these conditions should be borne in mind in making any comparison between the prices quoted and those of the wholesale drug trade.

DECEMBER 30, 1897.

The markets not having reopened since the holidays, and there being no changes of importance to record, we have thought it would be interesting to our readers to sum up the present position of the more important articles as compared with twelve months ago.

ACID CARBOLIC. — Present values are practically the same as those of twelve months ago, both for the crude and for crystals, and whilst to-day the position is very firm, there is no very definite indications as to the future course.

ACID CITRIC—Closes the year at slightly lower values than last year, with a somewhat weak tendency.

ACID TARTARIC.—The position of this article is very similar to that which it held twelve months ago, values being about the same.

ALOES.—*Cape* were very low in price twelve months ago, good bright hard realising only 19s. per cwt. in the first sale of 1897. Later on prices rose decidedly, closing firm at 21s. 6d. to 23s. 6d. for same quality. *Socotrine* were very scarce at the beginning of the year, and 100s. per cwt. was asked for good kegs, for which 80s. per cwt. is the present quotation. *Curaçao* are decidedly dearer for both boxes and gourds, the latter being very scarce. Value at the moment, 38s. per cwt. for good pale livery in boxes, as against 30s. twelve months ago. From New York we hear that there have been several arrivals lately, which were promptly disposed of at full prices. *Capey* held for 17s. per cwt., *c.i.f.*

ATROPINE.—Price of *Sulphate* at beginning of the year was 11s., and of the *pure* 13s. 6d., prices being now 2s. per oz. dearer at 12s. 6d. for the *Sulphate*, and 15s. per oz. for the *pure*.

BALSAMS.—*Peru* closes very firm at 8s. per lb., as against 7s. per lb. twelve months ago. *Tolu* is lower than last year, closing at 2s. 3d. to 2s. 6d. per lb., as against 2s. 6d. to 2s. 9d. per lb. *Copaiba* closes steady at 2s. per lb. as against a rather higher figure last year.

BISMUTH.—The expected advance in value to 5s. per lb. for the *metal*, and 4s. 10d. per lb. for the *subnitrate*, took place shortly after the beginning of the year, prices having previously been 3s. and 3s. 6d. per lb. respectively. A further advance has been anticipated, but has so far not yet taken place.

BORAX—Has been on the downward grade throughout the year, starting at 19s. 6d. to 20s. per cwt. for crystals, and closing dull at 14s. to 14s. 6d. per cwt.

BROMIDES—Are about 2d. per lb. dearer, price of *Pot. Bromide* being 1s. 9d. to 1s. 10d. per lb. against 1s. 7d. to 1s. 8d. in January last.

BUCHU LEAVES.—At the beginning of the year the value of good green rounds was 3¾d. per lb., but later on with small shipments and very reduced stocks in first-hands some considerable buying for speculative account took place, and really good quality was held for as much as 8d. per lb., but no sales at this price have been reported. Demand continuing limited, the small arrivals proved sufficient to satisfy it, and probably 6d. per lb. was highest price paid. At the close the market is rather weaker at 5½d. per lb. for good green.

CALUMBA ROOT.—At the beginning of the year medium sorts could be obtained at 15s. to 20s. per cwt., whilst to-day these are very scarce, the last price realised being 50s. per cwt. Higher values are looked for.

CAMPHOR.—The year opened with a declining market for the *crude*, quotations ranging from 93s. per cwt. *c.i.f.* terms for *China* and 110s. per cwt. *c.i.f.* for *Japan*. At the close quotations rule somewhat firmer at 86s. per cwt. *c.i.f.* for *China* and 90s., same terms, for *Japan*. *Refined* closes at about same rates as those which ruled at the beginning of January. It is stated, however, that English makers will reduce their price 1d. per lb. at commencement of the New Year.

CARDAMOMS.—Stocks have been low during the whole of the year, with consequent high prices. At the first auctions in January a considerable decline on the extreme rates ruling at the end of 1896 took place, and the year closes with prices about on a par with those then established.

CASCARA SAGRADA—Is slightly dearer, present value being about 18s. 6d. per cwt.

COCAINE—Had at commencement of the year come down to what was then considered to be an excessively low price, viz., 11s. 9d. per oz. ; since then, price, however, continued to fall, with one slight recovery, until the article was quoted 8s. to 8s. 6d. per oz. according to brand. Towards the close of the year a decided upward movement took place, and makers now quote 10s. 3d. to 10s. 9d. per oz.

CODEIA—Is slightly lower at 11s. 3d. to 11s. 6d. per oz. against 11s. 6d. to 11s. 9d. at commencement of the year.

COD-LIVER OIL.—This article has rapidly fallen in value during the past twelve months. The nominal value this time last year was about 135s. per barrel for best non-freezing *Norwegian* oil, whilst at the present moment it is quoted at just half the money, and from all appearances lower than higher rates will rather rule in the near future.

COLOCYNTH—Has become very cheap since this time last year, the price for good pale *Syrian* apple being then 1s. 10d. to 1s. 11d. per lb. as against 1s. 1d. per lb. now, but it would appear probable that at this latter price it does not pay to ship, and higher values are looked for. With present low rates for *Turkey* apple the demand for *Spanish* is exceeding small.

CREAM OF TARTAR—Started the year at 82s. per cwt. for first white *French* crystals, and closes at 75s. 6d. per cwt., with a very quiet feeling.

GLYCERINE — Shows a decided fall in value of at least 5s. to 7s. 6d. per cwt. on present values of 52s. 6d. to 57s. 6d. per cwt., for the best white chemically pure, double *distilled* 1·260 quality in tins and cases.

IODINE.—Price is now 7½d. per oz., against 9d. per oz. in January, the *Iodides* being also cheaper in proportion, *Potass. iodide* having been reduced from 11s. 6d.-12s. to 9s. 9d.-10s. 3d. per lb.

IPECACUANHA.—At the first sale of the year 51 bales *Rio* root were shown and held for 5s. 9d. to 5s. 10d. per lb., these prices being then above the ideas of buyers. At the last sale of the year 7s. to 7s. 2d. per lb. was readily paid, and higher prices up to 7s. 6d. have since been realised. *Carthagena* sold at the commencement of the year at 4s. 2d., present value being now about 6s. 3d. to 6s. 6d. per lb.

LITHIA.—Price of the *carbonate* has risen from about 9s. 6d., the figure which was ruling in January, to 10s. 8d. to 11s. per lb., the *citrate* being also dearer.

MENTHOL—Opened the year with a value of 7s. 9d. per lb. on the spot, since which the article has touched a considerably lower figure, closing the year, however, at about same price as at the commencement.

MERCURIALS—Are practically unchanged in price on the year at 2s. 2d. to 2s. 5d. per lb. for *Corrosive sublimate* and 2s. 6d. to 2s. 9d. per lb. for *Calomel*.

MORPHIA—Has fallen since beginning of the year from 5s. 3d.-5s. 6d. to 4s. 3d.-4s. 6d. per oz. for the *Hydrochlorate salt* in powder.

OPIUM—Has declined in value during past twelve months about 9d. to 1s. per lb. for some of the qualities, and somewhat more or less for other kinds, while *Persian*, on the other hand, even commands a slightly better price, in consequence of its scarcity.

PHENACETIN.—*Bayer's* article was quoted at the commencement of the year at the fancy figure of 14s. 3d. per lb. for quantity and in bulk, which figure it still commands, while the commercial article, which was quoted 5s. per lb. at beginning of the year, is now obtainable at 4s. to 4s. 3d. per lb., according to quantity and packing.

PILOCARPIN.—The course of this article has been in a persistently downward direction, and price, which was down to 65s. per oz. at commencement of 1897, after having some time previously been as high as 160s., is now quoted for quantity and in bulk as low as 22s. 6d. per oz., which is not so very much above the normal price which had ruled for some time previous to the abnormal rise in value.

PODOPHYLLIN—Was quoted early this year at the high price of 15s. to 16s. per lb., according to make. Demand having, however, become quiet, value receded to 9s. 6d. to 10s. 6d., since when, in consequence it is said of scarcity, bad yield, and high price of mandrake root, makers have again advanced their quotations to the figures ruling at the commencement of 1897.

QUICKSILVER.—At the beginning of the year importers' price was £6 12s. 6d. per

bottle; to-day they ask £6 17s. 6d. per bottle. The article is very firm, and an advance in price is thought not improbable.

QUININE—Had at the beginning of this year again reached the almost unprecedently low price of 9d. per oz., being also very weak at that reduced figure. Since then the article further receded in value, until makers quoted 7½d. per oz.; shortly afterwards an improved feeling set in and price was successively advanced to 10d., 11d., 1s. 1d., 1s. 2d., and 1s. 3d. per oz., partly in consequence of the combined action of the makers, but chiefly in sympathy with the higher prices of and active demand for the bark, since when, however, a reaction set in, and makers now quote 1s. 1d. per oz.

RESORCIN—Is cheaper; price in January was 6s. 3d. to 6s. 9d. per lb. against present quotation of 5s. 6d. to 6s. 3d. for pure *recryst.*

SACCHARIN.—The price of 36s. per lb., which was the figure at which the article was quoted at commencement of the year, remains nominally unchanged, everything now depending upon the results of the legal action which the saccharin corporation is taking, with a view to upholding and enforcing the validity of the patents, under which it claims the monopoly of the sale of the article in the United Kingdom.

SANTONINE.—This article has come down a few pence in price, present quotation for large quantity in bulk being 5s. to 5s. 6d. per lb.

SENNA.—The stocks have been drawn upon very considerably during the past twelve months, being to-day some 1600 bales less than that at the same period last year. This shortage has taken place in the *Tinnevelly* variety. Prices close therefore very firm. *Alexandrian* kinds are in oversupply except for really fine leaf, which is scarce and in demand, although nominal, price is very low at 9d. per lb.

SHELLAC.—The year opened with a dull market at 80s. per cwt. on the spot for *TN Second Orange*, but values have fallen throughout the twelve months, closing, however, firm at 65s. per cwt.

STRYCHNIA—Has risen during the year about 2d. per oz. for the *pure*, say from 1s. 11d., which was the maker's price in January last, to its present value of 2s. 1d., the *salts* having been advanced in proportion.

SULPHONAL.—Price of this article, which had remained steady at the advanced figure of 15s. to 16s. per lb, to which makers had raised their quotation at the end of 1894, has since, in consequence of outside competition, been reduced by the two principal makers, first to 7s. 9d. and then to 7s. 3d. per lb., at which latter figure it remains; makers, however, declaring that at this figure the article not only is not remunerative, but that it actually shows them a loss, and that a tangible advance in price is, therefore, only a question of time.

THYMOL—Is cheaper, to-day's value being about 6s. 6d. per lb., against 6s. 9d. to 7s. in January last.

Anent the Drug Sales, it is reported that several of the brokers are strongly in favour of holding a public sale on 6th. inst., which may therefore possibly be the case. Bank-rate remains at 3 per cent. We wish our readers a Happy and Prosperous New Year.

NEWCASTLE CHEMICAL REPORT.

DECEMBER 29, 1897.

The holidays are at present stopping business, and until the year turns, new lines on contract will scarcely be gone into. Some fair inquiries for Sulphur and Soda Ash are in calculation, but practically nothing positive is passing. Prices remain as follow:—Alkali: 52 per cent., £5 5s. Caustic Soda: 70 per cent., £7 10s. to £7 15s. Soda Crystals: 42s. 6d. to 57s. 6d. Sulphur: £5. Soda Ash: 52 per cent., £4 5s. Bleaching Powder, according to markets, £6 5s. to £7 5s. per ton.

MANCHESTER CHEMICAL REPORT.

DECEMBER 29, 1897.

Generally, heavy chemicals are unchanged, and there is a slight downward tendency in Caustic Soda, but in Ammonia Soda an advance of 5s. per ton is reported, making the price £4 2s. 6d. per ton in bags on rails. Soda Crystals are scarce, but without change in price. Brown Acetate of Lime is firm at £6 for Welsh and American delivered Manchester. There is no change in Sulphate of Copper, which is easier. Pitch continues to decline, and is as low as 16s. per ton, *f.a.s.* Ship Canal. Yellow Prussiate of Potash closes at 7d.—a farthing higher than last week. Chlorate is somewhat lower, but Bichromate is unchanged. Glycerin, double distilled, is being advanced by makers here, and varies from 49s. to 51s., *f.o.b.*, Manchester. Sal Ammoniac: £33 per ton, firsts; and £31, seconds. Aniline Oil and Salt: 7d. and 6½d. respectively.

In regard to the chemical trade of the North, our correspondent adds the following remarks, and as they are based on observation and personal knowledge of the district, may prove of interest and value to our readers. He says: "It is difficult indeed to gauge accurately the progress or otherwise of the chemical trade of the North for the past year. While pessimists have asserted that the market for bleach and soda is in a deplorable condition, yet there are optimists who humorously assert that so long as the Chinese do not wash there is hope for the alkali trade. While the frequent reductions of wages both in Cheshire and Lancashire, coupled with the fact that bleaching powder has dropped considerably, say, 20s. per ton, point to an undesirable state of things, yet during the year there has been a perfect race between the pioneers of various new processes in the way of cheapening production. There is also the fact that the prices of miscellaneous articles cannot go lower, and as the year closes many of them show an advancing tendency. Take now a brief glance at our imports and exports during the past eleven months. The imports of chemicals, dye stuffs, etc., show a decrease of about three-quarters of a million, but this is compensated for to some extent by the exports of chemicals and medicinal preparations amounting to £7,957,214 in 1897, as against £7,513,302 in 1896. In the United States the development of the alkali trade has been very rapid. The Michigan Alkali Co. is producing 400 tons per week of high strength caustic soda, and the Matheson Company, which holds the American patent rights for the electrolytic process, is also getting to work, so that the prospect is bad for English-made stuff, and is further darkened by the action of the Dingley Tariff Bill. Parenthetically it is a question still whether the progress of the electrolytic processes will be as rapid as some people think, and in this respect experts are manifestly divided in their views.

LIVERPOOL REPORT.

DECEMBER 29, 1897.

In consequence of the holidays business has been limited without material alterations to report as regards prices, which are those of last week.

CANARY SEED.—150 bags of Turkish are reported sold at 26s. per 464 lbs.

CASTOR SEED.—564 bags of Maranham sold at auction for 10s. per cwt.

FŒNUGREC SEED.—100 bags of Egyptian sold privately, ex quay, at 9s. 1½d. per cwt.

LINSEED—Continues firm, with little offering and no sales to report.

OILS.—*Castor*:—Both French and Calcutta are selling steadily at 3⅝d. to 3⅜d. per lb. *Olive* is selling at late rates in small amount. *Linseed oil* of Liverpool makes is firm at the unaltered rate of 16s. to 16s. 6d. per cwt. *Cottonseed oil* is quiet at the easy rate of 14s. 6d. to 15s. 3d. per cwt. *Spirits of turpentine* is offered at 24s. 3d. to 24s. 6d. per cwt., but there is not much inquiry.

POTASHES—Are in retail demand at 19s. 6d. per cwt.

PEARLASH—Is quiet at 30s. per cwt.

SODA NITRATE—Is steadily selling at 7s. 6d. to 7s. 9d. per cwt.

SATURDAY, JANUARY 1.

ROYAL INSTITUTION, at 3 p.m.
"The Principles of the Electric Telegraph," by Professor Oliver Lodge. (Lecture III., Land Telegraphy. Lectures IV., V., and VI. will be given on January 4, 6, and 8.)

MONDAY, JANUARY 3.

SOCIETY OF CHEMICAL INDUSTRY, at 8 p.m.
"Standard Methods of Tanning Analysis as adopted by the International Association of Leather Trades Chemists, with remarks thereon," by Professor H. R. Procter and Dr. J. G. Parker.
"Extraction of Tanning Materials at Various Temperatures," by Dr. J. G. Parker.
"Neatsfoot Oil," by Messrs. J. H. Coste and E. J. Parry.

TUESDAY, JANUARY 4.

BRADFORD AND DISTRICT CHEMISTS' ASSOCIATION.
"Vegetable Thieves and Murderers," by W. West.

THURSDAY, JANUARY 6.

PHARMACEUTICAL SOCIETY, at 12 noon.
Meeting of Council.
MIDLAND CHEMISTS' ASSISTANTS' ASSOCIATION.
Second Annual Ball.

FRIDAY, JANUARY 7.

ABERDEEN JUNIOR CHEMISTS' ASSOCIATION, at 9.30 p.m.
Municipal Election. (Candidates: Messrs. Tavendale, F. Milne, and Murray.)
SHEFFIELD MICROSCOPICAL SOCIETY, at 8 p.m.
"Respiration in Animal and Vegetable Organisms" (illustrated), by Cyril Carr.

EXCHANGE Offers & Wants

Prepaid Notices not exceeding thirty words, including name and address, are inserted at a fee of Sixpence each, if they do not partake of the nature of ordinary advertisements. For every twelve words (or less) extra, the charge is Sixpence. A price, or two initials will count as one word. The fee for use of the Serle Street address, including re-direction of replies, is Sixpence. The right is reserved to omit any notice if considered necessary. All communications should be addressed "Pharmaceutical Journal," 5, Serle Street, Lincoln's Inn London, W.C., where notices can be received until 10 a.m. on Thursdays.

OFFERED.

Miscellaneous.

Magic Lanterns, second-hand; triples and biunials; oxyhydrogen microscope; marvellous pamphengos oil; lantern, gives 14-ft. picture; 60,000 slides and effects; 4-in. 4-wick lanterns, 18s. 6d. each, bargains; illustrated list post free, 2d.—Hughes, Brewster House, 82, Mortimer Road, Kingsland, N.

Books.

Will post 'Chemist and Druggist' every Monday in exchange for 'Pharmaceutical Journal,' posted same day, commencing with issue for January 1, 1898.—Enness, Chemist, Wandsworth, S.W.

WANTED.

10s. offered for 'British Medical Journal' for 1898, posted week after publication.—Herbert J. Whittaker, 37, Camden Street, Belfast.

Wanted.—Upright Counter Case, mahogany, about 2¾ ft. high, about 6 ft. long.—McGibbon, Wathon-Dearne.

Wanted.—Pharmacopœia, English and foreign, earlier than 1820.—Williams and Norgate, 14, Henrietta Street, Covent Garden, London.

Wanted.—Chemical and physical apparatus, balances, batteries, etc.—"Cervix," 'Pharm. Journ.' Office, 5, Serle Street, London, W.C.

Fittings, fixtures, utensils, etc.; must be good; cash prices free on rail.—Balchin's Pharmacy, Gosport.

GENERAL INDEX to the PHARMACEUTICAL JOURNAL

A general index to the "**Pharmaceutical Journal**" for the seventeen years ending June 29, 1895—including volumes IX. to XXV. of the 3rd series—will be printed by subscription if a sufficient number of orders are received. The subscription price will not exceed one guinea and may be considerably less if a large number of orders are sent in, as it is not desired to do more than cover the cost of production. A suitable order form is appended for the convenience of intending subscribers.

SPECIAL NOTICE.—If the work is to be proceeded with, it is necessary that orders should be sent without delay to the

Editorial Department, "PHARMACEUTICAL JOURNAL,"

17, Bloomsbury Square, London, W.C.

ORDER FORM.

Please add my name to the list of subscribers for the proposed General Index to the "**Pharmaceutical Journal,**" *to be published at a price not exceeding one guinea.*

Name.....

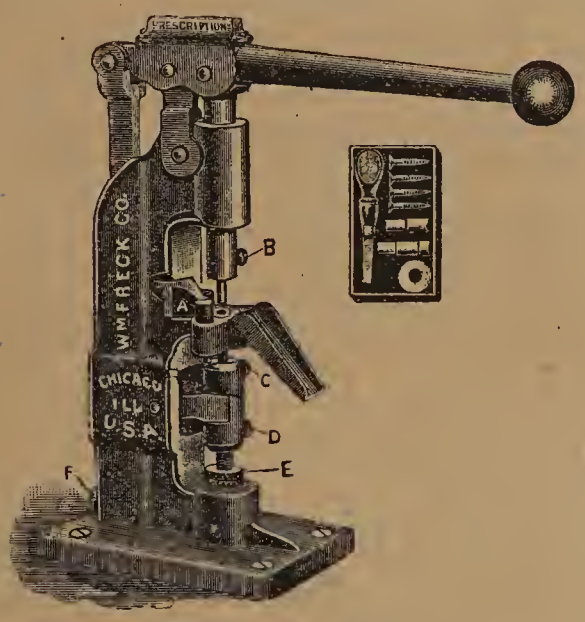
Address.....

Date..... *Number of Copies required*.....

NEW IDEAS & TRADE NOTES

PRESCRIPTION TABLET MACHINE.

MESSRS. S. MAW, SON & THOMPSON, London, furnish particulars of the Freck prescription tablet machine, which has been especially designed for dispensing medicines in tablet form and also for making compressed tablets for general demand. It is claimed to have the same advantages as the best high-priced manufacturing machines, and large quantities of tablets can be made by its aid with ease; its capacity being given as 25,000 tablets per day. The powder or material to be made into tablets is put into the feeder or funnel, and the feeder moved over the die, which is filled automatically; the feeder is moved back, the lever brought down, compressing the powder, the lever raised again at the same time that the lower compressor in the die is raised, bringing the perfect-shaped tablet to the surface, whence it is discharged through the spout by the sweeping motion of the feeder. All these various movements are accomplished by once lowering and raising the lever, in addition to moving the feeder. The lower



compressor is adjustable by means of screw for making tablets of various thicknesses, and if once set, will make tablets of perfect uniform weight; it is also adjustable so that it will stop exactly even with the surface of the die, no matter how deep it recedes into it. Each machine has two sets of dies and compressors, making tablets of 9/32 and 3/8ths of an inch diameter respectively, of any required thickness, and from 1/2 to 10 grains in weight. Additional sets in sizes of 3/16ths, 7/32, 1/4, 5/16ths, 7/16ths, and 1/2 inch can be obtained. The dies and compressors can be changed quickly and easily, and for making large quantities of tablets, a funnel is fastened on the feeder. One pound of pressure on the lever is claimed to give ten pounds of pressure on the tablet, and the latter can be made as hard or soft as desired. The machine is 12½ inches high, occupies 4×6 inches of counter or shelf space, and weighs twelve pounds. The price of it is fifty shillings.

CONCENTRATED NOURISHMENT.

OXINE is an extract of beef and vegetables, devised with the view of avoiding the defects of meat extracts that contain little or no real nourishment, and are as a matter of fact not much more than stimulants. It is supplied in tablets (6*d.* each), each of which makes one pint of beef-tea, in 2, 4, 8, and 16-oz. jars, containing a product of half that strength; also in skins and in the form of lozenges. Prof. Meldola, in his report on OXINE, states that "as far as chemical analysis can throw light on the nutritive value of animal and vegetable preparations, the results are highly satisfactory. The total quantity of nitrogen contained in the solid material, and the proportion of this element present in an assimilable form, is greater than in any other product of a similar character of which the composition has been made known. So also the mineral constituent or ash contains all the necessary salts for human requirements. The albuminoids are present in a soluble and easily digestible condition, and the preparations are thus eminently fitted for nutritive purposes in cases where weakness of the digestive system prohibits the use of solid food."

PHARMACEUTICAL ENTERPRISE.

MESSRS. WRIGHT, LAYMAN & UMNEY send a very neat and interesting publication giving a short account of the various departments of their business. A perusal of this clearly indicates an earnest endeavour on the part of the firm to keep abreast with the modern and more scientific requirements of the business of pharmacy. Views are included of the firm's warehouses in Southwark Street, the storage warehouse, Union Hall, Boro', S.E., the general offices, despatch department (home trade), export packing department, "wet" floor, drug mills, manufacturing laboratory, distillation department, vacuum apparatus, analytical and research laboratory, pill and tablet department, medicinal and toilet soap manufacturing department, soap and fancy goods packing department, engine and boiler house. All the illustrations are well printed from excellent process blocks, and the result is highly creditable to the firm.

Coming Pharmacy Balls.

WEDNESDAY, JANUARY 19.

CHEMISTS' BALL, at the Portman Rooms, Baker Street, London, W. Hon. Sec.: W. Warren, 24, Russell Street, Covent Garden, London, W.C.

THURSDAY, JANUARY 20.

MIDLAND PHARMACEUTICAL ASSOCIATION BALL, at the Grosvenor Rooms, Grand Hotel, Birmingham. Hon. Sec.: H. S. Shorthouse, 144, Edmund Street, Birmingham.

EDINBURGH CHEMISTS' BALL, at the Freemasons' Hall, George Street, at 9 p.m. Hon. Sec.: Rea I. McDougall, 1, Gladstone Place, Leith, from whom tickets (15*s.* each) can be obtained.

WEDNESDAY, FEBRUARY 9.

JUNIOR PHARMACY BALL, at the Portman Rooms, Baker Street, London, W. Hon. Sec.: W. J. Henson, Beulah Hill, London, S.E.

NEWS IN BRIEF

THE DUNDEE CHEMISTS' ASSISTANTS AND APPRENTICES held their annual social in the Queen's Hotel on Monday, January 3. There was a very good attendance, and Mr. R. M. Lindsay, who presided, dealt briefly with the chief features in connection with current pharmaceutical politics, and congratulated the master chemists on having such a fine body of assistants and apprentices as were present that evening. A vote of thanks to the Chairman terminated a very pleasant gathering.

THE LIVERPOOL PHARMACEUTICAL STUDENTS' SOCIETY will hold its eighth annual dinner on Thursday, January 13, at the Bee Hotel, Queen's Square, Liverpool, at 8.15 p.m. Tickets, 3*s.* 6*d.* each, can be had from the Hon. Sec., Mr. J. Harris Burns, 87, Bold Street, Liverpool, or from members of the Council.

PHARMACOGRAPHY IN 1897.—Two obvious printer's errors were overlooked by the author of this article in correcting the proof supplied to him. On page 15, column 2, line 21, "Mitzpflanzen" should be "Nutzpflanzen," and on line 23 "West" should read "East." The name of Sir Joseph Hooker was also inadvertently associated with the 'Icones Plantarum.' He has had no connection with that work for some years past.

COMPLIMENTARY BANQUET TO THE LORD MAYOR OF MANCHESTER. — Mr. Harry Kemp, the Hon. Secretary to the Banquet Committee, desires us to say that as two or three instances have come to his knowledge where chemists in the district, either through his fault or that of the postal authorities, have not received any circular respecting this function, he will be glad if any others similarly treated, and who may wish to be present on January 26, will at once communicate with him.

MR. T. DONALD WATSON has accepted the Secretaryship of the Formalin Hygienic Co., Ltd., 9 and 10, St. Mary-at-Hill, E.C., and is no longer connected with the firm of Messrs. Fuerst, Bros., Philpot Lane, E.C.

BRADFORD AND DISTRICT CHEMISTS' ASSOCIATION.—On Tuesday, January 4, Mr. Wm. West, F.L.S., gave an interesting lecture, entitled "Vegetable Thieves and Murderers," before a moderate attendance of members at the Great Northern Victoria Hotel. Describing first the foods necessary for building up plants and how obtained and assimilated, the lecturer proceeded to explain the many varieties of vegetable life which obtained their nourishment, either partially or wholly, from sources outside themselves. Several illustrations were thrown on a large screen, not only of examples in this country, but of others in various parts of the world. The lecture was greatly enjoyed by an attentive and appreciative audience.

MARKET REPORT and Prices Current

Specially compiled for the Pharmaceutical Journal

The quotations here given are in all cases the lowest cash prices for bulk quantities, and often the articles quoted have to be sorted in order to suit the requirements of the retail pharmacist. The cost of freightage from the chemical and drug works to the various distributing centres must also be considered. It is important that these conditions should be borne in mind in making any comparison between the prices quoted and those of the wholesale drug trade.

LONDON REPORT.

JANUARY 6, 1898.

The past week, while quite fulfilling any reasonable expectations in this direction, has hardly yet brought a full revival of business after the New Year holidays, while the changes which have taken place have been of minor importance. Acid Citric is weaker. Acid Tartaric and Cream of Tartar steady. Iodine and Iodides, Bromine and Bromides, Quicksilver and Mercurials all firm at unchanged values. Cod-liver Oil dull and weak. Glycerin quiet. A better feeling appears to prevail respecting Quininc, without, however, having so far led to any change in price. Santonin lower. Cascara Sagrada decidedly dearer, and fully expected to further advance. Acid Carbolic dull. Lithia Salts firm. Bismuth unchanged. Codeia steady. Opium and Morphia very quiet. Cocaine, Sulphonal, and Phenacetin without change. English makers reduced their price for refined Camphor, as was anticipated. Shellac firmer. Cubebs and Oil of Cubebs dearer. Colocynth very firm. The following are prices actually ruling for articles of chief interest :—

ACID BORACIC—Unchanged at 24s. per cwt. for *crystals* and 25s. per cwt. for *powder*.

ACID CARBOLIC—Has been rather dull at 7d. per lb. for the 35-36° C. *ice crystal* in large packing, price of other qualities and packing being in proportion, say 7½d. for 39-40° C. *ice crystals*, and 8½d. for 39-40° C. *detached crystals* in larger bulk ; *crude* 60° F. 2s. per gallon ; 75° F. 2s. 5d. ; *liquid* 95 per cent. of pale straw colour 1s. 2d. to 1s. 3d. per gallon in 40 gallon casks.

ACID CITRIC—Is lower at 12½d. to 1s. 1d. per lb. according to make. It is thought that this article has now touched rock bottom, and that an early upward movement is not improbable.

ACID TARTARIC.—Steady at 1s. 1d. to 1s. 1½d. per lb. for *English* and 12½d. per lb. for *foreign* crystals.

AMMONIA COMPOUNDS.—*Sulphate* is very firm ; grey prompt 24 per cent., London, £9 2s. 6d. to £9 5s. per ton. *Chloride* unchanged at 23s. 6d. to 25s. 6d. per cwt. for the 98 per cent. *Bromide* steady at 2s. 2d. per lb. *Nitrate* firm at 40s. per cwt. *Sulphocyanide* : 1s. to 1s. 1½d. per lb. according to quantity. *Iodide* steady at 14s. 6d. per lb.

ATROPIA.—Price of this article is fully maintained at 12s. 6d. for the *Sulphate* and 2s. 6d. per oz. more for the *pure*.

BISMUTH.—So far no change has taken place in the price of this article, which remains at 5s. for the *metal*, and 4s. 10d. per lb. for the *subnitrate* in 5-cwt. lots.

BLEACHING POWDER—Steady at £7 per ton on the spot.

BORAX—Quiet and unchanged ; *crystals*, 14s. per cwt. ; *powder*, 14s. 6d. per cwt.

CAMPHOR—*Crude* : Business in this article is slow, although nominal quotations are higher at 87s. 6d. per cwt., *c.i.f.*, for *China* and 91s., *c.i.f.*, for *Japan*.

CAMPHOR (REFINED).—As anticipated, the English makers reduced their prices on the 1st inst. to 1s. 3½d. per lb. for bells and ½ and 1-lb. blocks and for flowers, and th usual differences for the smaller blocks.

CARDAMOMS. — About 150 cases were offered by auction to-day, part of these being without reserve, as damaged by fire and water *ex* the "Kawachi Maru" s.s. The damaged portion sold well at 1s. 9d. to 1s. 11d. per lb., whilst for good bold pale *Mysores* 3s. 9d. to 3s. 10d. per lb. was paid. Good *decorticated* realised 3s. 6d. per lb., which was rather less than was paid at the December auctions. One lot *Malabar* sold at 3s. per lb., being also easier.

CASCARA SAGRADA—Is much firmer, nearest quotation being about 22s. 6d. per cwt. *c.i.f.* It would, however, be difficult to buy much even at this price, while much higher prices are confidently anticipated in the near future. One firm has received instructions to at once ship back to New York on arrival here between 40 and 50 tons of the article, now *en route* for this country—a fact which speaks for itself.

COAL TAR DISTILLATION PRODUCTS.—*Toluol* : 2s. 1d. per gallon. *Benzole* : 50 per cent., 1s. 9d. ; 90 per cent., 1s. 6d. *Crude Naphtha* : 30 per cent. at 120° C., 10d. *Solvent Naphtha* : 95 per cent. at 160° C., 1s. 11d. per gallon ; 90 per cent. at 160° C., 1s. 8d. ; 90 per cent. at 160° C., 1s. 5d. per gallon.

COCAINE—Is quiet at late quotations, makers still asking 10s. 6d. to 10s. 9d. per oz. for 100-oz. lots, while there are still a few second-hand holders who would accept somewhat less. Present price is still extremely low, and, in view of the possibility of a further advance in value, many buyers are keeping full stocks.

COCOA BUTTER.—At the monthly auctions on Tuesday 30 tons Cadbury's make sold at again lower prices, the average being 9⅝d. per lb., as against 10½d. per lb. last month and 11⅞d. per lb. at the November sale.

CODEIA—Steady at unchanged value, say, 11s. 3d. to 11s. 9d. per oz., according to quantity.

COD-LIVER OIL. — There is not much doing in this article, quotation being 62s. 6d. to 65s. per barrel for best non-freezing Norwegian. Stocks on the other side are said to be considerable, and there will probably be a pressure to sell before the advent of the new season's oil.

COLOCYNTH.—The crop of *Syrian* is said to be small this year, and the stock in first hands a few cases only. Business has been done this week at 1s. 2d. per lb. for fair apple, and 1s. 3d. per lb. is now asked. For new crop more money is asked, and only very moderate quantities appear to be available.

CREAM OF TARTAR—Very firm at 75s. 6d. for first white French *crystals* on the spot ; *powder*, 78s. to 79s. per cwt.

CUBEBS—Are strongly held by importers at a nominal value of 35s. per cwt., but it would probably be difficult to buy much at this price.

FERRI ET AMMON. CIT.—In sympathy with lower quotations for citric acid this has been reduced to 1s. 1½d. per lb.

GLYCERIN.—So far there has not been much doing this year in this article, price of which remains 52s. 6d. to 57s. 6d. per cwt., according to quantity and brand, for the best white double-distilled chemically-pure 1·260 quality in tins and cases.

HELLEBORE ROOT—Has been in demand during the past ten days, it is said, for shipto the United States, and it appears impossible now to find any stocks, either here or on the Continent, except in the form of powder, for which quotations range from 25s. to 45s. per cwt., according to holder and purity.

JAPAN WAX—Is slow of sale at 37s. per cwt. on the spot, whilst for arrival 33s. per cwt., *c.i.f.*, is the latest quotation.

KAVA KAVA—Is dearer at 9d. per lb.

LITHIA—Remains firm at the late advance to 10s. 8d. to 11s. per lb. for the *carbonate*, and 6s. 4d. to 6s. 8d. for the *citrate powder*, and in view of the fact that the article appears to be now completely controlled by the two makers, it would appear that price will be fully upheld.

MENTHOL—Is quiet but steady at 7s. 6d. to 8s. per lb. according to quantity, both on spot and for arrival.

MERCURIALS—Are unchanged at 2s. 6d. to 2s. 9d. per lb. for *Calomel* and 2s. 2d. to 2s. 5d. per lb. for *Corrosive sublimate*.

MORPHIA.—Very quiet, price of the *Hydrochlorate* powder being 4s. 3d. to 4s. 6d. per oz. for quantity.

OILS (ESSENTIAL).—*Cubebs* is dearer at 4s. 6d. per lb. *Pimento* is also dearer at 13s. per lb. for English. *Lemongrass* is very scarce, last price paid being 10d. per oz., and some holders now ask 1s. per lb. *Peppermint* : H.G.H. continues weak for arrival at about 5s. 4½d. per lb., *c.i.f.* terms. *Cajuput* is very scarce, and 4s. 9d. per bottle is asked. *Star Aniseed* is very dull without change, which may also be said of *Cassia*. *Bergamot* is easier at 6s. 9d. to 7s. per lb. *Lemon* is also easier at 3s. 3d. to 3s. 4d. per lb.

OILS (FIXED) AND SPIRITS.—*Linseed* is firm at £4 17s. 6d. for pipes on the spot, and £15 7s. 6d. for barrels same position. *Rape* steady ; ordinary brown on spot £24 10s. ; refined spot £26. *Cotton* steady ; crude spot £12 10s. ; refined £13 17s. 6d. to £14 7s. 6d., according to make. *Olive* unchanged at £32 for Spanish, £31 10s. to £33 for Levant. *Cocoanut* : Ceylon on the spot £22 10s. *Cochin*, £28. *Palm* : Lagos on the spot £23. *Turpentine* : Steady. American spot 23s. 7½d., per cwt. *Petroleum* : Unchanged. *Russian* spot 4⅝d. per gallon. *American* 4½d. per gallon. *Water white*

5¾d. *Petroleum Spirit*: American 6d.; deodorised 6¼d. per gallon.

OPIUM—Remains unchanged with but little doing in the article.

ORANGE PEEL.—The new crop still commands a fairly ready sale at 1s. per lb. for thin cut, whilst old crop is to be had at 5d. to 8d. per lb. as to condition.

PHENACETIN—Is quiet at 4s. to 4s. 3d. for both *crystals* and *powder* in quantity and bulk packing.

POTASH COMPOUNDS.—*Chlorate* rather firmer at 3¾d. per lb. on the spot. *Citrate* is lower at 1s. 1½d. per lb. in sympathy with the reduced price of citric acid. *Bromide* steady at 1s. 10d. per lb. for ordinary quantities less than 1 cwt. *Iodide* in good demand at 9s. 9d. to 10s. 3d. per lb., according to quantity. *Bicarbonate* steady at 30s. per cwt. for crystal or powder in large bulk. *Permanganate* is weak at 65s. per cwt. for small, and 70s. for large crystals. *Prussiate*: *Yellow* quiet at 6½d. per lb., *red* 1s. 1d. per lb.

QUICKSILVER—Unchanged at £6 17s. 6d. per bottle from first hands, and 6d. less from second-hand holders.

QUININE.—A decidedly better feeling prevails respecting this article, and while makers' price is still 1s. 1d. per oz., it is doubtful whether they would accept any very large orders at this figure. The price from second-hand is nominally still 12½d., but there are few sellers, the larger second-hand holders appearing to have very decided ideas as to the future of the article. It is further reported that the holders of bark in Amsterdam have decided to offer only a limited moderate quantity in next and following sales. In some quarters the idea appears to prevail that Quinine not only will not be cheaper but that we may very likely see tangibly higher prices in the not too distant future.

SAFFRON.—Market appears now to be in such a position that an upward turn may come at any moment. Genuine *Valencia* is quoted at 35s. to 40s. per lb., whilst *Alicante* is to be had at 22s. 6d. to 27s. 6d. per lb., according to quality and quantity.

SEIDLITZ POWDER.—Messrs. Howards have reduced their price to 60s. 3d. per cwt.

SANTONIN.—The two principal makers of this article have reduced their price, which is now 4s. 11d. per lb. for smaller quantity down to 4s. 5¼d. for 3-cwt. lots taken in one delivery. The object of this reduction would appear to be with a view to driving out of the field or at least discouraging one or two other smaller makers who have hitherto been underselling. It is, however, reported that so far the reduction has been without effect, and that underselling is still going on, which might mean the possibility of a still further reduction in the price of this article.

SHELLAC.—The shipments for December just to hand proved to be much smaller than anticipated, and more firmness has been given to the market, prices closing dearer. At the auctions on Tuesday unusually small supplies were catalogued, and although bids showing an advance of fully 3s. per cwt. on last sale's rates were made, holders were extremely firm, and nearly the whole was bought in. A few cases basis *TN* sold at 65s. per cwt. A total of 500 cases offered and 31 cases sold. *Second Orange*: of 336 cases 25 sold, fair to good bright curly at 64s. to 66s., good pale lemony *PM* in double triangle bought in at 84s., and fair bright curly *BRO* in diamond little matted at 70s. *Button*: of 164 cases 6 sold, ordinary mixed firsts at 73s.; the remainder bought in, *BL* 2 at 70s., and circle 2's at 65s. to 67s. Since the sales about 200 cases *Second Orange* have been sold; fair to good bright at 65s. to 68s. per cwt. The shipments from Calcutta (per "Reuter") to the United Kingdom were for the last half of December 2600 cwt., making 6700 cwt. for the month, against 14,800 cwt. last year; and to the United States for the last half of December 1200 cwt., making 4200 cwt. for the month, against 5000 cwt. last year. To the Continent the shipments were 3200 cwt., making 5900 cwt. for the whole month, against 4400 last year.

SODA COMPOUNDS.—*Crystals* steady at 55s. per ton ex-ship terms. *Nitrate*: Refined on the spot £7 15s. per ton. *Bicarbonate* steady at £7 10s. to £7 15s. for the commercial 98 per cent., and 18s. 6d. per cwt. for the fully bicarbonated. *Bromide* unchanged at 2s. 2d. per lb. *Iodide* firm at 11s. 7d. per lb. *Sulphite* 17s. 6d. per cwt for ordinary crystals, and 22s. 6d. per cwt for recryst.

SODA TARTARATA—Has been reduced to 68s. to 71s. per cwt. according to quantity and packing.

SPICES (VARIOUS).—Zanzibar *Cloves* are steady, with business at 3 1/2d. to 3 5/8d. for January to March, and 3 5/8d. for March to May. *Black Pepper*: Small sales of Singapore at 3⅞d. for spot, and moderate business for arrival at 4 1/2d. to 4 5/8d. *White Pepper* r Penang April to May delivery, 6½d.; Singapore February to April steamer, 7¼d. *Cassia ltgnea*: Quiet, but steady at 46s. 6d. to 47s.

SULPHATE OF COPPER.—Slow of sale at £15 5s. to £16 10s. per ton according to make and quantity.

SULPHONAL—Remains in *statu quo*, the two makers still selling at 7s. 3d. per lb., which is less than half the price which they were asking twelve months ago.

LIVERPOOL REPORT.

JANUARY 5, 1898.

AMMONIUM SALTS.—Carbonate is still somewhat scarce at 3d. per lb. Sal ammoniac is said to be about to increase in price 33s. and 31s. per cwt. Sulphate continues a firm market, £9 2s. 6d. to £9 3s. 9d. per ton.

BEESWAX.—20 packages of Gambia were sold at £6 5s. to £6 7s. 6d. per cwt.

BLEACHING POWDER—Is dull at £5 12s. 6d. to £6 5s. per ton.

CANARYSEED—Continues flat. The only sales reported are 50 bags of Turkish at 26s. per 464 lbs. and 200 bags of Spanish for shipment at 32s. 9d. per 464 lbs.

CASTOR SEED.—124 bags Maranham found buyers at 10s. per cwt.

COPPERAS—Is extremely firmly held at 39s. per ton for Lancashire, and 37s. for Welsh.

COPPER SULPHATE—Is a shade dearer on the spot for prompt shipment; £16 per ton.

GUM ARABIC.—A large import of Brazilian gum will shortly come on this market.

HONEY.—150 barrels Chilian Pile X sold at 26s. per cwt.

Monthly Statement of Drugs, etc., Warehoused in London.—January 1, 1898.

		December, 1897.		Stocks, Dec. 31, 1897.	
		Arrivals.	Deliveries.	1897.	1896.
Aloes (all kinds)	packages	716	173	5,069	5,997
Balsams ,,	,,	38	34	428	808
Cinchona Bark	,,	1,078	1,900	16,695	22,190
Quinine Sulphate	ounces	71,280	9,968	1,539,264	1,407,264
Beeswax	packages	373	1,036	2,303	1,082
Camphor	,,	205	135	11,438	11,932
Cardamoms	,,	192	184	470	444
Cochineal	,,	576	209	2,529	2,702
Colombo Root	,,	20	12	23	11
Cubebs	,,	—	78	339	470
Dragon's Blood	,,	—	7	60	59
Galls (all kinds)	,,	—	179	3,771	6,600
Gum, Ammoniacum	,,	—	3	29	39
Arabic, all kinds	,,	1,285	2,405	12,430	12,996
Asafœtida	,,	—	38	490	261
Benjamin	,,	223	446	2,373	3,403
Galbanum	,,	—	—	—	1
Gamboge	,,	11	18	295	192
Guaiacum	,,	2	62	66	50
Kino	,,	2	—	21	25

		December, 1897.		Stocks, Dec. 31, 1897.	
		Arrivals.	Deliveries.	1897.	1896.
Gum, Mastic	packages	—	—	—	12
Myrrh	,,	5	32	556	574
Olibanum	,,	—	257	931	2,406
Tragacanth	,,	300	457	2,723	4,047
Ipecacuanha	,,	76	51	263	468
Jalap	,,	17	22	342	304
Nux Vomica	,,	—	20	129	518
Oils, Castor	,,	85	154	493	1,027
Olive	,,	98	232	645	1,161
Aniseed	,,	—	6	141	45
Cassia	,,	15	1	130	20
Rhubarb	,,	137	108	970	461
Saltpetre	tons	1,098	1,038	2,468	2,552
Sarsaparilla	packages	15	85	184	263
Senna	,,	549	405	1,357	3,025
Shellac	,,	5,803	3,388	51,948	35,679
Terra Japonica, Gambier	tons	1,030	468	1,705	1,067
Cutch	,,	75	88	1,416	1,826
Turmeric	,,	—	81	318	907

The stocks of camphor, oils of aniseed and cassia are incomplete, some warehouses not making returns

LINSEED—Is very scarce and dear; 600 bags of Trebizonde sold at 35s. per 416 lbs.

OILS (FIXED) AND SPIRITS.—*Castor oils* are in fair demand at the firmly maintained price of 3⅝d. to 3¾d. per lb. for both Calcutta "good seconds" and French first pressure. *Olive oils* have only been selling in retail amount at extreme prices. *Linseed oil* of Liverpool make keeps its price up well, 16s. to 16s. 6d. per cwt., but the transactions are for this week unimportant. *Cottonseed Oil* is very flat for Liverpool refined, which is quoted at 14s. 6d. to 15s. 3d. per cwt. *Spirit of Turpentine* is firmly held for 24s. 3d. to 24s. 6d., but inquiry is small.

POTASH SALTS.—*Bichromate*: 4½d. per lb. *Chlorate*: 3½d. per lb. *Cream of Tartar* is at 75s. to 76s. per cwt. for best white, but is neglected. *Pearlashes*: 30s. per cwt. *Potashes* are in better inquiry at 19s. 6d. per cwt. *Saltpetre*: 21s. 6d. per cwt.

SODA SALTS.—*Bicarbonate*: £6 15s. per ton. *Borax*: £13 10s. per ton. *Caustic*: 76 per cent. to 77 per cent., £8 15s. per ton; 70 per cent., £7 5s.; and 60 per cent., £6 5s. *Crystals*: Firm at £2 17s. 6d. per ton.

MANCHESTER CHEMICAL REPORT.

JANUARY 5, 1898

The market has not yet recovered its wonted activity after the holidays, and business is of a very "hand to mouth" character. Sulphur and Soda Ash continue firm, but Bleaching Powder is dull at £5 to £5 5s. per ton, softwood casks on rails. Brown acetate of lime varies from £5 15s. to £6 per ton, Welsh and American both delivered Manchester. Sulphate of Ammonia is firmer at £8 17s. 6d. per ton, on rails Lancashire. Ammonia Alkali 58 per cent. is quoted £4 per ton in bags, on rails. Pitch continues dull, but there is a prospect of a revival shortly. Green Copperas is unchanged, and makers of Lancashire are well sold forward. Glycerin is again slightly higher locally. Cresote is easy at 2¼d. Naphthas in slightly more request. Yellow Prussiate unchanged at 7d. per lb. best local make. Sulphate of Copper £16 10s. to £17 per ton, best brands delivered Manchester. Aniline Oil and Salts 6¾d. and 6¼d. respectively.

NEWCASTLE CHEMICAL REPORT.

JANUARY 5, 1898

Contracts made usually at this time of the year with the paper makers show little or no change in values. The trade moves slowly, and with the exception of Sulphur, which keeps scarce, late prices continue to rule, as follow:—Bleaching Powder, £6 5s. to £7 5s. Soda Crystals: 42s. 6d. to 57s. 6d., according to markets. Caustic Soda: 70 per cent., £7 10s. to £7 15s. Soda Ash: 52 per cent., £4 5s. Alkali: 52 per cent., £5 5s. Sulphur: £5 per ton.

PARTNERSHIPS DISSOLVED.

(From the London Gazette.)

Arthur E. Pownall & Alfred A. Mumford, Physicians and Surgeons, Chorlton-cum-Hardy, Lancaster.

C. F. Slater, S. R. Slater, & Fredk. Crossley (trading as Slater Brothers & Crossley), Manufacturers of Surgical Appliances and Electrical Apparatus, 20, Baker Street. Debts will be received and paid by C. F. Slater & S. R. Slater.

Oswald H. Edwards & David Donelly, Physicians and Surgeons, Mersey Road and Sims Cross, Widnes, Lancaster.

Henry Sanderson & James R. Windmill (trading as Sanderson & Co.), Mineral Water Manufacturers, John Street, West Bromwich. Debts will be received and paid by Henry Sanderson.

Jonathan Pollard and J. W. B. Winter (trading as J. Pollard and Co.), Chemists and Druggists, 3, Woolshops, Halifax. Debts will be received and paid by Jonathan Pollard.

W. E. Barton and G. Colley March, Physicians, Surgeons, etc., Staunton-on-Wye, Hereford. Debts will be received and paid by W. E. Barton, who will carry on the practice.

Albert Wheatley and Thomas Stainton (trading as Wheatley and Son), Veterinary Surgeons, Friar Street, Reading. Debts will be received and paid by Albert Wheatley.

RECEIVING ORDERS IN BANKRUPTCY.

(From the London Gazette.)

Wilkinson and Spencer, Mineral Water Manufacturers, 70A, Heap Lane, Bradford.

Oscar Wall (trading as Wall and Co.), Chemist and Druggist, late of 35, Renshaw Street, Chorlton-on-Medlock, Manchester. Now out of business and residing at 61, Duke Street, Rusholme, Manchester.

DIARY FOR THE WEEK.

SATURDAY, JANUARY 8.

ROYAL INSTITUTION, at 3 p.m.
"The Principles of the Electric Telegraph," by Professor Oliver Lodge. (Lecture VI., Space Telegraphy).

TUESDAY, JANUARY 11.

GLASGOW AND WEST OF SCOTLAND PHARMACEUTICAL ASSOCIATION, at 9 p.m.
Short Papers by Members.

WEDNESDAY, JANUARY 12.

PHARMACEUTICAL SOCIETY.
Council Meeting at 11 a.m.

SHEFFIELD PHARMACEUTICAL AND CHEMICAL SOCIETY at 8.30 p.m.
"The Proposed New Pharmacy Bill," by Geo. Squire (President).

THURSDAY, JANUARY 13.

LIVERPOOL PHARMACEUTICAL STUDENTS' SOCIETY, at 8.15 p.m.
Annual Dinner. (Bee Hotel, Queen's Square.)

NORTH STAFFORDSHIRE AND DISTRICT CHEMISTS' ASSOCIATION, at 7 p.m.
Discussion on the New Pharmacy Bill, followed by a Supper and Social Evening.

FRIDAY, JANUARY 14.

ABERDEEN JUNIOR CHEMISTS' ASSOCIATION, at 9.30 p.m.
"Heat," by R. Glegg.

EDINBURGH CHEMISTS', ASSISTANTS', AND APPRENTICES' ASSOCIATION, at 9.15 p.m.
Open Meeting, Arrangements by William Duncan.

LATE ADVERTISEMENTS.

Engagements Wanted.

LONDON.—Junior seeks day or evening engagement. 23. Good references. S.W., "Pharm. Journal" Office, 5, Serle St.

PERMANENT or TEMPORARY. Experienced. Qualified. BORAX, "Pharm. Journal" Office, 5, Serle St., W.C.

Assistant Wanted.

CAPE COLONY.—A qualified ASSISTANT wanted, of good address, age 25 to 30, for an old-established high-class business. Passage paid out, under a three years' agreement. Apply by letter to GOOD HOPE, "Pharm. Journal" Office, 5, Serle St., London, W.C.

EXCHANGE—OFFERS AND WANTS.

Prepaid Notices not exceeding thirty words, including name and address, are inserted at a fee of Sixpence each, if they do not partake of the nature of ordinary advertisements. For every twelve words (or less) extra, the charge is Sixpence. A price, or two initials will count as one word. The fee for use of the Serle Street address, including re-direction of replies, is Sixpence. The right is reserved to omit any notice if considered necessary. All communications should be addressed "Pharmaceutical Journal," 5, Serle Street, Lincoln's Inn London, W.C., where notices can be received until 10 a.m. on Thursdays.

OFFERED.

Miscellaneous.

Microscope by Crouch; 2 objectives, 1 in. and ⅛ in., in mahogany case; suitable for Minor or Major work. Also Vine's 'Botany' (new).—Apply "Micro," 28, Gracechurch Street, City.

Magic Lanterns, second-hand; triples and biunials; oxyhydrogen microscope; marvellous pamphengos oil; lantern, gives 14-ft. picture; 60,000 slides and effects; 4-in. 4-wick lanterns, 18s. 6d. each, bargains; illustrated list post free, 2d.—Hughes, Brewster House, 82, Mortimer Road, Kingsland, N.

WANTED.

Wanted.—Pharmacopœia, English and foreign, earlier than 1820.—Williams and Norgate, 14, Henrietta Street, Covent Garden, London.

Microscope, Students'.—Wanted to hire for three months.—Apply, with terms, which must be moderate, to C., 17, The Avenue, Bedford Park, Chiswick, W.

Wanted for cash, old electric lamps and scrap platinum.—P. Rowsell, 14, Walcot Square, Lambeth, S.E.

NEWS & TRADE NOTES

CAMWAL CALENDARS FOR 1898.

Two very neat folding pocket calendars are published by Camwal, Ltd. On the outsides are four coloured sketches (two on each calendar) illustrating the use of syphons (1) in the sickroom, (2) at card parties, (3) at picnics, (4) on the dinner table. Inside of each folding card is a complete calendar for 1898, and a space is reserved for the distributing chemist's name and address. It may be mentioned that the calendars are not "printed in Germany."

EXTRACT OF MEAT.

THE LIEBIG'S EXTRACT OF MEAT COMPANY, LTD., intimate that at a board meeting held on Friday, January 7, it was resolved to declare a half-yearly interim dividend of 5 per cent., the same as last year, being twenty shillings per share free of income tax, payable on and after February 15 next to the proprietors registered in the company's books on February 8 and to holders of share warrants to bearer.

AN HISTORICAL ALMANAC.

MR. JOSEPH H. WATSON, chemist and druggist, Shipley (Yorks), sends a very interesting historical almanac replete with entertaining literary matter. It also gives postal and other information respecting the Shipley Urban District Council, Fire Brigade, Poor Law Officers, West Riding Police, Inland Revenue Officers, Shipley School Board, the Institute, etc.

HOLLOWAY'S COCA WINE.

This preparation, which is said to invigorate the nerves, restore brain power, remove sleeplessness, prevent fatigue, and prolong life, may or may not be all that the makers claim in those respects, but it is certainly a palatable beverage, and possesses just sufficient of the coca flavour to be agreeable. It might therefore be thought to recommend itself so strongly that no effort would be required to sell it. The makers, however, are not content to rest on the undoubted merits of the preparation, for they intimate that doctors' samples are supplied free to agents, while the Holloway's Coca Wine Co. pays—on £15 assorted orders of coca, Liebig's extract meat and malt wine and invalid port—for the licence required to sell; and supplies books on "Nerve Worry," with the agents' names printed on free. More than this, they advertise their goods in the local papers. It is claimed that this is the best paying medicinal wine agency there is, on account of the low sale prices—1*s.* 6*d.* and 2*s.* 9*d.* respectively—and the discount to the trade—33⅓ per cent. and 2½ per cent. monthly. Being members of the P.A.T.A. the makers will not allow their coca wine to be cut below 1*s.* 4½*d.* or 2*s.* 6*d.* per bottle.

BACTERIOLOGICAL LABORATORY.

MESSRS. SOUTHALL, BROS. & BARCLAY, BIRMINGHAM, intimate that they have opened a new bacteriological laboratory in connection with their establishment. They are sending out circulars giving a scale of charges and pointing out the importance of the bacteriological examination of water and milk, besides giving instructions for taking samples.

NEWS IN BRIEF

AN EVENING MEETING of the Pharmaceutical Society (North British Branch) will be held at 36, York Place, Edinburgh, on Wednesday, January 19, at 8.30 p.m., Mr. J. Laidlaw Ewing in the chair. A paper on "Pharmaceutical Ethics" will be read by Mr. David Storrar.

'THE QUARTERLY THERAPEUTIC REVIEW' (price 1*s.*), published by Messrs. Baiss Brothers & Co., Jewry Street, E.C., and New Brown Street, Manchester, is a useful record of new remedies and formulæ, and of special applications and preparations of medicines.

MR. J. B. TAYLOR, Ph. C., who for the last fifteen years has carried on business at 19, High Street, Bedford, under the style of Taylor & Cuthbert, announces that he has taken into partnership Mr. H. S. Brawn, a former assistant, and that in future the business will be carried on at 69a and also at 53, High Street, Bedford, under the names of Taylor & Brawn.

THE LIEBIG'S EXTRACT OF MEAT COMPANY, LTD., has removed its advertising and packing warehouses to two new buildings in Rangoon Street, Fenchurch Street, E.C.

MR. WM. JNO. HOGG, younger son of Mr. Jas. Hogg, chemist, York Street, Belfast, was successful at the second examination for the diploma M.R.C.S. (Eng.), L.R.C.P. (Lond.), the subjects of which are anatomy and physiology, which took place on 6th, 7th, and 10th inst. at the Examination Hall, Victoria Embankment.

MR. GEO. FISHER and MR. FRANK FLOOD, chemists and druggists, of Leamington Spa, have entered into partnership and purchased the business of Mr. Lamplough, at 35, Bath Street, which they intend running in conjunction with the business hitherto carried on by Mr. Fisher at 23, High Street.

THE CHEMISTS' CLUB.—The following is a list of amounts promised, up to date in connection with the reorganisation of this club:—Horace Davenport, Esq., 33, Great Russell Street, £10 10s.; Messrs. Maw, Son, & Thompson, £5 5s.; Messrs. Sanger & Sons, Winsley Street, Oxford Street, £5 5s.; Messrs. Baiss Brothers & Co., £5 5s.; Messrs. Barclays (Limited), £5 5s.; Messrs. F. Newbery & Sons, £3 3s.; Messrs. Ingram and Royale, £3 3s.; Messrs. Willows, Francis, Butler, & Ayscough, Thompson, £2 2s.; Messrs. Bowles & Co., £2 2s.; Messrs. Blondeau & Co., £2 2s.; Messrs. Kent & Sons, £2 2s.; Members of the General Committee, £10 10s.; total, £56 14s.

MESSRS. EVANS, GADD & Co. intimate that their postal addresses are now Fore Street, Exeter, and Redcliff Street, Bristol, whilst their registered telegraphic addresses are "GADD, EXETER," and "GADD, BRISTOL."

MIDLAND CHEMISTS' ASSISTANTS' ASSOCIATION.—A musical and social evening was held in the Exchange Restaurant on December 29, Mr. Chas. Thompson, local secretary of the Pharmaceutical Society, in the chair. The Secretary (Mr. E. Osborne) proposed Messrs. J. S. Buckley, R. D. McAllister, and J. H. Pearson as new members, and they were duly elected. The musical part of the programme was ably rendered by Messrs. S. Stephens, Smith, Woolman, Poole, Thornton, Stan Leigh, and Taylor, and was much appreciated. The Chairman spoke of the benefits to be derived from unity, and urged all Birmingham assistants to join the Association. Mr. H. Jessop proposed a vote of thanks to the artistes, and a vote of thanks to the Chairman for presiding terminated the meeting.

MIDLAND CHEMISTS' ASSISTANTS' ASSOCIATION BALL.—The second annual ball was held on Thursday, January 6, at the Vestry Hall, Edgbaston. The gathering was well attended, and proved a distinct success. Mr. E. Whitehead performed the duties of M.C., and was assisted by the following gentlemen as stewards:—Messrs. Jessop, Lawton, Landor, Thomas, Davis, Burton, Osborne, Bindloss, Stewart, Selby, and Gateley. Hon. Secs., Messrs. E. W. Mann and F. Casson. Dancing was continued to the music of Mr. A. Westwood's band until 2.30 a.m., when the party broke up.

MANCHESTER PHARMACEUTICAL ASSOCIATION.—An ordinary meeting of this Association will be held in the room of the Chemical Club, Victoria Hotel, on Wednesday, January 19. All connected with the trade are cordially invited to be present. The chair will be taken by Mr. G. S. Woolley, President, at 7 p.m. A paper on "Pharmaceutical Organisation" will be read by Mr. John Taylor. At the close of Mr. Taylor's paper the subject of the draft Pharmacy Bill will be introduced for discussion. Considering the importance of this Bill, it is desirable that every chemist in the district should take this opportunity of expressing his views in regard to it.

LATE ADVERTISEMENTS.

Market Report and Prices Current

Specially compiled for the Pharmaceutical Journal

The quotations here given are in all cases the lowest cash prices for bulk quantities, and often the articles quoted have to be sorted in order to suit the requirements of the retail pharmacist. The cost of freightage from the chemical and drug works to the various distributing centres must also be considered. It is important that these conditions should be borne in mind in making any comparison between the prices quoted and those of the wholesale drug trade.

LONDON REPORT.

January 13, 1898.

The course of business has been a little disappointing during the past week, although it is somewhat early in the year to expect things to have already got into full swing. Acid Citric would appear to be about to take a turn for the better. Cream of Tartar is firm. Acid Tartaric undecided. Quicksilver dearer, but Mercurials unchanged. Iodine and Iodides, Bromine and Bromides, without alteration, which also applies to Bismuth and Lithia Salts. Opium and Morphia very quiet. Codeia firm. Cod-liver Oil weak. Glycerin the turn harder. Quinine quiet. Ipecacuanha very firm, and looks almost like going dearer. Cannabis Indicus again dearer, as is also Sulphate of Ammonia. Borax and Acid Boracic weak and quiet. Acid Carbolic dull. Santonine steady. Shellac firm. Cascara Sagrada has advanced, much higher prices being spoken of. The following are prices ruling for some of the chief articles :—

Acid Boracic—Quiet at 24s. per cwt. for *crystals* and 25s. per cwt. for *powder*.

Acid Carbolic—Dull at 6⅞d. to 7d. per lb. for 35-36° *ice crystal* in bulk ; other qualities and packing in proportion. *Crude*: 60° F. 2s. 1d. per gallon, 75° F. 2s. 6d. ; *Liquid*, 95 per cent., of pale straw colour, 1s. 2d. to 1s. 3d. per gallon in 40 gallon casks.

Acid Citric.—Whilst prices are nominally unchanged at 12½d. per lb. for ordinary and 1s. 1d. per lb. for Howard's *crystals*, the market seems to have a firmer tendency, and it would appear that the bottom has been reached.

Acid Tartaric.—There is considerable competition in this article, and *crystals* are offered as low as 12⅜d. per lb. for foreign and 1s. 1d. per lb. for English, but buyers hold off.

Acetanilide—Is weak at 1s. 2½d. to 1s. 4d. per lb., according to quantity and packing.

Ammonia Compounds.—*Sulphate* continues its upward course, and this week closes at the again dearer price of £9 10s. for gray prompt 24 per cent. London. *Muriate* is steady to rather dearer at 24s. to 26s. per cwt. for the 98 per cent. *Bromide* firm at 2s. 2d. per lb. *Nitrate* firm at 40s. per cwt. *Iodide* steady at 14s. 6d. per lb. *Sulphocyanide* 1s. to 1s. 1½d. per lb. according to quantity.

Atropine—Firm at 12s. 8d. per oz. for the *sulphate*, and 15s. for the *pure*.

Balsam Canad.—Is very firm and tending higher ; 1s. per lb. *c.i.f.* terms is asked for 3 cwt. casks.

Balsam Peru—Is firmer at 8s. 3d. to 8s. 9d. *Tolu*, good quality, is quoted at 2s. 3d. to 2s. 4d., but demand is somewhat slow.

Bismuth—Unchanged at 5s. for the *metal*, and 4s. 10d. for the *subnitrate*, for large quantity.

Bleaching Powder—Quiet and less firm at £7 per ton, ex wharf London.

Borax.—Steady at unchanged rates. *Crystals* at 14s. per cwt. ; *powder*, 14s. 6d. per cwt.

Buchu Leaves.—There appear no further shipments coming forward, and sales of fair round leaves have been made at 6d. per lb., an advance on last sales' rates.

Cannabis Indicus has been again advanced in price, good green tops to 5d. per lb., brownish and broken 4d. to 4½d. per lb. Stock is small, and further shipments seem unlikely for some time to come.

Cascara Sagrada—Is in good demand, and is steadily advancing and likely to be very much dearer in the spring. It is said by one of the principal American firms that practically none will be gathered, owing to the general exodus of the people who usually do the collecting to the Klondyke goldfields. In New York the value is above that of this market, 21s. per cwt. *c.i.f.* for new bark being asked. Here a small business was done at 21s. on the spot for old root, but now 25s. is asked, and holders are very firm.

Cinchona Bark.—For the opening sales at Amsterdam on the 20th inst. 5657 packages are catalogued. The exports from Java for the month of December were 731,000 Amsterdam lbs., against 890,000 lbs. in 1896, and 634,000 lbs. in 1895. For the twelve months the shipments were 8,511,000 Amsterdam lbs., against 10,079,000 lbs. in 1896, and 8,827,700 in 1895.

Cloves.—Only 165 bales *Zanzibar* offered at auction, and all sold at 3d. to 3¼d. ; 10 cases low dark *Penang* bought in at 4½d. Privately, *Zanzibar* are in good demand ; higher rates have ruled, and the market is very firm. Business includes spot at 3⅛d., Jan.-March delivery, 3⅛d. ; Feb.-April, 3 7/32d. ; March-May, 3¼d. ; and April-June, 3⅛d.

Coal Tar Distillation Products.—*Toluol* : 2s. *Benzole* : 50 per cent., 1s. 7½d. ; 90 per cent., 1s. 4½d. *Crude Naphtha* : 30 per cent. at 120° C., 10d. *Solvent Naphtha* : 95 per cent. at 160° C., 1s. 11d. per gallon.

Cocaine – Remains in a somewhat anomalous position, makers being firm at 10s. 3d. to 10s. 9d. per oz., according to quantity and brand, one of the manufacturers whose article is most in favour stating that they are unable to book orders at this, or in fact at any price ; while, on the other hand, second-hand holders of certain brands would probably accept tangibly less than above prices in order to effect sales. It is difficult in any way to foresee the future course of prices. It must, however, not be overlooked that same is still very low compared with those which ruled for this article not so very long ago.

Coca Leaves—Are dearer at 8d. per lb. for good green Truxillo.

Codeia—Is firm at 11s. 3d. to 11s. 9d. per oz., according to quantity.

Cod-liver Oil.—With the early approach of the 1898 oil and the large stocks left over from 1896 and 1897, prices are very weak, and it is difficult to say what would really be taken for Norwegian non-freezing quality. We think 62s. 6d. per barrel is about the nearest quotation, but there is practically no business passing.

Colocynth.—*The Oil Paint and Drug Reporter* of New York has received advices from Trieste that the market there is bare of supplies, and adds : "It looks as if something were going to happen." That "something" is evidently meant to be a rise in values, and from the appearance of our market it would seem that they are about right. There are only a few cases here to be had at 1s. 3d. per lb.

Colombo Root—Is in demand, but supplies are very short, and in view of the plague in India we fear it will still be some time before any considerable arrivals take place. Last price paid for small dusty sorts, 50s. per cwt.

Cream of Tartar—Is very firm. First white French *crystals*, 75s. 6d. per cwt. ; *powder*, 78s. to 79s. per cwt.

Damiana Leaves.—Owing to the arrival in New York of new crop, price has declined to 8d. per lb., *c.i.f.* terms. This is a considerable drop, last quotation for old crop being 1s. 6d. per lb.

Galls.—China firm but quiet at 64s. to 65s. per cwt. on the spot ; for arrival quotations are higher at 54s. 6d. to 55s. per cwt., *c.i.f.* terms.

Ginger. – Rough *Cochin* is flat, and 1552 bags offered were mostly bought in, washed rough at 20s. to 24s. Of cut kinds, 43 cases sold, medium chiefly cut but wormy at 38s. 6d. to 40s. ; B cut bought in at 75s., and fine bold 105s. 98 bags limed *Japan* bought in at 15s. ; 10 bags damaged *Bengal* sold at 12s. For *Jamaica* the demand was slow, and only 20 barrels sold ; common to good common, 70s. to 72s.

Glycerin.—Market is decidedly firmer, *crude* being £2 per ton dearer in consequence of large demand for dynamite purposes. Refined is harder, the chief English makers having advanced their price in proportion to the rise in value of crude. Best German makes are quoted 52s. 6d. to 57s. 6d. per cwt. according to quantity and brand for the best white chemically pure double distilled 1 260 quality in tins and cases.

Gum Acacia.—Market is quiet, with a small business doing at steady rates. *Picked*, £6 10s. to £14 per cwt. ; *Turkey sorts*, 80s. to 85s. per cwt. ; *Ghezorah*, very scarce and wanted ; nominal values, 37s. 6d. to 42s. 6d. per cwt.

Insect Flowers.—Market in Trieste is firm and inclined to harden. Quotations from thence come at 120s. per cwt. for *closed* flowers, 80s. per cwt. for *half-open*, and 60s. per cwt. for *open* flowers, all *c.i.f.* London.

Ipecacuanha—Is exceedingly firm, and for *Rio* nothing under 7s. 6d. per lb. can be bought, and very little even at this figure. For *Carthagena* 6s. to 6s. 3d. per lb. is named as the nominal quotation, but there

is very little stock available. The prospects for both kinds are towards even higher prices.

LITHIA—Is firm from the makers at 10s. 8d. for the *carbonate* and 6s. 8d. per lb. for the *citrate powder*. It is, however, possible to buy somewhat below these prices from second-hand holders who were fortunate enough to secure a supply before the late advance in makers' prices.

MENTHOL—Quiet at 7s. 6d. to 8s. per lb. for good dry white crystals, both on spot and to arrive.

MERCURIALS.—Makers have so far made no change in their prices, which remain 2s. 2d. to 2s. 5d. for *Corrosive sublimate*, and 2s. 6d. to 2s. 9d. for *Calomel*.

MORPHIA—Remains inactive at 4s. 3d. to 4s. 6d. for the *Hydrochlorate powder*, according to quantity and packing.

OILS (ESSENTIAL).—*Peppermint* continues to be offered at very low rates, which, it is said, do not pay the American growers, and they propose growing other crops which promise a better return. The acreage planted this year will, therefore, be much smaller, and with a small production prices must be dearer. *H.G.H.* in bottles is quoted 5s 6d to 5s. 9d., and prime *Wayne County* in tins, 3s. 6d. per lb. net on the spot. *Japanese* very quiet at 3s. 3d. per lb. for dementholised, and 5s. per lb. for 40 per cent. *Wintergreen* is firmer at 5s. 6d. per lb. in tins on the spot, and 5s. 9d. per lb. *c.i.f.* in bottles. *Spearmint*: *H.G.H.* 8s. per lb. in bottles, *c.i.f.* terms. *Star Aniseed* is rather inclined to be weaker at 7s. 6d. per lb. on the spot, and 6s. 6d. to 7s. per lb. for January to February steamer. *Cassia* dull; 70 to 75 per cent., 5s. 6d. on the spot, and 4s. 6d. per lb. *c.i.f.* *Citronelle* steady but quiet; spot 1s. 3½d. per lb. *Lemongrass* quiet, but very firm at 10d. per oz.

OILS (FIXED) AND SPIRITS.—*Linseed*: The market is quieter, but without actual change of value, which is still quoted £14 17s. 6d. for spot pipes and £15 7s. 6d. barrels. *Rape*: Flat and lower. Ordinary brown on the spot £24. Refined on spot £25 10s. *Cotton*: Firm at higher rates. Crude London spot £12 12s 6d. to £12 15s. Refined spot £14 to £14 10s., according to make. *Olive*: Spanish, £32; Levant, £31 10s. to £32. *Cocoanut*: Unchanged. Ceylon on the spot £22 10s.; Cochin, spot, £28. *Palm*: Lagos on the spot £23 to £23 10s. *Turpentine*: The market closes dearer, but quiet at the advance; American, spot, 24s. 1½d. per cwt. *Petroleum Oil*: Dull; Russian, 4⅝d. per gallon; American, 4½d. per gallon. *Petroleum Spirit*: American, 6d. per gallon; deodorised, 6¼d. per gallon.

OPIUM.—Dull and without change, *Druggists'* being quoted at 9s. 3d. to 11s. per lb. *Soft Shipping*, at 10s. 6d. to 12s. 6d. *Persian*, 10s. 6d. to 11s. per lb.

ORANGE PEEL.—The new crop continues to arrive freely, and small sales have again been made at 1s. per lb. for fine cut and 5d. per lb. for old. It would probably now be possible to buy new crop at rather less money.

PHENACETIN—Is quiet but steady at 4s. to 4s. 3d. per lb., according to quantity, for both *crystal* and *powder*.

PILOCARPINE.—The tendency of this article continues its downward course, price being nominally 20s. to 21s. per oz., but less would no doubt be accepted for larger quantity.

PODOPHYLLIN—Is firm at 13s. 6d. to 14s. 6d. for the P.B. quality, and 11s. 6d. to 12s. 6d. per lb. for the less soluble American article.

POTASH COMPOUNDS.—*Chlorate* steady at 3¼d. per lb. on the spot. *Bromide* firm at 1s. 10d. per lb. for ordinary quantities less than 1 cwt. *Iodide*, 9s. 9d. to 10s. 3d. per lb., according to quantity. *Bicarbonate* unchanged at 30s. per cwt. for crystal or powder in large bulk. *Permanganate* is still weak, but values are nominally the same at 65s. per cwt. for small crystals, and 70s. per cwt. for large crystals. *Prussiate* quiet but steady at 6¾d. per lb.

QUICKSILVER.—After having done a large business at £6 17s. 6d. per bottle, the importers advanced their price on Tuesday to £7 per bottle, second-hand holders advancing in proportion to £6 19s. 6d.

QUININE.—Market is very quiet, makers' price remaining nominally 1s. 1d. per oz; second-hand also asking same price, but not appearing very anxious to sell. The result of the approaching Bark sales in Amsterdam is awaited with interest, and it appears probable that same will not inconsiderably affect the future course of price of the manufactured article. It is believed that those who should be most competent to form a correct opinion have laid in full supplies.

SANTONINE.—It is stated that the underselling has ceased, and that lowest price at which the article is now obtainable is that of the two agents for the principal maker, viz., 4s. 5¼d. per lb. for large quantity in original cwt. cases.

SENEKA ROOT—Is very quiet, prime Western being quoted 1s. 3d. per lb. on the spot.

SERPENTARIA ROOT—Is becoming very scarce, and but small quantities are available at 1s. 2d. per lb.

SHELLAC.—Whilst there has been rather less activity in the market, a very firm tone prevails. On the spot fair sales have been effected, including *TN Orange* cakey to good fair free at 63s. to 67s. per cwt., and *Button* at a further advance. The speculative market is firm.

SODA COMPOUNDS.—*Crystals*: Unchanged at 55s. per ton ex-ship terms. *Nitrate*: £7 15s. per ton for refined on the spot. *Bicarbonate*: The commercial 99 per cent. is still quoted at £7 15s. per ton, and the fully bicarbonated quality 18s. 6d. per cwt. *Bromide*: Steady at 2s. 2d. per lb. *Iodide*: Steady at 11s. 7d. per lb. *Sulphite*: 17s. 6d. per cwt. for ordinary crystals, and 22s. 6d. per cwt. for recryst.

SPERMACETI—Is lower for American on the spot at 1s. 3d. per lb.

SPICES (VARIOUS).—*Black Pepper* being firmly held, was mostly bought in; Penang 3⅝d., Lampong 3⅞d., Singapore 4d. A few bags Wynaad sold at 4d. and 2 bags Ceylon at 4d. *White Pepper*: Penang bought in at 6⅛d. and Siam at 7d. Of Singapore 69 bags sold at 6⅞d., the remainder bought in; fair 7¼d., fine to choice 8½d. to 10d. *Chillies*: Zanzibar bought in at 32s. 6d. to 37s. 6d. 20 cases good Japan sold without reserve at 41s. 6d. to 42s. 6d. *Pimento* is dearer; 70 bags sold at 4½d. to 4⅝d. *Cassia Lignea*: Bought in at 37s. *Cassia Vera*: Bought in at 26s. *Cinnamon*: 300 bags coarse Ceylon chips sold at 2¾d.; 45 bags quillings sold at 8d. to 8½d. *Nutmegs* dull. *Mace*: 25 packages West India sold, low to good middling red, 1s. 1d. to 1s. 7d.; one lot pale, 1s. 9d.; 18 cases Wild Bombay bought in at 3½d.

SULPHONAL.—The two chief makers are still accepting from-hand-to-mouth orders at 7s. 3d. per lb.

SULPHATE OF COPPER—Quiet, but unchanged at £15 10s. to £16 10s., according to brand.

NEWCASTLE CHEMICAL REPORT.

JANUARY 11, 1898.

This chemical trade so far does not show much animation. New business is slow in coming forward. Bleaching powder is lower, otherwise there is not much change to record. Quotations are:—Bleaching Powder, £6 to £6 10s., according to markets. Soda Crystals: 42s. 6d. to 57s. 6d. Caustic Soda: 70 per cent., £7 10s. to £7 15s. Soda Ash: 52 per cent., £4 5s. Alkali: 52 per cent., £5 5s. Sulphur: £4 15s. to £5 per ton.

LIVERPOOL REPORT.

JANUARY 12, 1898.

The general tone of the market has considerably improved during the week; inquiries have been numerous and sales of some importance have been effected. Among the latter may be mentioned a lot of Syrian Fœnugrec Seed, together with dried Kola Nuts and some of the Brazilian Gum Arabic mentioned last week. A decline has been experienced in the price of Quillaya Bark, owing to the arrival of a Chilian importation relieving the scarcity of this article recently noticeable here. The prices of oils generally have not experienced much change, but a better tone prevails with Cottonseed and Linseed Oils and Spirits of Turpentine. More has been doing in heavy chemicals, which meet with improved inquiry. Caustic Soda is stronger owing to a good amount of business having been done in it.

AMMONIUM SALTS.—Sulphate has advanced to £9 7s. 6d. per ton.

BEESWAX.—4 cases of Peruvian sold at £6 12s. 6d. per cwt., and 5 packages of Gambia at £6 7s. 6d.

BLEACHING POWDER—Is firmer, £5 12s. 6d. to £6 5s. per ton.

BORATE OF LIME.—1560 bags sold ex quay on private terms.

CANARYSEED—Is steady in price, but the business passing is small in amount. Turkish seed has been sold at 25s. 6d. to 26s. per 464 lbs., and Spanish at 37s.

CASTOR SEED.—163 bags Parahiba sold ex quay at 9s. 6d. per cwt.

COPPERAS—Remains firmly at the recent quotation, 39s. per ton for Lancashire, and 36s. for Welsh.

COPPER SULPHATE—Is quiet at last week's price, £16 per ton.

FŒNUGREC.—50 bags Egyptian found buyers at 9s. per cwt. ex quay, and 20 tons Syrian also at 9s. to 9s. 3d. per cwt. quay and store.

GUM ARABIC.—Brazilian variety has been selling at 25s. per cwt.

HONEY.—A lot of Peruvian was disposed of at 22s. 6d. per cwt., and retail amounts of Chilian Pile X at 30s. per cwt.

KOLA NUTS.—173 packages of dried sold at 3d. per lb.

LINSEED—Is very strong in all positions. 1500 bags of Turkish made from 36s. 6d. to 37s. 3d. per 416 lbs., and 776 bags ditto 36s. 9d. to 38s. per 416 lbs.

OILS (FIXED) AND SPIRITS.—*Castor oils* are in better demand, and the amount of trade doing is satisfactory and at steady prices, both Calcutta and French 1st pressure being at 3⅝d. to 3¾d. per lb. *Olive oils* are in fair inquiry; holders still want high prices, and business is reported in Seville oil at £32 per tun. *Linseed oil* of Liverpool make is still quoted at 16s. to 16s. 6d. per cwt. *Cottonseed oil* is steadier at 14s. 9d. to 15s. 6d. per cwt. *Spirits of Turpentine* is firm at 24s. 6d. per cwt.

POTASH SALTS.—*Bicarbonate*, 50s. per cwt. *Bichromate*, 4⅛d. per lb. *Chlorate* 3½d. to 3¾d. per lb. *Cream of Tartar* is unchanged at 75s. to 76s. per cwt. *Potashes*, 19s. 6d. per cwt. *Pearlash*, 32s. per cwt.

SODIUM SALTS.—*Bicarbonate*, £6 15s. per ton. *Caustic*, 76 to 77 per cent., £8 15s. per ton; 70 per cent., £7 5s.; 60 per cent., £6 5s. *Crystals*, £2 17s. 6d. per ton. *Nitrate*, 7s. 6d. to 7s. 9d. per cwt. *Borax*, £13 5s. per ton.

MANCHESTER CHEMICAL REPORT.

JANUARY 11, 1898.

The Board of Trade Returns just published are regarded here as very unsatisfactory, and judging from appearances, the heavy chemical trade with the United States must now be looked upon as a diminishing quantity. For December only 109,278 cwts. were exported, as against 236,332 cwts. in 1896, and 300,618 cwts. in 1895. Bleaching materials do not show such a conspicuous decrease. In Alkali generally there is a decrease of 27·4 in quantity and 26·0 in value, and in Bleaching materials 15·1 in quantity and 21·4 in value. Despite this, however, the shares of one well-known Cheshire company have risen during the past week, while those of other firms are fairly steady. Caustic Soda is firm at £8 12s. 6d. for 77 per cent., and Bleaching Powder varies from £5 10s. to £5 15s. on rails, with quotations for forward delivery at £5 5s. The scarcity of Brown Acetate of Lime continues, and dealers here have little or no stock. The current rates are now £6 to £6 5s. per ton for best American, *c.i.f.* Manchester, and Welsh about £6. One small lot of the latter has been offered at £5 15s. Ammonia Alkali, 58 per cent., varies from £4 to £4 2s. 6d., in bags, on rails at makers' works. Aniline Oil and Salt are offering at very low prices, especially for forward delivery. Sulphate of Copper is 10s. per ton higher for best brands, £17 10s. delivered Manchester. Alum is quiet at late rates. Acetic Acids and Acetate of Soda have an upward tendency. Generally, there is a better feeling reported from some of the Lancashire manufacturing centres, and if the improvement continues it cannot fail to benefit the dyeing and chemical industries.

MARRIAGES.

FELL—ALLEN.—On January 5, at St. Andrew's, Wells Street, by the Rev. Reginald Fisher, M.A., John Campbell Fell, 9, Albemarle Mansions, Holloway, N., analyst to "Camwal," to Jane (Jennie), eldest daughter of the late George Allen and of Mrs. Allen, Langdon Hills, Essex.

ROBINS—SMITH.—On January 8, at St Edmund's Church, Alexandra Park, Manchester, by the Rev. Tindall, Rector, H. H Robins to Edith, eldest daughter of Mark Smith, Hazlehurst, Whalley Range, Manchester.

SCOTT—COOPER.—At All Saints' Church, Cockermouth, on the 11th inst., by the Rev. E. Cannington-Bennett, W. Stanley Scott, proprietor of the firm of Cooper Bros., Chemists, to Mrs. M. A. Cooper, widow of the late F. Ashley-Cooper, Savings Bank, Cockermouth.

PARTNERSHIPS DISSOLVED.

(From the London Gazette.)

Geo. R. Cox, Junr., Percy Stuart Cox, Fred. A. Cox, and Samuel J. Edmondson, trading Cox Brothers, General Produce Brokers, Exchange Buildings, Liverpool, and 6, Crosby Square, London, so far as regards Fred. A. Cox.

Thomas J. Merrick and C. W. Crofts, Veterinary Surgeons, Castillian Street, Northampton, so far as regards Thomas J. Merrick.

W. T. Freeman and C. H. R. Holden, M.D., Surgeons and Physicians, Reading and Bradfield, Berks. Debts will be received and paid by either partner. W. T. Freeman will in future practise on his own account at Sidmouth House, Reading, and at Bradfield, and G. R. Holden will practise at 168, Castle Hill, Reading.

Herbert J. Hargrave and C. Seymour Langley, Physicians and Surgeons, Haverhill and Great Thurlow, Suffolk. Debts will be received and paid by H. J. Hargrave.

Joseph A. Gilburt and Hy. W. Harragan, Box Manufacturers, Old Ford, E.

Henry H. Pollard and Geo. Brown, Chemists and Druggists, 113, High Street, Newport, Isle of Wight. Debts will be received and paid by Henry H. Pollard.

C. H. Osmond and E. A. Bulmer (trading as Osmond, Bulmer & Co.), Wholesale Chemists and Druggists, 210, Sultan Road, Landport, Hants.

Wm. Berg and Arthur R. Meyer (trading as M. R. Meyer & Co.), Merchants and Exporters of Colonial Produce, 37, Mincing Lane, London.

DIARY FOR THE WEEK.

TUESDAY, JANUARY 18.

BRADFORD AND DISTRICT CHEMISTS' ASSOCIATION.
"A Wheel in Brittany," by W. F. Bray.
ROYAL INSTITUTION, at 3 p.m.
"The Simplest Living Things" (Lecture I.), by Professor E. Ray Lankester.

WEDNESDAY, JANUARY 19.

ABERDEEN AND NORTH OF SCOTLAND SOCIETY OF CHEMISTS AND DRUGGISTS, at 8 p.m.
"At Home." (Douglas Hotel.)
BOLTON PHARMACEUTICAL ASSOCIATION.
Ordinary Meeting.
CHEMISTS' BALL at the Portman Rooms, Baker St, W.
MANCHESTER PHARMACEUTICAL ASSOCIATION, at 7.
"Pharmaceutical Organisation," by John Taylor, and Discussion on the Draft Pharmacy Bill.
MIDLAND CHEMISTS' ASSISTANTS ASSOCIATION, at 9.15.
"Pharmacy Law," by H. S Lawton.
PHARMACEUTICAL SOCIETY (N. B. Branch), at 8.30.
"Pharmaceutical Ethics," by David Storrar.
PLYMOUTH, DEVONPORT, STONEHOUSE AND DISTRICT CHEMISTS' ASSOCIATION, at 7 p.m.
General Quarterly Meeting.
ROYAL MICROSCOPICAL SOCIETY, at 8 p.m.
President's Annual Address.

THURSDAY, JANUARY 20.

CHEMICAL SOCIETY, at 8 p.m.
Ballot for the Election of Foreign Members.
"The Action of Caustic Alkalies on Amides," by Julius B. Cohen and Edward Brittain.
"The Formation of Monomethylaniline from Dimethylaniline," by Julius B. Cohen and H. T. Calvert.
"Note on the Aluminium-Mercury Couple," by Julius B. Cohen and H. T. Calvert.
CHEMISTS' ASSISTANTS' ASSOCIATION, at 9 p.m.
Musical and Social Evening.
EDINBURGH CHEMISTS' BALL, at 9 p.m.
At the Freemasons' Hall, George Street.
LINNEAN SOCIETY OF LONDON, at 8 p.m.
"On the Larval Hyobranchial Skeleton of the Anurous Batrachians, with Special Reference to the Axial Parts," by Dr. W. G. Ridewood.
"On the 'Abdominal Pore' in the Myscinidæ," by R. H. Burne.
MIDLAND PHARMACEUTICAL ASSOCIATION, at 7 p.m.
Twenty-fifth Annual Ball. (Grand Hotel).
ROYAL INSTITUTION, at 3 p.m.
"The Halogen Group of Elements" (Lecture I.), by Profcssor Dewar,

FRIDAY, JANUARY 21.

GLASGOW SCHOOL OF PHARMACY.
Annual Dinner. (Bath Hotel).
ROYAL INSTITUTION, at 9 p.m.
"Buds and Stipules," by Sir John Lubbock.

EXCHANGE.

OFFERED.

Miscellaneous.

Magic Lanterns, second-hand; triples and biunials; oxyhydrogen microscope; marvellous pamphengos oil; lantern, gives 14-ft. picture; 60,000 slides and effects; 4-in. 4-wick lanterns, 18s. 6d. each, bargains; illustrated list post free, 2d.—Hughes, Brewster House, 82, Mortimer Road, Kingsland, N.

WANTED.

A few Students' Microscopes (Leitz preferred), each with 1 in. and ¼ in. objectives, very cheap.—P. B., 61, Grosvenor Street, W.

Green's 'Botany,' vol. i.; Everett's 'Physics,' latest editions, good condition; also to exchange 'Pharmaceutical Journal' for 'Chemist and Druggist' weekly.—A. G., 37, Bearwood Hill, Burton-on-Trent.

Becker's or other students' chemical balance, cheap.—S. Holliday, 19, West Street, Warwick.

HOLLOWAY'S COCA WINE.—The new address of the makers of Holloway's Coca Wine —61, New Oxford Street, London, W.C.—was inadvertently omitted from the notice which appeared at page 66a of last week's issue.

DUTIES ON ETHER AND ALCOHOL.—A correspondent of the *Saturday Review* points out the hardships involved to British manufacturers and patentees by the duties levied on sulphuric ether, absolute alcohol, and other articles. In Germany the excise upon chemicals is insignificant.

MR. FRANK MAITLAND, chemist and druggist, Stonehouse, Plymouth, was duly installed Worshipful Master of Lodge Fortitude, No. 105, at the Masonic Temple, Plymouth, on Monday, January 10.

MR. C. J. PARK, pharmaceutical chemist, Mutley Plain, Plymouth, was duly installed Worshipful Master of the St. John's Lodge, No. 1247, on Thursday, January 13.

MR. ROBERT MACDONALD, chemist and druggist, late assistant with Mr. John McMillan, Great Western Road, Glasgow, has commenced business at No. 99, Academy Street, Inverness.

SCHOOL OF PHARMACY DINNER.—This dinner is to be held on Wednesday, February 16, in the Duke's Salon, Holborn Restaurant. It is hoped that there will be a representative gathering of past and present students and others connected with the Society. Mr. T. Edward Lescher, 17, Bloomsbury Square, is Hon. Sec., and would be glad to receive applications for tickets, price 5*s.* each, as early as possible.

THE SACCHARIN LITIGATION.—Mr. Justice North having refused to grant an interlocutory conjunction restraining infringement of the patents owned by the Saccharin Corporation by the Chemicals and Drugs Co., Ltd., who undertook to keep an account of all saccharin sold by them until the trial of the action, the plaintiffs appealed, and filed further affidavits in support of their case. The appeal came on before the Master of the Rolls and Lords Justices Rigby and Vaughan Williams on Wednesday, January 19, when Mr. Moulton, Q.C., appeared for plaintiffs, and Mr. Swinfen Eady, Q.C., for defendants. The affidavit in defence filed by Mr. Hunter, secretary to the defendant company, not being considered quite satisfactory, he was allowed to give evidence *viva voce* (a very unusual thing in the Appeal Court), and as the result the appeal was dismissed with costs.

EXCISE PROSECUTION.—At the Birmingham Police Court on January 13 Frank Henry Prosser, pharmaceutical chemist, 112, Spring Hill, was charged under the Spirits Act of 1880 with having failed to enter in his stock book the receipt of ten gallons of spirit on October 1, and also to cancel a certificate of the receipt of five and a half gallons of spirits on September 6.—Mr. T. J. Birtwell, supervisor of the Inland Revenue, stated that the defendant had been previously warned.—For the defence it was urged that the omissions were due to the illness of Mr. Prosser.—A fine of £3 and costs was imposed in each case.

THE SHEFFIELD PHARMACEUTICAL AND CHEMICAL SOCIETY will hold its first chemists' ball in the Masonic Hall, Sheffield, on Thursday, February 10. As no previous ball has been held under the auspices of the Society, the Council hope that both members and associates will unite to make the function a great success with a view to its being made an annual fixture. Tickets may be had from members of the Council or from the Hon. Sec., Mr. J. B. Pater, 265, Fulwood Road, Broomhill, Sheffield. The cost of tickets—single, 6*s.*, double, 10*s.* 6*d.*—will include light refreshment.

THE LATE PROFESSOR TYNDALL, before his death, desired his wife (at such time as should be most convenient to herself) to present in his name to the Royal Institution the sum of one thousand pounds, as an expression of his attachment to the Institution, with which he was so long connected, and of his sympathy with its objects. His wife has now carried out his wish by sending a cheque for the amount to the Treasurer, Sir James Crichton-Browne, the money to be disposed of as the Board of Managers may see fit for the promotion of science.

PHARMACY ACT PROSECUTION.—At the Nottingham Summons Court on Tuesday, January 18, before Mr. S. H. Sands and R. W. Smith, John Henry Hopkins, chemist and druggist, 88, Alfred Street South, was prosecuted by the police and fined 20*s.* for selling infants' preservative containing a preparation of opium without distinctly labelling the bottle with the name of the preparation and the word "Poison."

MR. JAMES PETRIE, Chemist, Blairgowrie, was awarded a silver medal for his exhibits of photographic apparatus at the second International Photographic Exhibition, held under the auspices of the Blairgowrie and District Photographic Association, It may be mentioned that a fine collection of prints kindly lent by the Sandell Plate Co., Ltd., was exhibited, including two of the Pharmaceutical Society's Board Room and Examination Hall in Bloomsbury Square.

PARTNERSHIPS DISSOLVED.

(From the London Gazette.)

S. A. Sturton and F. A. Sturton, Pharmaceutical Chemists, Goldhawk Road, Shepherd's Bush, W. Debts will be received and paid by S. A. Sturton.

J. H. Cuff, Veterinary Druggist, 453, Caledonian Road, N., has assigned his business to his two sons, J. H. Cuff, jun., and S. W. Cuff, who will in future carry on the business under the style of J. H. Cuff and Sons.

C. F. Knight and H. G. W. MacLeod, Surgeons and General Medical Practitioners, 341, Brixton Road, S.W. Debts will be received and paid by H. G. W. MacLeod.

S. G. Rawling and A. Davies, Manufacturers of Botanic Drinks, Spa Works, Meanwood Road, Leeds. Debts will be received and paid by S. G. Rawling, who will carry on the business under his own name.

R. Lamphier and A. E. Odling, Physicians and Surgeons, Alford, Lincs. Debts will be received and paid by A. E. Odling, who will continue the business under the old style.

T. H. Cruse, W. R. Gossling, and A. J. Pratt (trading as Cruse & Co.), Chemists and Druggists, 63, Palmerston Road, and 1, Victoria Road, Southsea, and 7, The Strand, East Southsea. Debts will be received and paid by T. H. Cruse, who will continue the businesses.

Medical Jottings.

THE EXHIBITION OF FOODS, DRUGS, INSTRUMENTS, ETC., in connection with the sixty-sixth annual meeting of the British Medical Association, will be held in the Drill Hall, Forrest Road, Edinburgh, from July 26 to 29 next. Applications for plans and regulations should be addressed to the Secretary, Dr. Norman Walker, 7, Manor Place, Edinburgh. Last year, in consequence of the meeting being held in Montreal, the usual exhibition did not take place.

THE MERCERS' COMPANY has sent the Vice-Chancellor of Cambridge University a cheque for one thousand guineas towards the fund for rebuilding the School of Medicine and Surgery attached to the University.

A NEW AMERICAN MEDICAL PAPER is to be published weekly, which will be called the *Philadelphia Medical Journal*. The first number is to be issued this month. Dr. G. M. Gould will have charge of the editorial department.

DR. S. WEIR-MITCHELL, of the University of Philadelphia, is on the Board of Trustees of this new venture. He is well known to laymen in this country by his successful novels. The latest — 'Hugh Wynne, Free Quaker, a story of the War of Independence'—is one of the most striking successes in the world of fiction at the present time. The sale has exceeded 45,000 copies.

THE EXPORTS OF MEDICINES from the United Kingdom, comprising drugs and medicinal preparations, during the twelve months ending December 31, last amounted to the value of £1,132,636, against £1,122,201 during 1896, and for the month of December only the value was £102,226, against £113,562 in 1896.

Football.

PHARMACEUTICAL F.C. v. ST. MICHAEL'S UNITED.—This match, played on January 15 at Wormholt Farm, resulted in a win for the Square team by 8 to *nil*.

MARKET REPORT and Prices Current

Specially compiled for the Pharmaceutical Journal

The quotations here given are in all cases the lowest cash prices for bulk quantities, and often the articles quoted have to be sorted in order to suit the requirements of the retail pharmacist. The cost of freightage from the chemical and drug works to the various distributing centres must also be considered. It is important that these conditions should be borne in mind in making any comparison between the prices quoted and those of the wholesale drug trade.

LONDON REPORT.

JANUARY 20, 1898.

Business has been rather quiet during the past week, and there are few changes of importance to record. Quininc has stiffened up, in anticipation of the result of to-day's Bark sales in Amsterdam, particulars of which had not, however, come to hand at time of going to press. Opium and Morphia remain quiet. Codeia firm. Cocaine is reported firmer to-day in consequence, it is stated, of firmness of price of the crude article. Sulphonal, Phenacetin, Quicksilver, and Mercurials unchanged, as also are Brominc and Bromides. The position of Iodine has again become unsettled, which cannot fail in turn to react upon that of Iodides. It is quite certain that any change can only be in a downward direction, and it is to bc feared that when the drop does come it will be a serious one. Sulphate of Ammonia again dearer. Acid Carbolic dull. Citric quiet. Tartaric steady. Cream of Tartar very firm. Cod-liver Oil weak. Glycerin without change. Sulphate of Copper dearer in sympathy with the stronger position of the metal. Ipecacuanha firm, with a rising tendency. Bismuth and Lithia unchanged. The following are the actual prices of articles of principal interest :—

ACID BORACIC—Steady at 24s. per cwt. for *crystals* and 25s. per cwt. for *powder*.

ACID CARBOLIC—Quiet but steady at 6⅞d. to 7d. per lb. for 35/36° C. *ice crystal*, in bulk; other qualities are also unchanged in value. *Crude*: 60 F. 2s. 1d. per gallon; 75° F., 2s. 6d. *Liquid*: 95 per cent. of pale straw colour, 1s. 2d. per gallon, in 40 gallon casks.

ACID CITRIC—Is dull at 12½d. per lb. to 1s. 1d. per lb. for *English*.

ACID TARTARIC—Fairly steady at 12⅜d. per lb. for foreign, and 1s. 1d. per lb. for English.

AMMONIA COMPOUNDS.—*Sulphate*: very firm at again higher prices, closing £9 15s. per ton for gray prompt 24 per cent. London. *Muriate* firmer at 24s. 6d. to 26s. 6d. per cwt. for the 98 per cent. free from metals. *Bromide* steady at 2s. 2d. per lb. *Iodide* unchanged at 14s. 6d. per lb. *Nitrate* firm at 40s. per cwt. *Sulphocyanide*: 1s. to 1s. 1½d. per lb., according to quantity.

BISMUTH—Unchanged at 5s. for the *metal*, and 4s. 10d. per lb. for the *subnitrate* in 5-cwt. lots.

BORAX—Quiet at 14s. per cwt. for *crystals*, and 14s. 6d. for *powder* in quantity and in bulk.

BROMINE AND BROMIDES—Remain in good demand at unchanged prices.

CASCARA SAGRADA—Is very firm at 22s. 6d. to 25s. per cwt.

CLOVES.—No *Zanzibar* offered at auction. 20 bags *Seychelles*, small and dark, sold at 3¼d. to 3⅜d. 23 bags dull *Amboyna* sold at 4½d. 60 cases unpicked *Penang* sold without reserve at 5¼d. Privately *Zanzibar* have continued to advance somewhat, but are now quiet, though steady; small spot sales at 3¼d.; March to May delivery, 3 3/8 d.; and April to June, 3 1/2 d.

COAL TAR DISTILLATION PRODUCTS.—*Toluol*: 1s. 11d. *Benzole*: 50 per cent., 1s. 7d. per gallon. *Crude Naphtha*: 9d. *Solvent Naphtha*: 95 per cent. at 160° C., 1s. 11d. per gallon.

COCAINE—Remains exceedingly quiet, makers' price being unchanged at 10s. 3d. to 10s. 9d. per oz., according to brand. The large supplies in second hands appear, however, to press upon the market, and until these are lightened the sales by the manufacturers themselves cannot well fail to continue on a limited scale, especially in view of the fact that some brands are being offered from second hands as low as 9s. 9d. per oz., and hardly finding a ready sale even at this reduced figure.

CODEIA—Is firm at 11s. 3d. to 11s. 9d. per oz., according to quantity.

CREAM OF TARTAR—Very firm, to the turn dearer at 75s. 6d. to 76s. per cwt. for first white French *crystals*; *powder*, 78s. to 79s. per cwt.

GINGER.—*Cochin* continues flat, and rough kinds were mostly bought in; wormy to good fair washed at 16s. to 24s.. 20 cases ordinary C cut sold at 32s. 6d. to 33s. 6d.

IODINE.—It is rumoured that a large producer on the West Coast has resolved to force his stocks on the market independently of the Syndicate. This, if it takes place, can hardly have any other result than a reduction in price of *Iodides*, which, however, so far remain unchanged.

MERCURIALS.—Makers have so far made no alteration in their prices, which remain at 2s. 2d. to 2s. 5d. for *corrosive sublimate*, and 2s. 6d. to 2s. 9d. per lb. for *Calomel*.

MORPHIA—Very quiet at 4s. 3d. to 4s. 6d. per oz. for the *Hydrochlorate powder*.

OILS ESSENTIAL.—*Lavender*: Exot., 4s. 9d. to 6s. 3d. per lb. as to quality. *Pennyroyal*: 4s. 9d. per lb. *Neroli*: 8s. per lb. *Bergamot*: *Calabrian*, 8s. per lb. *Lemon*: 3s. 3d. to 3s. 6d. per lb. *Orange*: Sweet, 6s. 6d. per lb.; bitter, 9s. per lb. *Peppermint* is quiet; *HGH* is selling at 5s. 6d. to 5s. 9d. per lb. on the spot, and 5s. 4½d. per lb. for arrival, *c.i.f.* terms. *Wayne County*: 3s. 9d. per lb.; Japanesc unchanged at 3s. 3d., *c.i.f.*, for dementholised. *Star Aniseed* quiet at 7s. 6d. to 7s. 9d. per lb. on the spot. *Cassia* slow of sale at 5s. 6d. per lb. for 70-75 per cent.

OILS (FIXED) AND SPIRITS.—*Linseed*: A considerable amount of business has been done this week at dearer rates; on the spot, pipes, London, £15 5s.; barrels, £15 15s. *Rape* has declined still further to £23 for ordinary brown on the spot, and to £24 10s. for refined on the spot, at which lower prices an important business has been done. *Cotton* very firm at advance noted last week; £12 15s. for crude on the spot, and £14 10s. for refined on spot. *Olive* unchanged at £32 for Spanish and £31 10s. to £32 for Levant. *Cocoanut* quiet at £22 10s. for Ceylon on the spot and £28 for Cochin same position. *Palm* the shade firmer at £23 on the spot. *Turpentine*: The market is very firm at 24s. 3d. per cwt. for American on the spot. *Petroleum* dull; Russian spot 4¼d. per gallon, American 4½d. per gallon, water-white 5⅝d. per gallon. *Petroleum Spirit*: American 4½d. per gallon, deodorised 6¼d. per gallon.

OPIUM—Dull at unchanged values, quotations being nominally the same as given in our last report.

ORRIS ROOT.—*Verona* is offered at 22s. per cwt. for *sorts*, 24s. 6d. per cwt. for small white, and 25s. per cwt. for prime, *c.i.f.*, London. *Florentine*: Extra picked is quoted 41s, picked 36s., and sorts 35s. per cwt., *c.i.f.*, London.

PHENACETIN.—The hoped-for improvement in this article has so far not taken place, price remaining 4s. to 4s. 3d. per lb. according to quantity.

POTASH COMPOUNDS.—*Chlorate* firm at 3¼d. per lb. on the spot. *Bromide* firm at 1s. 10d. per lb. for quantities less than 1 cwt. *Iodide*, 9s. 9d. to 10s. 3d. per lb., according to quantity. *Permanganate* very weak, but for ordinary quantities nominally unchanged at 65s. per cwt. for small crystals, and 70s. for large crystals. *Bicarbonate* steady at 30s. per cwt. for crystals or powder. *Prussiate*, 6¼d. per lb. for English.

QUICKSILVER—Is firm at last week's advance to £7 per bottle from first hands, and £6 19s. 6d. from second hands.

QUININE.—Market remains inactive; price is, however, very firm, the nominal quotation being still 1s. 1d. per oz., some makers, however, declining to book orders, while from second hand only limited quantities could be obtained at about figure named above. It now depends upon the result of to-day's Bark sales in Amsterdam what the course of the article is likely to be in the immediate future, many people believing that an advance in value is quite probable in view of the change of tactics adopted by the holders of the raw material.

SHELLAC.—Only moderate supplies were catalogued for the auctions on Tuesday. Active competition prevailed owing to moderate shipments, but this also caused holders to show increased firmness, with the result that the higher prices asked checked business, and less than half the offerings were disposed of; prices, however, of *Second Orange*, showed a further advance of 3s. per cwt. on last sales rates, making standard *TN* now 68s. per cwt. A total of 952 cases offered and 383 cases sold. *Second Orange*: Of 823 cases 319 sold, *AA* in circle red of the mark at 73s., fair red to good bright free *TN* at 67s. to 69s., strong bright cakey at 68s., ordinary flat red at 64s., red curly cakey at 63s., low livery at 62s., shivered block dull red to fair bright at 63s. to 65s., red flint

block at 61s. *Garnet*: Of 54 cases 24 sold, *AC* slightly cakey at 75s., fair free *PBG* at 63s., low blocky *JBG* and Snake at 57s. to 58s. *Button*: Of 75 cases 40 sold, weak glassy pale at 80s., ordinary to fair 2nds at 73s. to 75s., fair circle 2nds at 64s. The shipments from Calcutta during the first half of January were as follow: To the United Kingdon, 4500 cwt. against 3600 cwt.; to the United States, 200 cwt. against 2300 cwt.; and to the Continent, 1600 cwt. against 1100 cwt. last year.

SODA COMPOUNDS.—*Crystals* steady at 55s. to 60s. per ton *ex* ship terms. *Nitrate* firm at £7 15s. per ton on the spot. *Bicarbonate* firm at £7 15s. per ton for the 98 per cent. commercial quality, and 18s. 6d. per cwt. for the fully bicarbonated. *Bromide* unchanged at 2s. 2d. per lb. *Iodide* fairly steady at 11s. 7d. per lb.

SPICES (VARIOUS).—*Black Pepper*: Only 14 bags offered and bought in. *White Pepper*: 201 bags Singapore bought in at 7¼d. *Chillies*: 20 cases fine Japan sold, without reserve, at 43s. *Capsicums*: 10 bags common small Bombay bought in. *Cassia Vera*: 8 baskets coarse sold at 24s. to 27s. *Cinnamon Chips*: 16 bags sold at 3¾d. *Mace*: 5 packages West India sold at 1s. 4d. to 1s. 7d. *Nutmegs*: 2 cases *Penang* sold, 65's at 2s. 7d.; 10 cases Bombay sold, 90's at 1s. 5d., 108's at 1s. 1d., wormy broken at 4½d. to 5d.; 4 packages West India sold, 80's to 76's in shell, 9d. to 10d. *Pimento* is firmly held, only 44 bags sold, fair, 4⅞d.; good, 5d.

SULPHATE OF COPPER—Dearer in sympathy with the strong market for the metal at £15 15s. to £17 5s. per ton, according to make and package.

SULPHONAL.—The two principal makers are still selling at 7s. 3d. per lb. for limited quantities only and for immediate delivery.

VANILLA.—The quantity of vanilla to be sold after the long interval since the last auctions necessitated the separation from the ordinary drug auctions. On Friday, the 14th, therefore, about 1150 tins were offered, and there being keen competition nearly the whole sold, extra long lengths at slightly easier rates, whilst prices of all other sizes and qualities were full up to 1s. per lb. dearer than last sales. *Seychelles*: Of 1028 tins 975 sold, fair to good colour, 7½ to 9 inch at 25s. to 26s. 6d., 8 to 8½ inch at 24s. to 25s., 7½ to 8 inch at 22s. 6d. to 24s., 6½ to 7½ inch at 20s. 6d. to 22s., 5 to 6 inch at 19s. 6d. to 21s., 3 to 4½ inch at 17s. 6d. to 19s. 6d., brown and common 9s. to 18s. 6d. *Mauritius*: 61 tins all sold, fair flavour, 7 to 8 inch at 23s., 6½ to 7 inch at 21s. 6d. to 22s., 5½ to 6½ inch at 20s., 4 to 5½ inch at 18s. 6d. to 20s., brown and common 12s. to 17s. *Bourbon*: Of 35 tins 31 tins sold, fair to good colour, 6 to 7 inch at 20s. to 22s. 6d., 5½ to 6 inch at 19s. 6d. to 22s., common 16s. The remainder and *Tahiti* were bought in.

At to-day's drug auctions, notwithstanding the intermediate separate sales of Vanilloes and Cardamoms, the large number of 19 catalogues, representing over 2500 lots, together more than 9000 packages, of various drugs were offered; but on the whole the actual business transacted was limited, the following being the result as far as it has been possible to give same prior to going to press:—

ALOES.—Fair hard bright *Cape* held for 23s. to 24s., slightly inferior selling 20s. 6d. to 22s., rather drossy at 18s. 6d. to 19s. per cwt. 41 kegs and 34 boxes fair dry *Socotrine* were held for 80s., ditto part dark and mixed for 75s. per cwt.

ANISEED.—20 bags good *Russian* sold cheaply at 19s. 6d. per cwt.

ANNATTO PASTE.—59 cases all bought in, 2s. 6d. per lb. being the price required.

ANTIMONY.—50 cases of crude *Japan* were taken out at £20 per ton.

ARGOL.—7 bags *Cape*; part sold at 35s. per cwt.

ASAFETIDA.—Privately there has been some inquiry lately for export, but the quality offered in sale to-day was not fine. Nearly 300 cases were on show, but of these only some 40 cases sold at 44s. to 50s. per cwt. for broken block mixed almonds, some loose. A further arrival of about 100 cases is advised.

ASPHALT.—61 cases fair *Syrian* all bought in at 9d.

BALSAM COPAIBA.—2 casks clear brown were held for 2s. per lb.

BUCHU LEAVES—Were lower, being rather more freely offered. Fine green long sold at 7¾d. per lb., whilst fair green realised only 4½d. per lb. Fair green round sold in part at 5¼d. per lb., being a drop of ¾d. per lb. on last sale; yellowish rounds only realised 2¼d. per lb.

CACTUS FLOWERS.—10 bags were again up in sale and were bought in at 8d. per lb, there being no demand.

CARDAMOMS.—Nearly 400 cases were catalogued, and at first the demand was very slow, such sales as were made realising about last rates, but later on there was decidedly more competition, and an advance of 4d. to 5d. per lb. took place. *Decorticated* of good quality realised 3s. 4d. to 3s. 5d. per lb., whilst inferior fetched 2s. 9d. per lb. only. Fine bold pale *Mysores* sold 4s. per lb., second size 3s. 8d. to 3s. 9d. per lb., medium 3s. 6d. to 3s. 7d. per lb., slightly splitting 3s. 4d. per lb.

CASTOR OIL.—Fair *Calcutta firsts* were held for 4½d., *seconds* for 3¾d. Mixed quality in casks part selling at 2½d. per lb.

COLCYNTH PULP.—10 boxes fair *Spanish* held for 3s., 1 bale brownish selling at 1s. 7d. per lb.

COLOCYNTH.—3 casks good small *Turkey* apple were taken out at 1s. 3d. per lb.; 2 cases broken *Spanish* at 10d.; 1 bag seeds also offered, but did not find a buyer.

COLOMBO ROOT.—16 bags small to bold washed held for 70s. per cwt.

CROTON SEEDS.—7 bags of fair quality sold subject to approval at 41s. per cwt.

CUBEBS.—80 bags part *Java* part dusty shrivelled *Singapore* were all bought in, 40s. being the price named, while 24 bags slightly mouldy were bought in at 35s. per cwt.

CUMMIN SEED.—62 bags held for 20s. per cwt., fair to good *Malta* being bought in at 32s.

CUSCUS ROOT.—5 bales cleaned were bought in at 30s. per cwt.

CUTTLE FISH.—50 mats good pale fairly bold were held for 3½d., fair medium, rather dirty, part selling at 2¼d. per lb.

DRAGON'S BLOOD.—Fine is still scarce. 2 cases blocks, fairly bright, sold cheaply at £6 per cwt.; dull saucers, 95s. per cwt., whilst very seedy lump was taken out at £5 to £6 per cwt.

ERGOT OF RYE.—4 bags fair *Russian* bought in at 11d. per lb.

GALANGAL ROOT.—64 bales of fair quality all bought in at 30s. per cwt.

GALLS.—11 bags *Bagdad* damaged sold without reserve at 35s. to 51s. per cwt.

GENTIAN ROOT.—49 bags of only medium quality were bought in at 25s., a bid of 20s. being declined, 21 bales of fair quality sold cheaply at 20s. to 21s. per cwt.

GUAZA.—45 Robbins were all bought in stalky green at 5d.; slightly brownish tops at 4½d.; and brown old at 4d. per lb.

GUM AMMONIACUM.—Good clean drop seed to bold drop held for 55s., darkish block realising 28s. to 39s. 1 case fair drop without reserve sold very cheaply at 41s. per cwt.

GUM ARABIC.—Good pale grain was taken out at £6 10s., and 13 bags sorts at 75s. per cwt.

GUM BENJAMIN.—Fair *Palembang* realised 35s. per cwt. *Sumatra* medium seconds were held for £5 to £6 per cwt., fair ditto selling at £7 10s. 4 cases *Penang* sold at 62s. 6d.

GUM EUPHORBIUM.—23 serons, part very woody, held for 20s. per cwt.

GUM GALBANUM.—16 packages fair dark part woody, part blocky were taken out at 1s. up to 1s. 4d. per lb. for fine.

GUM KINO.—2 tins of good quality taken out at 15s. per lb., a bid of 10s. being refused.

GUM MASTIC.—7 cases part yellow part pale were held for 2s.; 1 case sold subject to approval at 1s. 9d. per lb.

GUM MYRRH.—6 cases good pale native picked bought in at 70s., fair pale sorts at 80s., 2 casks siftings selling at 41s. per cwt.

GUM SANDARAC.—11 casks were bought in at 75s. per cwt.

GUM TRAGACANTH.—5 cases taken out at £12 per cwt.

HONEY.—5 packages *Jamaica* sold at 23s. 6d. per cwt.; 88 cases *Honolulu* were bought in at 25s. to 28s. per cwt.

IPECACUANHA—Continues in active demand, and decidedly higher rates are generally anticipated. In sale about 60 bales *Rio* were offered, and fair sales were made at 7s. 7d. to 7s. 9d. per lb., being an advance of 4d. to 5d. per lb. A bid of 7s. 6d. per lb. was made by a shipping firm for a long string, but owners would not accept. Good bold root held for 8s. per lb.

KAMALA.—5 cases of good quality all sold at 10½d. to 1s. 0½d. per lb.

KOLA NUTS.—10 bags fair bold bright were held for 7d. per lb., a bid of 5d. being declined.

LIQUORICE ROOT.—Of 69 bales fair rough, part sold at 6s. to 7s. per cwt.

MENTHOL.—Fairly dry crystals, part slightly oily, were held for 7s. per lb.

NUTMEG PASTE.—2 cases of fair quality were held for 2½d. per oz.

ORRIS ROOT.—10 bags rough *Verona* were bought in at 35s. per cwt.

PATCHOULI LEAVES.—29 bales, all more or less country damaged and mixed with sand, were bought in, 4d. per lb. being the price named.

QUILLAIA BARK.—20 bales crushed bought in at 40s. per cwt.

SAFFRON.—15 tins held for 27s. per lb.

SANDALWOOD LOGS.—5 tons were all bought in, £16 per ton being the price which would have been accepted.

SCAMMONY RESIN.—13 cases were all taken out at prices varying from 12s. to 30s. per lb., according to quality.

SCAMMONY ROOT.—100 bags were held for 30s. per cwt., 105 bags being also bought in at the same figure.

SENNA.—Privately there has been a good demand during the past week, but it was expected by some that lower prices would have to be taken owing to the large quantity offered. On the contrary, however, a very strong competition led to decidedly dearer rates for the 600 bales *Tinnevelly* offered, small yellowish leaves realised 2d. to 2¼d. per lb., small green 2¾d. to 3d. per lb., and for the bolder leaves up to 4¾d. per lb. was paid. For *Alexandrian* leaves the demand was slow, and only really fine green sold at 6d. to 7d. per lb., siftings 2¾d. per lb.

SPERMACETI WAX.—1 bale taken out at 3d. per lb., there being no bid.

SQUILLS.—5 bags sold without reserve at 2¼d. per lb.

TAMARINDS.—85 barrels *West Indian* bought in at 8s. 6d. per cwt.

TARTAR.—7 casks Greek bought in at 60s. per cwt.

THYME SEED.—26 bags of fair quality bought in at 10s. per cwt.

TONQUIN BEANS.—4 cases foxy and slightly mouldy held for 10d., good crystallised *Para* part selling at 1s. 9d. per lb.

VERMILION.—9 cases *China* unworked were bought in at 2s. 1d. per lb.

WAX.—2 cases fair *Zanzibar* realised £6 5s.; 8 bags *Tangiers* held for £7; 5 bags *Australian* sold for £6 5s., 1 case ditto being bought in at £8 10s.; fair to good *Jamaica* sold at £6 15s. to £7 2s. 6d.; fair *Calcutta* held for £6 to £6 10s., *Bombay* for £5 15s., *North American* for £6 15s., *Australian* for £6 5s. per cwt. 50 cases fair *Japan* bought in at 37s. 6d. per cwt.

NEWCASTLE CHEMICAL REPORT.

JANUARY 19, 1898.

Quietness still prevails, and not much new over-sea business reported. Sulphur is a trifle scarce, but price unchanged. Other quotations are :—Bleaching Powder, £6 5s. to £6 15s. Caustic Soda: 70 per cent., £7 10s. to £7 15s. Soda Crystals: 42s. 6d. to 57s. 6d., according to markets. Soda Ash: 52 per cent., £4 5s. Alkali: 52 per cent., £5 5s. Sulphur: £4 15s. to £5 per ton.

MANCHESTER CHEMICAL REPORT.

JANUARY 19, 1898.

In miscellaneous articles there is an upward tendency, and heavy chemicals are fairly steady. Bleaching Powder over next year varies from £5 5s. to £5 10s. per ton, soft wood casks, prompt delivery, and forward, £5 to £5 5s.; White Caustic Soda, 78 per cent., is at £8 15s., and seventies at £7. Ammonia Alkali, 58 per cent., is well maintained at £4 to £4 2s. 6d. on rails, maker's works. A fair demand for Bicarbonate of Soda continues, and Industrial is firm at £5 5s. per ton for 1-cwt. kegs, on rails at works, Northwich. Pitch is very low, 15s. per ton being named *f.a.s.* Manchester Ship Canal. Naphthas are very steady. Green Copperas is still active for Lancashire make, and as local demand is at present great, especially for sewage precipitating purposes, prices are well maintained. Glycerin continues to advance, and is locally £51 to £52 for double distilled *f.o.b.* Ship Canal or on rails. Brown Acetate is scarce, and at £6 5s. to £6 10s., according to quantity. Sulphate of Copper steady at £17 10s. per ton for best brands delivered Manchester. Yellow Prussiate of Potash, 7d. Creosote easier at 2d. to 2¼d. The local trade in oil in bulk to the Manchester Ship Canal continues. Four steamers are fixed from Philadelphia and Batoum with about 17,500 tons.

LIVERPOOL REPORT.

JANUARY 19, 1898.

A considerable advance having taken place in the price of Olive Oils in Spain, holders here have increased their prices accordingly twice within the week, Seville and Malaga oils now bring extreme rates, as do also those from the Levant. Linseed oil has given indication of higher rates in sympathy with the scarcity of seed experienced here for some time past. The market has been entirely cleared of Turkish Linseed, and the price to arrive is quoted at 38s. per 416 lbs. An advance in Potashes is worth noting, for they have been stationary for some time past, so far, however, Pearlashes are unaffected. Sales of Beeswax have been numerous, comprising Gambia, Chilian, and good quality Peruvian, all of which obtained good prices. In chemicals, Sulphate of Ammonia and Sulphate of Copper have gone higher, particularly the latter, which has increased in price 15s. to 20s. per ton since last report.

AMMONIUM SALTS.—*Carbonate* is still scarce at 3d. per lb. *Sal ammoniac* quoted from 31s. to 33s. per cwt. *Sulphate* dearer, £9 12s. 6d. to £9 15s. per ton.

BEESWAX.—Gambia sold at £6 7s. 6d. per cwt., 40 sacks Chilian at £6 12s. 6d., and 7 cases Peruvian at £6 12s. 6d. to £6 15s.

BLEACHING POWDER—Is a shade firmer at £5 12s. 6d. to £6 5s. per ton.

BORATE OF LIME—Quiet at £7 17s. 6d. per ton.

CANARYSEED—Is somewhat slow of sale at 25s. 6d. to 27s. 6d. per 464 lbs. for Turkish.

COPPERAS—Firm at 36s. to 38s. per ton.

COPPER SULPHATE—Is dearer, viz., £16 15s. to £17 per ton.

LINSEED—Is held at very high rates. All Turkish sold out at 38s. per 416 lbs., which was the figure paid for a consignment about to enter the river. River Plate for forward delivery, 34s.; Calcutta, 38s. and 36s.

OILS.—*Castor oils* have been selling freely at the same price as last week for Calcutta and French, first pressure, 3⅝d. to 3¾d. per lb. *Olive oils* are advancing in price, particularly Spanish. Malaga and Seville are quoted at £31 10s. to £32, and £32 10s. to £33 per tun respectively. Candia also £33 to £33 10s. *Linseed oils* of Liverpool pressure have risen 3d. per cwt., viz., 16s. 3d. to 17s. *Cottonseed oil* of Liverpool refining, 14s. 9d. to 15s. 6d. per cwt. *Spirits of turpentine* are selling moderately at 24s. 6d. per cwt.

POTASH SALTS.—*Potashes* have advanced to 19s. 9d. and 20s. per cwt. *Pearlashes* are unchanged at 32s. *Cream of tartar* attracts but little attention at 75s. to 76s. per cwt.

QUILLAYA BARK—Has been selling freely at £18 per ton.

DIARY FOR THE WEEK.

TUESDAY, JANUARY 25.

GLASGOW AND WEST OF SCOTLAND PHARMACEUTICAL ASSOCIATION, at 9 p.m.
"Pharmacography" (Illustrated), by J. Lothian.

ROYAL INSTITUTION, at 3 p.m.
"The Simplest Living Things," by Professor E. Ray Lankester.

WEDNESDAY, JANUARY 26.

WESTERN CHEMISTS' ASSOCIATION (OF LONDON). Musical and Social Evening, at 9 p.m.

MANCHESTER CHEMISTS' DINNER to the Lord Mayor of Manchester, Mr. Robert Gibson, Ph.C.

THURSDAY, JANUARY 27.

CHEMISTS' ASSISTANTS' ASSOCIATION, at 9 p.m.
"How an Evening Paper is Produced," by E. W. Richardson.

NEWPORT AND MONMOUTH CHEMISTS' ASSOCIATION. Annual Dinner (Westgate Hotel).

ROYAL INSTITUTION, at 3 p.m.
"Halogen Group of Elements," by Prof. Dewar.

FRIDAY, JANUARY 28.

ABERDEEN JUNIOR CHEMISTS' ASSOCIATION, at 9.30.
"Glycerin: Manufacture and Use," by R. Leslie.

EDINBURGH CHEMISTS', ASSISTANTS', AND APPRENTICES' ASSOCIATION, at 9.15 p.m.
"The Profession of Pharmacy," by W. Makepeace Lock.

ROYAL INSTITUTION, at 9 p.m.
"Instinct and Intelligence in Animals," by Professor C. Lloyd Morgan.

SATURDAY, JANUARY 29.

PHARMACEUTICAL FOOTBALL CLUB.
Return match with the Hon. Artillery Co. at the latter's headquarters at Finsbury.

GLASGOW SCHOOL OF PHARMACY.—The first annual supper in connection with this school was held on Friday, January 21, at the Bath Hotel, Bath Street, Glasgow. Over sixty students and friends were present. Mr. W. L. Currie occupied the chair, and was supported by Mr. J. Lothian (Principal of the School), Dr. Lees Grecnock, a former principal, Mr. James Robb, and Mr. David Watson. The loyal toast was proposed, and the Chairman paid a fitting eulogium to Mr. Lothian in proposing the toast of the evening—"The Glasgow School of Pharmacy." Mr. Lothian replied and urged his students, if they had the true grit of Scots, to go on to the Major examination, and remedy the dearth of pharmaceutical chemists in Scotland. Other toasts were proposed and replied to by Dr. Lees, Mr. J. Robb, and Mr. Taylor. Songs, etc., were also given, and a very enjoyable evening was spent.

DR. FRANK CLOWES, since taking up the position of Chief Chemist to the London County Council, has been elected by the University College at Nottingham as Emeritus Professor of Chemistry. The following is an extract from the minutes of the University College Committee :—

> Resolved, that in recognition of the valuable services rendered to the College by Professor Clowes, first in organising the Chemical Department, and afterwards, for sixteen years, discharging the duties of Chemical Professor, and for three years the duties of Principal, the honorary position of Emeritus Professor of this College be conferred upon him.

MR. WILLIAM MURRAY, chemist and druggist, manager for Mr. James Hinds, 127, Gosford Street, Coventry, has taken over the business carried on there.

SCHOOL OF PHARMACY.—The second annual dinner of the School of Pharmacy is to be held on Wednesday, February 16, in the Duke's Saloon, Holborn Restaurant. Professor Greenish, F.I.C., F.L.S., in the chair. It is hoped that old students and others connected with the Society will make an effort to be present. The Hon. Secretary, Mr. T. Edward Lescher, will be glad to receive applications for tickets, price 5s. each, as early as possible, so as to enable him to complete arrangements.

EDITORSHIP OF THE 'BRITISH MEDICAL JOURNAL.'—Dr. Dawson Williams, assistant editor, who has been connected with the editorial department of the *British Medical Journal* for seventeen years, at a recent meeting of the Council of the British Medical Association, was unanimously appointed to succeed the late Dr. Ernest Hart as editor of the journal. Dr. C. Louis Taylor, who has been sub-editor for the last eleven years, was appointed assistant editor.

CHEMISTS' ASSISTANTS' ASSOCIATION.—The second Cinderella of the season will be held at the Portman Rooms, Baker Street W., on Thursday, Feb. 3. Tickets can be obtained from Mr. H. H. Robins, 113, Ridley Road, Forest Gate, E., or Mr. Cooper, 48, Baker Street, W.

WESTERN CHEMISTS' ASSOCIATION (OF LONDON).—A successful musical and social evening was held at the Westbourne Restaurant, 1, Craven Road, W., on Wednesday, January 26, the President in the chair. Each member had the privilege of introducing a friend on the occasion, and the necessary arrangements were carried out by the Hon. Secretaries, Messrs. H. Cracknell and J. F. Harrington.

GLASGOW AND WEST OF SCOTLAND PHARMACEUTICAL ASSOCIATION.—A meeting of this Association was held in the Rooms at 94, West Regent Street, on Tuesday evening, January 25, Mr. W. L. Currie, President, in the chair, when a lecture on "Pharmacography" was delivered by Mr. John Lothian, Principal of the Glasgow School of Pharmacy. Mr. Lothian showed how essential a knowledge of the structure of drugs is in the practice of pharmacy, and how, owing to the extended use of powdered drugs nowadays a practical acquaintance with the microscope is more than ever incumbent on the pharmacist. After describing the preparation of drugs for section work, the lecturer showed over sixty slides by the optical lantern, illustrating the histology and pharmacognosy of the principal starches, spores, roots, stems, barks, leaves, and glands used in medicine, including a number of slides of powdered and adulterated drugs, describing the elements by which drugs are recognised in the powdered state. The lecture was listened to by a large and appreciative audience, including a number of ladies, and on the motion of the Chairman, seconded by Mr. Brodie, a cordial vote of thanks was awarded to Mr. Lothian for his interesting and instructive lecture.

THE ROYAL BOTANIC SOCIETY has granted a fresh concession to students, who will in future be admitted to the Botanic Gardens daily from 9 a.m. to 3 p.m., except on Sundays and on the Wednesdays and Saturdays in May, June, and July.

MESSRS. BAISS BROS. & Co. held the annual dinner and smoking concert of the gentlemen of their staff at the "City Arms" on Friday evening last, when a very successful and pleasant evening was spent. Amongst those present were the heads of the firm, Mr. A. Baiss (in the chair) and Mr. S. S. Baiss, together with their two sons, Mr. W. A. Baiss and Mr. G. G. Baiss, while amongst the many visitors we noticed Mr. W. C. Allen, Mr. A. Lambert, and Mr. S. Lambert.

MESSRS. MAYS & MACKAY, wholesale druggists and oil merchants, Reading, intimate that they have purchased the freehold of the premises formerly occupied by the late firm of "Paget & Riggot" at 5 and 6, Gun Street, Reading, and that in future their business will be carried on at that address.

SALE OF FOOD AND DRUGS ACT.

SPIRIT OF NITROUS ETHER.—On Wednesday, January 19, at the Boston Sessions House, Henry Mells, chemist and druggist, Kirton, Lincolnshire, was summoned for selling spirit of nitrous ether below the minimum standard required by the British Pharmacopœia. The County Analyst (Mr. C. E. Cassal), certified that the spirit was deficient to the extent of 72·9 per cent. of the required nitrous ether, and that it contained 7·93 per cent. of extraneous water.—The defendant stated that he purchased the drug from one of the first houses in London, and he sold it as it came to him, but there might have been evaporation of the spirit through frequent removal of the stopper of the bottle, in which it was kept for retail purposes. The Magistrates said the defendant was bound to provide pure drugs and sell them according to the British Pharmacopœia. It was clear from the analyst's certificate that had not been done, and therefore he had broken the law.—Fined 40s. and costs.

PAREGORIC ELIXIR.—John Richard Smith, Hart's Hill, Dudley, has been summoned at the Dudley Borough Police Court for selling paregoric not of the nature and substance demanded.—The analysis showed that there was an entire absence of opium in the preparation, and the spirit contained therein was 15 per cent. under proof.—The defendant stated that it was sold as obtained from the wholesale house.—Fined £1 and costs and ordered to pay the analyst's fee.

BORIC ACID IN BUTTER.—On Wednesday, January 19, the stipendary magistrate, Mr. J. Ignatius Williams, gave judgment in the case of Thomas Jones, grocer, Tyncwydd, who was summoned recently at the Pontypridd Police Court by the Glamorganshire County Council for selling butter containing boric acid, to the extent of 63 grains in the pound.—The defence was that under the Margarine Act the defendant was entitled to use the boric acid as a preservative, as the Act stated that salt or any other preservative could be used.—The magistrate fined the defendant £5 and costs, and remarked that it was a case which should be threshed out, and a true interpretation put upon the word "preservative," contained in the section of the Margarine Act quoted for the defence.

DYES IN FOOD.—Dr. A. Wynter Blyth, public analyst for Marylebone, in a report issued January 21 to the local vestry, referring to the colouring of margarine with aniline dye so as to resemble butter, expressed the hope that the proposed amendment of the Sale of Food and Drugs Act will make it an offence to colour foods with aniline dye unless the purchaser was informed of the fact. He adds: "The aniline dyes possess such great tinctorial power that even with those that are poisonous the quantity taken in the consumption of any one ordinary coloured article is most minute, so that in few cases could decided symptoms be produced. On the other hand, when sugar, butter, milk, cream, sausages, confectionery, and a number of other things all have a small trace of ani-

line, these traces in the day total up. Observation and experiment have shown that the aniline dyes in small doses interfere with digestion." Dr. Blyth is of opinion that the increase of maladies of the digestive organs is in part due to the increasing use of the aniline or tar colours, and to the use of antiseptics, such as boracic acid, formalin, and salicylic acid.

The quotations here given are in all cases the lowest cash prices for bulk quantities, and often the articles quoted have to be sorted in order to suit the requirements of the retail pharmacist. The cost of freightage from the chemical and drug works to the various distributing centres must also be considered. It is important that these conditions should be borne in mind in making any comparison between the prices quoted and those of the wholesale drug trade.

LONDON REPORT.

JANUARY 27, 1898.

Business has been somewhat quiet during the past week, while the changes which have taken place are of quite minor importance. So far the anticipated drop in Iodine has not taken place, the article remains, however, in a very critical position. Opium is dearer. Morphia and Codeia unchanged. Bromine and Bromides firm. Quicksilver and Mercurials unchanged. Cream of Tartar steady. Acid Tartaric and Citric quiet. Acid Carbolic dull. Sulphate of Ammonia again dearer. Bismuth unchanged. Glycerin firmer. Cod-Liver Oil weak. Cinchona Bark and Quinine in sympathy, firmer, as is also Cocaine. Sulphonal and Phenacetin unchanged. Acetanilid very weak. The following are particulars of some of the prices actually ruling:—

ACETANILID—Is lower, and could be bought in ton lots at 1s. per lb., or, perhaps, even below this; in view, however, of the pressure to sell, buyers are somewhat frightened of the article.

ACID ACETIC—Quiet at unchanged rates, which for ordinary quantities below half-ton lots are as follows:—B.P., 15s. 3d. per cwt.; 80 per cent., 32s.; and glacial, 39s. 3d. per cwt. in carboys of 130 lbs. each.

ACID BORACIC.—Steady at 24s. per cwt. for *crystals*, and 26s. per cwt. for *powder*.

ACID CARBOLIC—Remains somewhat dull at 6⅞d. to 7d. per lb. for the 35°-36° C. *ice crystal* in 2½ cwt. drums and overcasks. Other qualities and packing in proportion. *Crude* 60° F., 2s. per gallon; 75° F., 2s. 6d. *Liquid* 95 per cent., of pale straw colour, 1s. 2d. to 1s. 3d. per gallon in 40-gallon casks.

ACID CITRIC—Is very quiet at 12½d. to 1s. 1d. per lb. for *English*.

ACID TARTARIC.—*English* on the spot 12¾d. to 1s. 1d. per lb.; *Foreign* 12¼d. to 12½d. per lb. same position.

AMMONIA COMPOUNDS.—It is anticipated all ammonia compounds will go dearer. *Sulphate* is in very active demand at again dearer rates, gray prompt 24 per cent. London £10 5s. per ton.; Beckton prompt not offering. *Chloride* firm at 25s. 6d. to 26s. 6d. per cwt. for the 98 per cent. free from metals, whilst the chemically pure small crystals is 32s. to 33s. per cwt. *Oxalate* steady at 6¼d. per lb. *Bromide* steady at 2s. 2d. per lb. *Iodide* nominally unchanged at 14s. 6d. per lb. *Nitrate* very firm at 40s. per lb. *Sulpho-cyanide* 1s. to 1s. 1½d. per lb., according to quantity.

BISMUTH.—No change has taken place in price, either of the *metal* or of the *salts*.

BLEACHING POWDER.—Steady at £7 5s. per ton on the spot.

BORAX—Quiet at 14s. per cwt. for *lump* and 14s. 6d. per cwt. for *powder* in quantity and in bulk.

CAFFEINE—Is quiet at the late reduction to 14s. 4d. per lb. It is reported, however, that a new maker has entered, or proposes entering, the market, which will, of course, mean increased competition, and possibly a further reduction in the price of the article.

CAMOMILES—Are in good demand, with a tendency to higher prices, especially for the better qualities. Quotations range from 30s. to 40s. per cwt., as to quality and quantity.

CAMPHOR.—*Crude* remains quiet on the spot, but prices from Japan come dearer at 94s. per cwt. *c.i.f.* for January-March steamer. *China* quoted 88s. per cwt. *c.i.f.*

CANTHARIDES.—*Russian* are firm at 1s. 10d. to 1s. 11d. per lb. *Hungarian* steady at 1s. 9d. to 1s. 10d. per lb. *Chinese* are very scarce; nominal value, 1s. 6d. per lb.

CASCARA SAGRADA—Is quiet but firm at 22s. 6d. to 25s. per cwt. on the spot.

CINCHONA BARK.—At the London auctions on Tuesday 3466 packages of all descriptions were offered. Competition was good, showing a marked improvement on the December sales, and about two-thirds of the whole sold at an advance on last London sales, and at about the same rates as were realised at Amsterdam lately. *Ceylon*: 231 bales and 6 cases offered and sold, according to analysis. *Succirubra*, stem chips and shavings, ordinary to fair at 2¾d. to 4⅜d., renewed ditto 3½d. to 3¾d., quill 3½d.; *Officinalis*, chips and shavings at 3¼d. to 4⅛d. *East Indian*: Of 1327 bales and 34 cases 976 bales and 26 cases sold (about 200 bales being withdrawn before the sales with high limits). Red, stem chips and shavings, fair to good rich at 3⅜d. to 5½d., renewed ditto at 4d. to 5¼d., good root at 4d., quill at 3⅛d.; *Officinalis*, natural stem chips at 3¼d. to 3½d., good shavings at 7d., good root at 4⅜d., renewed chips and shavings, fair to good at 3⅛d. to 5⅞d.; Ledger stem chips, fair to good at 4¼d. to 5⅞d., Ledger branch at 4d. to 4¼d., and good Ledger root at 4⅝d. *Java*: Of 117 bales and 100 bags offered 77 bales and 100 bags sold, good Ledger stem chips at 6¼d. to 7½d., low dark dusty ditto at 2⅜d. to 2½d., root 4⅝d. *South American*: Of 732 bales Bolivian Calisaya offered, about 200 bales sold, gray quill at 8⅛d. to 9½d., ordinary at 5¾d., flat country-damaged at 9¾d. to 10⅛d. *Carthagena*: 19 bales bought in, stout split quill at 6½d. *Pitayo*: 51 bales offered and 37 bales sold at 2d. to 2¾d. *African*: 843 bales offered and 618 bales sold, fair to good quill at 4⅜d. to 6⅝d., broken quill and chips at 5⅝d. per lb.

CLOVES.—Privately the market for *Zanzibar* has been active, with advancing prices. Sales include spot at 3½d., and for delivery, February to April, at 3½d., March to May at 3½d., April to June at 3⅝d., and June to August at 3⅝d. In auction 50 bales good bright *Zanzibar* bought in at 4½d., also 5 cases dark *Penang* at 7d. to 7½d.

COAL TAR DISTILLATION PRODUCTS.—*Toluol*: 1s. 9d. *Benzole*: 50 per cent., 1s. 8d. per gallon; 90 per cent., 1s. 5d. per gallon. *Crude Naphtha*: 30 per cent. at 120° C., 10d. *Solvent Naphtha*: 95 per cent. at 120° C., 1s. 11d. per gallon.

COCAINE—Is decidedly firm, makers not appearing at all anxious to book orders at their nominal prices, which remain at 10s. 3d. to 10s. 9d. per oz., according to brand, for 100-oz. lots. There are, however, still some second-hand holders who would probably accept somewhat less, but the quantity available from such holders would appear to be limited. It is reported that *crude* is very firm and tending higher, which would point to higher figures for the manufactured article.

CODEIA—Remains firm at 11s. 3d. to 11s. 9d. per oz., according to quantity and packing.

COD-LIVER OIL.—The new oil will be late on the market this season, but there seems no reason for thinking it will be missed, as not only is the demand very slow, but stocks here are very large. Quotation for fine non-freezing Norwegian quality is 60s. to 62s. 6d. per barrel.

CREAM OF TARTAR—In good demand at firm rates. First white *French* crystals, 76s. per cwt. Powder, 78s. to 79s. per cwt.

DAMIANA LEAVES.—From New York we hear that there have been further arrivals of new crop, and prices are lower at 7d. per lb., *c.i.f.* London.

GINGER.—*Cochin* continues dull. 122 bags wormy washed rough sold at 16s., fair bought in at 21s. to 22s. Of 48 barrels old *Jamaica*, 24 barrels sold, chiefly common, without reserve, at 66s. 6d. to 68s. 6d., one barrel middling 81s.

GLYCERIN—Is firmer, and 52s. 6d. per cwt. is now the general quotation for the 1260° s.g. chemically pure odourless and water white quality packed in cases of 4 56-lb tins.

IODINE.—It would appear that one of the larger producers on the West Coast, who hitherto held with the Syndicate, has a considerable quantity of *Iodine* here, which he is proposing to throw upon the market quite independent of the Syndicate. No doubt every effort will be made to induce him to remain in the fold, while, should he persist in his intention, the Syndicate will no doubt retaliate in an effective manner by lowering their price. Apart from the question whether any of those interested in iodine would in the long run be in any way really benefited by the threatened break up, which is somewhat more

than doubtful, the point would arise whether any quantity of iodine could be readily disposed of outside the Syndicate, owing to the fact that under the circumstances purchases at almost any price would appear rather dangerous. It is said, however, that a certain class of people "rush in where angels fear to tread." It therefore now remains to be seen what will happen. Meantime price of *Iodine* remains nominally unchanged at 7½d., prices of *Iodides* and *Iodoform* being also still unaltered. Of course, however, business in some is restricted to covering from hand-to-mouth requirements.

MENTHOL—Rather firmer at 7s. 6d. to 7s. 9d. per lb., according to quantity and brand.

MERCURIALS.—Unchanged at 2s. 2d. to 2s. 5d. per lb. for *corrosive sublimate*, and 2s. 6d. to 2s. 9d. per lb. for *Calomel*; other salts in proportion.

MORPHIA—Is quiet at nominally still unchanged prices, say 4s. 3d. to 4s. 6d. per oz. for the Hydrochlorate Powder. Should, however, the movement which has made itself felt in Opium be maintained, Morphia will no doubt advance in proportion.

OILS (ESSENTIAL).—*Clove* dearer at 2s. 6d. per lb. for English, and there appears every probability of a further advance. *Peppermint*: *H.G.H.* is firmer, but unchanged at 5s. 6d. to 5s. 9d. per lb. on the spot; *Japan*, 40 per cent., 4s. 3d. per lb. on the spot; and *dementholised*, same position, 3s. 3d. per lb. *Star Aniseed* quiet at 7s. 6d. per lb. *Cassia* steadier for arrival at 4s. 7d. per lb. *c.i.f.* for 70 to 75 per cent. *Citronella* unchanged at 1s. 3½d. per lb. *Lemon-grass* is quiet, with nominal quotations only. *Cajaputa* steady at 4s. 3d. to 4s. 6d. per bottle, according to brand and quantity.

OILS (FIXED) AND SPIRITS.—*Linseed* dearer since last week, but the market closes quieter in tone; on the spot pipes, £15 12s. 6d.; barrels, £16 2s. 6d. *Rape* firm and rather dearer at £23 10s. for ordinary brown on the spot, and £24 15s. for refined, same position. *Cotton* steady; crude London spot, £12 15s.; refined spot, £14 10s. *Olive* Spanish, £32; Levant, £31 10s. to £32. *Cocoanut*: Forward positions are very firm. On the spot, Ceylon is quoted £22 10s., Cochin, spot, £28. *Palm*: Lagos, on spot, £23 10s. *Turpentine* very firm, but unchanged. American, spot, 24s. 3d. per cwt. *Petroleum Oil* continues dull. Russian, spot, 4¼d. per gallon; American, spot, 4½d. per gallon; water-white, 5¾d. per gallon. *Petroleum Spirit*: American, 5½d. per gallon; deodorised, 6d. per gallon.

OPIUM.—After being very quiet all the week an advance was telegraphed last night from Smyrna; prices there, and here also in sympathy, being about 6d. per lb. higher for the various kinds. So far, however, not much business has taken place here at the advanced figures.

PHENACETIN.—We hear of offers in quantity at 3s. 8d. per lb. The make is said, however, to be one comparatively unknown upon this market.

PILOCARPINE.—One of the makers is quoting 16s. per oz. for both the *hydrochlorate* and the *nitrate* in 1-oz. lots.

POTASH COMPOUNDS.—*Chlorate* firm at 3½d. to 3¾d. per lb. on the spot. *Iodide* unchanged, but very little doing for fear of a decline. Nominal quotations 9s. 9d. to 10s. 3d. per lb. according to quantity. *Bromide* firm at 1s. 10d. per lb. for quantities less than 1 cwt. *Permanganate* very weak at 70s. per cwt. for large and 65s. per cwt. for small crystals. *Prussiate*: Red crystals, 1s. 2½d. per lb.; powder, 1s. 3d. per lb.; yellow, 6¾d. per lb. for English. *Cyanide*: 98-100 per cent. cake, 1s 2d. to 1s. 3d. per lb. according to quantity. *Oxalate*: Neutral 5d. per lb.

QUICKSILVER—Unchanged. First hands, £7; second hands, £6 19s. 6d. per bottle.

QUININE.—Market remains quiet but steady, makers' prices being still 1s. 1d. per oz. for 1000-oz. lots in bulk, there being few sellers from second hand below this figure; the firm tone of the London bark sales has also imparted a firmer feeling to the quinine market, although, so far, no actual alteration in price has taken place.

SHELLAC.—The market is steady at last week's advance, but closes quiet. On the spot there is a continued good inquiry for *Button*, but only a limited business has been done owing to scarcity of sellers. *Second orange* in slow demand at 68s. per cwt. for fair *TN*. *Garnet* quiet at 73s. for blocky *AC*.

SODA COMPOUNDS.—*Crystals* firm at 55s. to 60s. per ton ex-ship terms. *Caustic*: 70 per cent., white, £7 10s. per ton in large bulk; 60 per cent., £1 per ton less. *Acetate*: Refined white crystals, 14s. to 15s. per cwt.; chomically pure, 35s. to 37s. 6d. per cwt. *Hyposulphite*, 5s. 6d. to 8s. per cwt., according to make and quantity. *Bicarbonate* steady at £7 15s. per ton for the 98 per cent. quality; fully bicarbonated, 18s. 6d. per cwt.

SPICES (VARIOUS).—*Black Pepper*: Only 309 bags Lampong offered in auction and bought in at 3¾d. Privately the market for Singapore has been excited and rates have advanced. Considerable business has been done for arrival at 4 3/32d. up to 4 3/32d. according to position. *White Pepper*: None offered in auction, privately quiet but firm; Penang, April to June steamer, 6⅜d.; Singapore March to May, 7 7/16d. *Chillies*: 36 bags fine bright *Japan* sold at 45s. to 47s., also 12 cases good, without reserve, at 41s. 6d. to 42s. 6d. *Cassia Lignea* is firm at 49s. *Cinnamon chips*: Of 241 bags ordinary coarse *Ceylon* 41 bags sold at 2¾d. *Nutmegs* dull. *Mace* steady; of 17 cases *Penang* only 4 cases sold, good bold, partly wormy, at 2s. 1d. to 2s. 3d. *Pimento*: Only 20 bags offered and bought in at 5d.

SULPHATE OF COPPER—Again dearer at £16 to £17 10s. per ton, according to make and package.

SULPHONAL — Unchanged. The two makers, while insisting that present price shows them a loss, are still accepting orders for limited quantities at 7s. 3d. per lb., both for *crystals* and *powder*.

THYMOL—Is steadier at 6s. 6d. to 7s. per lb., according to quantity.

TURMERIC—Remains quiet, with a small business only, at 19s. per cwt. for *Cochin* finger, and 14s. 6d. for fair *China* ditto. *Bengal* quoted 14s. 9d. to 15s. per cwt.

NEWCASTLE CHEMICAL REPORT.

JANUARY 26, 1898.

Although not very marked, a shade more business is felt to be passing in heavy goods, notably Caustic Soda and Alkali. Spanish inquiries are a shade fuller. Sulphur and Soda Ash are somewhat on the scarce side. Quotations, however, do not change, and run as follow:—Bleaching Powder, £6 5s. to £6 10s. Soda Ash: 52 per cent., £4 5s. Alkali: 52 per cent., £5 5s. Caustic Soda: 70 per cent., £7 10s. to £7 15s. Soda Crystals: 42s. 6d. to 57s. 6d. Sulphur: £5 per ton.

MANCHESTER CHEMICAL REPORT.

JANUARY 26, 1898.

The market here maintains a firm aspect all round. Miscellaneous articles are in several instances higher, especially Sulphate of Ammonia, which continues to advance, and is now quoted £9 10s. per ton on rails, Lancashire, the highest figure known for some time past. An active inquiry prevails for Brown Acetate of Lime, which is said to have advanced a cent per lb. on the other side. No quotations are practically obtainable here, and it is said that £9 has been named for forward delivery, which is startling compared with the £6 10s. per ton of last week. Naphthas are steady, and Pitch is in more enquiry at 16s. per ton *f.a.s.* Manchester Ship canal, a most unremunerative figure indeed. Glycerin is unchanged, but firm. Ironfounders' Plumbago, £14 to £14 10s. per ton, according to quality, delivered Manchester. Peroxide of Manganese, £12 15s. to £13 5s., and Battery Manganese, £9 2s. 6d. and £9 10s. Manganese, 95 per cent., £15; 87 per cent, £10; 80 per cent., £8; and 70 per cent., £6, *f.o.b.* Manchester. Yellow Prussiate of Potash unchanged at 7d, Creosote firmer at 2¼d. Aniline Oil and Salt very low, 5¼d. and 5d. respectively. Sulphate of Copper tends upwards at £17 10s. to £18.

LIVERPOOL REPORT.

JANUARY 26, 1898.

During the week a steady tone has pervaded the market, prices have been good, with a general upward tendency, and the sales concluded have been of a more varied character than usual, and of a satisfactory nature. Olive Oils are practically unaltered as regards the stock held here, for the high rates ruling in Spain have almost stopped business in Liverpool, the prices asked being so high. A slight advance is to be observed in the price of Linseed Oil of Liverpool make, but other oils are practically as last week. A lot of Fennel Seed was sold ex-quay, as well as Guinea Grains, Sierra Leone Ginger, and various parcels of African Beeswax. Potashes are very firm just now, and Sulphate of Ammonia has again risen in price.

BEESWAX.—11 packages of Sierra Leone sold at £6 2s. 6d. per cwt., and some 95 lots of Gambia, Dakar, and Bissao Wax sold at £6 10s. per cwt.

BLEACHING POWDER—Is firm at £6 5s. per ton.

CANARYSEED.—Turkish is selling at

25s. 6d. to 27s. per 464 lbs.; 150 bags of medium quality sold at 25s. 6d.

COPPERAS.—High in price, 38s. and 36s. per ton.

COPPER SULPHATE—Is firm at £17 per ton.

CARNAUBA WAX.—Yellow has been selling at 72s. 6d. per cwt., and grey at 41s.

FENNEL SEED.—80 bags ex-quay found purchasers at 16s. 3d. per cwt.

GINGER.—Sierra Leone has been selling steadily, ex-store at 16s. to 17s. per cwt.

GUINEA GRAINS.—A small lot has been disposed of on private terms ex-quay.

GUM.—Some 15 tons of Brazilian Arabic have been sold at fully late rates.

HONEY.—100 barrels Pile 3 Chilian made 23s. 9d. per cwt., and small sales of Pile 1 have been effected at 26s. per cwt.

KOLA NUTS.—2d. per lb. was all that 39 packages of dried would bring.

OILS (FIXED) AND SPIRITS.—*Castor oil* is selling steadily at the well-sustained price of 3⅝d. to 3¾d. per lb. for Calcutta and French. *Olive oil* is very tightly held here, but pretensions of holders limit the sales. Spanish oils are quoted at £33 for Malaga, and £32 to £32 10s. per tun for Seville for shipment, cost, and freight. *Linseed oil* of Liverpool make is now at 16s. 6d. to 17s. per cwt. and very firm. *Cottonseed oil* is quiet at 14s. 9d. to 15s. 6d. per cwt. *Cocoanut oil*: The sale on private terms of 25 tuns, ex-quay, is reported. *Spirit of turpentine* continues firm at 24s. 6d. per cwt., selling freely.

POTASH SALTS.—Potashes are very firm at 20s. per cwt, and selling fairly well. *Pearlashes* are nominal. *Cream of Tartar* offers no inducement to buyers, who are few, at 75s. to 76s. per cwt.

Coming Pharmacy Balls.

THURSDAY, FEBRUARY 3.

CHEMISTS' ASSISTANTS' ASSOCIATION (Cinderella), at the Portman Rooms, Baker Street, London, W. Hon. Sec.: H. H. Robins, 73, Newman Street, W.

WEDNESDAY, FEBRUARY 9.

JUNIOR PHARMACY BALL, at the Portman Rooms, Baker Street, London, W. Hon. Sec.: W. J. Henson, Beulah Hill, London, S.E.

THURSDAY, FEBRUARY 10.

SHEFFIELD PHARMACEUTICAL AND CHEMICAL SOCIETY'S BALL, at the Masonic Hall, Sheffield. Hon. Sec.: J. B. Pater, 265, Fulwood Road, Broomhill, Sheffield.

Football.

METROPOLITAN COLLEGE OF PHARMACY *v.* KENSINGTON RANGERS' RESERVES on Saturday, January 22, at Southfields, Wimbledon Park; resulting in a win for the Metropolitan by 2 goals to *nil*.

THE PHARMACEUTICAL FOOTBALL CLUB will finish the season on March 26, will a match between past and present students of the School of Pharmacy. Mr. A. F. Surfleet, a renowned footballer in his year, will captain the "Old Boys," and take the chair at the smoking concert which is to follow the match.

Publications received.

JAHRESBERICHT ÜBER DIE FORTSCHRITTE DER CHEMIE UND VERWANDTER THEILE ANDERER WISSENSCHAFTEN, begründet von J. LIEBIG und H. KOPP. Herausgegeben von F. Fittica, für 1891. Braunschweig: Druck und Verlag von Friedrich Vieweg und Sohn, 1897.

NOMENCLATURE AND TERMINOLOGY OF ALKALOIDAL SALTS: A Symposium of Authorities. With Tabular Summary by S. W. Williams. Reprint from *Merck's Report*. 28 Pp. New York. 1897. From the Author.

SHOULD PHARMACY AND CHEMISTRY SPEAK THE SAME LANGUAGE? With special reference to the Nomenclature of Alkaloidal Salts. By SEWARD W. WILLIAMS. Reprint from *Merck's Report*. 31 Pp. New York. 1897. From the Author.

L'EUCHININA NELLA MALARIA. By Dr. PIETRO CONTI. 8 Pp. Reprint from 'Gazzetta degli Ospedali e delle Cliniche,' Milano: Francesco Vallardi.

HANDBOOKS OF COMMERCIAL PRODUCTS, No. 10. Imperial Institute series, Indian Section. Adhatoda Vasica. By DAVID HOOPER, F.I.C., F.C.S. Pp. 20. Price 8 annas. Calcutta: Office of the Superintendent of Government Printing, India. 1897. From the Author.

THE AGRICULTURAL LEDGER, 1896, No. 38. Cinnamomum Tamala (Tej-Pat, the Leaves). A Brief Description of the History of Tej-Pat and its Use in Medicine. By the Acting Editor. Calcutta: Government Printing Office. 1896.

THE AGRICULTURAL LEDGER, 1897. No. 6. MYRICA NAGI (KAIPHAL BARK), THE TINCTURAL PROPERTIES OF KAIPHAL BARK, AND AN ANALYSIS OF THE COLOURING PRINCIPLE. By Professor J. J. HUMMEL and Mr. ARTHUR G. PERKIN. With an introduction by Mr. DAVID HOOPER. Calcutta: Government Printing Office. 1897. From the Authors.

ADVERTISEMENTS

(Received too late for Classification).

HIGH-CLASS SHOPS to be Sold or Let. Situate Broadway, Green Lanes, Palmer's Green, facing Cock Tavern. Grand opening for a good Chemist. Apply, W. Holmes, Crescent Estate, Palmer's Green.

WANTED experienced Chemists' TRAVELLERS for England, Scotland, and Ireland, must be first-rate Salesmen, of good standing, long experience, and must have extensive connection. Address with full particulars, CHEMIST, care of Street & Co., 30, Cornhill, E.C.

SURBITON, S.W.—Wanted active and obliging JUNIOR, about 21. Send full particulars and salary required, also carte if convenient. C. LOWE & Co., Chemists, Surbiton.

Diary for the Week.

SATURDAY, JANUARY 29.

PHARMACEUTICAL FOOTBALL CLUB *v.* HON. ARTILLERY CO., at the latter's headquarters at Finsbury. Kick off at 3 p.m.

MONDAY, JANUARY 31.

ROYAL GEOGRAPHICAL SOCIETY.
"Through Somaliland to Lake Rudolf," by H S. H. Cavendish.

TUESDAY, FEBRUARY 1.

BRADFORD AND DISTRICT CHEMISTS' ASSOCIATION.
Lecture by T. H. Pattinson.
ROYAL INSTITUTION, at 3 p.m.
"The Simplest Living Things," by Professor E. Ray Lankester (Lecture III.).

WEDNESDAY, FEBRUARY 2.

NOTTINGHAM AND NOTTS. CHEMISTS' ASSOCIATION, at 8 p.m.
"The Scottish Alps," by W. L. Howie.
Supper at the Albert Hotel at 10 p.m.
PHARMACEUTICAL SOCIETY.
Meeting of Council at 11 a.m.

THURSDAY, FEBRUARY 3.

CHEMICAL SOCIETY, at 8 p.m.
"On the Dissociation of Potassium Platinichloride in Dilute Solution, and the Production of Platinum Monochloride," by E. Sonstadt.
"Effect of the Mono-, Di-, and Tri-Chloracetyl Groups on the Rotatory Power of Methylic and Ethylic Glycerates and Tartrates," by Percy Frankland and Thomas Stewart Patterson.
"The Rotation of Ethylic and Methylic Di-monochloracetyl Tartrates," by Percy Frankland and Andrew Turnbull.
"The Volumetric Estimation of Sodium," by H. J. H. Fenton.
CHEMISTS' ASSISTANTS' ASSOCIATION, at 7.30 p.m.
Cinderella Dance at the Portman Rooms, W.
LINNEAN SOCIETY OF LONDON, at 8 p.m.
"On the Muscular Attachment of the Animal to its Shell in Some Fossil Cephalopoda (Ammonoidea)," by G. C. Crick.
"The Comparative Anatomy of Certain Genera of Cycadaceæ," by W. C. Worsdell.
MIDLAND PHARMACEUTICAL ASSOCIATION, at 8.30 p.m.
Dispensing Difficulties, by Members
ROYAL INSTITUTION, at 3 p.m.
"The Halogen Group of Elements," by Prof. Dewar.

FRIDAY, FEBRUARY 4.

ABERDEEN JUNIOR CHEMISTS' ASSOCIATION, at 9.30 p.m.
"A Matter of Life," by Charles Forbes.
ROYAL INSTITUTION, at 9 p.m.
"Some New Studies in Cathode and Röntgen Radiations," by Alan A. Campbell Swinton.
SCHOOL OF PHARMACY STUDENTS' ASSOCIATION.
"Mountaineering Exploration in the Canadian Rocky Mountains," by Professor Collie.
SHEFFIELD MICROSCOPICAL SOCIETY, at 8 p.m.
"Photo-Micrography as Applied to the Study of Diatoms," by J. Newton Coombe.

EXCHANGE.

OFFERED.

Miscellaneous.

For Immediate Sale.—Watts' 'Dictionary of Chemistry,' vols. I., II, and III.; 'Theoretical Chemistry,' Nernst, translated by C. S. Palmer; 'Outlines of General Chemistry,' Ostwald, translated by J. Walker. Very little used.—"F.," Tavistock, Ranelagh Road, Co. Dublin.

Magic Lanterns, second-hand; triples and biunials; oxyhydrogen microscope; marvellous pamphengos oil; lantern, gives 14-ft. picture; 60,000 slides and effects; 4-in. 4-wick lanterns, 18s. 6d. each, bargains; illustrated list post free, 2d.—Hughes, Brewster House, 82, Mortimer Road, Kingsland, N.

WANTED.

For Cash, old electric lamps and scrap platinum.—P. Rowsell, 14, Walcot Square, Lambeth, S.E.

News in Brief

The Glasgow and West of Scotland Pharmaceutical Association will hold its Annual Supper on Tuesday, February 8, in the Grand Hotel, at 8 p.m. Tickets, 6*s.* 6*d.* each, may be obtained from the Hon. Secretary, Mr. D. Watson, 558, Cathcart Road, Glasgow.

Mr. Walter Temple Cooper's numerous friends and acquaintances will sympathise deeply with him in the great loss he has sustained by the death of his only daughter, Rita Winifred Cooper, on Tuesday last, at his residence, 66, Oxford Street, W. Only on the previous day his wife had presented him with a son, under conditions that gave rise to considerable anxiety, but it is satisfactory to learn that, despite the heavy blow to which reference has been made, no further danger is apprehended.

"The Dentist" is a new and independent monthly journal devoted to the interests of the dental profession. The first number, which is dated January, 1898, comprises interesting notes and researches, ample and impartial reports of societies and meetings, items of news, etc., etc. The subscription is 7*s.* per annum, and the publishers are Messrs. Hampton & Co., 13, Cursitor Street, London, E.C.

Edinburgh District Chemists' Golf Club.—The annual meeting of the club, adjourned from December, was held in the Pharmaceutical Society's house, 36, York Place, Edinburgh, on Tuesday, February 1. Mr. H. D. Alexander, Captain, in the chair. Mr. W. B. Cowie, Treasurer, submitted a highly satisfactory financial statement, showing a good balance in favour of the club. Eight gentlemen were elected members, and thereafter the committee arranged the details of the ensuing season's fixtures.

The Seventeenth Junior Pharmacy Ball will be held at the Portman Rooms, Baker Street, W., on Wednesday, February 9. The President of the Pharmaceutical Society—Mr. Walter Hills—the late President, Mr. Michael Carteighe — Mr. Arthur L. Savory, Mr. Richard Bremridge, and other prominent gentlemen have promised their support on this occasion. Music will be provided by Mr. Mortlake Mann's Orchestral Band, and the first dance will commence precisely at 9 p.m. The Hon. Secretary, Mr. W. J. Henson, Beulah Hill, S.E., intimates that he has a few tickets left that have been returned owing to illness, and those may be had on application to him.

The Sanitary Institute.—The twenty-fifth London Course of Lectures and Demonstrations for Sanitary Officers will be given in the Parkes Museum, Margaret Street, W., on Mondays and Thursdays at 8 p.m., commencing on February 21. The various subjects will be dealt with in a course of seventeen lectures, given by well-known authorities, and will be illustrated with diagrams, drawings, models, and lantern slides. The lectures will include the subjects scheduled for the examinations of the Institute.

Mr. G. H. Wilkinson writes to ask if any reader can favour him, through the Journal, with the present address of T. Edwards & Co., Opticians, late of Finsbury Pavement, London.

Bradford and District Chemists' Association.—Owing to the indisposition of Mr. T. Pattinson (who is suffering from a severe attack of influenza), the lecture which that gentleman should have given before the members of the Association on Tuesday last, February 1, at the Great Northern Hotel was postponed. The council, however, arranged a musical evening, at which there was a capital attendance. Mr. Dunn, the President, occupied the chair. Before the proceedings commenced the Secretary was requested to convey the sympathy of the members of the Association to Mr. Pattinson, expressing the hope that he would soon be restored to health. The programme, which was a varied one, was taken part in by Mesdames Mitchell and Moulson, and Messrs. Mitchell, Moulson, Severs, Hanson, H. Taylor, and C. McKee, and a very enjoyable evening was spent.—Mr. Dunn made special reference to Mr. Howie's lecture, entitled "The Scottish Alps," which is to be given on Monday next, Feb. 7, in the Mechanics Institute.—It was also stated by Mr. Waddington that the tickets were in brisk demand, over 200 having been disposed of.—On the motion of Mr. J. M. Newbould, a hearty vote of thanks was accorded to the ladies and visitors, which was ably seconded by Mr. F. K. Tayler. —Mr. R. W. Silson humorously responded on behalf of the ladies.

Business Changes.

Mr. S. W. Ord has joined the firm of Messrs. J. Lloyd Bullock and Co., pharmaceutical chemists, 3, Hanover Street, London, W. He has been manager of the firm for the last thirteen years, and we are pleased to learn that arrangements have now been completed which will interest him still more closely in the firm's business.

Mr. James Lees has disposed of his business at 88, High Street, Lees, and will now have only one address, namely, 110, Lees Road, Oldham.

Mr. Thomas Wade has purchased from Mr. J. Lees the business at 88, High Street, Lees, near Oldham.

Mr. Robert Leslie, Ph. C., M.P.S., has purchased the business that he has managed for the past two years at 627, George Street, Aberdeen.

New Ideas & Trade Notes

COD-LIVER OIL.

Messrs. Parke, Davis & Company send a brochure issued by them descriptive of the cod-liver oil industry in Norway, entitled "The Lofoten Islands and their Principal Product." A very interesting account is given of the "Land of the Midnight Sun," its inhabitants, and the fishing industry, whilst the booklet is profusely illustrated with scenes connected with the fishery. There is also a series of coloured pictures showing the appearance of healthy and diseased cod-livers.

THE SANITAS COMPANY, LIMITED,

This firm sends an advance copy of the third edition of a book, entitled 'How to Disinfect,' in which many improvements have been made and micro-photographs given of various disease germs. The publication gives, in a handy form, numerous useful hints for practical disinfection during cases of infectious illness and in every-day life. At a board meeting of the directors of the Sanitas Company, held on Friday, January 28, it was resolved to recommend the payment of a final dividend of 1*s.* and a bonus of 9*d.* per share, bringing up the total distribution for the year to $13\frac{3}{4}$ per cent. on the fully paid shares numbered from 1 to 50,000, and a final dividend and bonus of 1*s.* $2\frac{1}{2}d.$ (in all) on the shares numbered 50,001 to 60,000. The annual general meeting will be called for Wednesday, February 23.

VIMBOS SHOW-CARD.

The Vimbos Company are issuing as a show-card a very fine reproduction of Madame Brès' beautiful picture, "The Battle of Flowers." It will be remembered by those who visited the Paris Salon a year back that this exquisite work was awarded the gold medal. The picture was also exhibited last summer at Messrs. Graves' Gallery in Pall Mall at an exhibition of this artist's works, and was purchased by the Vimbos Company for a considerable sum. The reproduction of this delicate work has been very successful.

DATURA ASTHMA CURE.

Messrs. Potter & Clarke are issuing a new coloured show-card and a pamphlet in connection with their Datura Asthma Cure. Copies can be obtained by chemists on application to the firm.

Football.

Metropolitan College of Pharmacy *v.* Westminster College of Pharmacy, on Saturday, January 29, at Hyde Farm, Balham, resulting in a win for the Metropolitans by 5 goals to 1.

Pharmaceutical Football Club *v.* Hon. Artillery Company.—The return match between these teams was played on Saturday last at Finsbury, and resulted in a draw of two goals each.

Market Report and Prices Current

Specially compiled for the Pharmaceutical Journal

The quotations here given are in all cases the lowest cash prices for bulk quantities, and often the articles quoted have to be sorted in order to suit the requirements of the retail pharmacist. The cost of freightage from the chemical and drug works to the various distributing centres must also be considered. It is important that these conditions should be borne in mind in making any comparison between the prices quoted and those of the wholesale drug trade.

LONDON REPORT.

February 3, 1898.

Business has been somewhat disappointing during the past few days, while the changes which have taken place are quite unimportant. Quinine is steady and rather firmer. Same can be said of Cocaine. Cream of Tartar firm. Acid Tartaric and Citric quiet. Opium firm with an upward tendency. Ipecacuanha higher and very firm. Cardamoms steady. Senna in good demand for Tinnivelly, while Alexandrian is neglected. Iodine and Iodides so far still unchanged. Bromides steady. Borax and Acid Boracic quiet. Acid Carbolic dull. Morphia and Codeia steady. Cod-Liver Oil and Glycerin dull. Phenacetin and Acetanilid weak, Sulphonal unchanged. Lithia, Bismuth, Quicksilver, and Mercurials in steady demand at unaltered prices. The following are the ruling quotations for articles of chief interest :—

Acetanilid.—Is weak at 1s. to 1s. 1d. per lb. for quantity.

Acid Boracic—Quiet at 24s. per cwt. for *crystals*, and 25s. per cwt. for *powder* in large bulk.

Acid Carbolic—Is quiet at 6⅞d. to 7d. per lb. for 35-36° C. *ice crystal* in 2½ cwt. drums and overcasks. *Crude* 60° F., 2s. per gallon ; 75° F., 2s. 5d. *Liquid* 95 per cent. of pale straw colour, 1s. 1d. to 1s. 2d. per gallon, according to quantity, In 40 gallon casks.

Acid Citric—Continues dull, and quotations are nominal at 12½d. to 1s. 1d. per lb. for English *crystals*.

Acid Tartaric—Quiet; English, on the spot, 12¾d. to 1s. 1d. per lb. ; foreign, 12½d. to 12¾d. per. lb.

Ammonia Compounds.—*Sulphate* is steady, but no further advance has taken place on last week's price of £10 5s. per ton for gray prompt 24 per cent. London. *Sal ammoniac* is dearer at 35s. per cwt. for sublimed firsts and 33s. per cwt. for seconds. *Bromide* quiet but steady at 2s. 2d. per lb. *Iodide* dull at 14s. 6d. per lb. *Nitrate* steady at 40s. per cwt. *Chloride* firm at 26s. to 26s. 6d. per cwt. for the 98 per cent. free from metals and 33s. per cwt. for chemically pure small crystals.

Atropine—Firm at 12s. 4d. per lb. for the P.B. quality in 75 oz. lots and bulk packing.

Bismuth.—Unchanged at 5s. per lb. for the *metal* and 4s. 10d. for the *subnitrate* in 5-cwt. lots.

Bleaching Powder — Unchanged at £7 5s. per ton on the spot.

Borax—Is unchanged at last week's quotation of 14s. per cwt. for *crystals*, and 14s. 6d. per cwt. for *powder*.

Bromine and Bromides—Firm at unchanged prices, say 1s. 9d. per lb. for *Potass. bromide* in 10-cwt. lots.

Camphor.—*Crude* remains quiet, but prices from Japan come dearer at 94s. for January-March steamer. *China* 88s. per cwt. *c.i.f.*

Cloves.—Privately *Zanzibar* have continued in active demand at advancing prices. Sales comprise spot at 4⅛d. to 4⅛d. ; March to May delivery, 4⅛d. ; April to June, 4⅛d. ; June to August, 4¼d. In auction 10 bales good bright *Zanzibar* sold at 4½d. ; also 10 cases ordinary dark *Penang* at 5¼d.

Coal Tar Distillation Products.—*Toluol* : 1s. 11d. per gallon *Benzo'e* : 50 per cent., 1s. 7d. ; 90 per cent., 1s. 5d. *Crude Naphtha* : 10d. *Solvent Naphtha* : 95 per cent. at 160° C., 1s. 11d. per gallon.

Cocoa Butter.—In the monthly auctions on Tuesday 500 cases (50 tons) Cadbury's sold at 9¼d. to 9⅝d., the average being 9½d. per lb., against 9⅞d. per lb. in January, and 10½d. per lb. in December auctions.

Cocaine.—Makers' price remains 10s. 3d. to 10s. 9d. per lb., the latter figure being the nominal price of the brand most generally in favour, the manufacturers of which are, however, sold out, and are obliged to decline orders. The quantity available from second-hand would appear to be decidedly reduced, while the price of the *crude* is said to be firm, which would point to the probability of the continuance of a firm market for the article.

Codeia—Is firm at 11s. 3d. to 11s. 6d. per oz., according to quantity.

Cod-Liver Oil—Remains very quiet at nominally unchanged figures, nearest price for quantity being 62s. 6d. per barrel for best non-congealing *Norwegian* in tin-lined barrels.

Cream of Tartar—Continues firm at 75s. 6d. per cwt. for first white French *crystals* on the spot, and 78s. to 79s. per cwt. for *powder*.

Ginger.—*Cochin* continues flat. Of 774 bags offered only 126 bags low shrivelled ends sold at 12s., the remainder bought in, washed rough at 23s. to 26s., brown rough 29s. Also 22 cases small limed part cut at 35s. 170 bags limed *Japan* bought in at 14s. 6d. to 15s. Of *Jamaica*, 100 barrels good washed sold at 99s.

Glycerin.—The continued mild weather has not helped demand, and the article is quiet at 52s. 6d. to 55s., according to brand, for best German makes of chemically pure, white, double distilled, 1·260° quality, in tins and cases. *English* being offered slightly below these figures.

Iodine and Iodides.—So far the expected break in prices has not taken place, *Iodine* being still quoted 7½d. per oz. and *Potass. Iodide* 9s. 9d. per lb. in 2-cwt. lots. Other *Iodides* in proportion.

Lithia.—Firm at 10s. 8d. for the *Carbonate* in 2-cwt. lots.

Mecurials.—Are unchanged at 2s. 2d. for *Corrosive sublimate*, and 2s. 6d. for *Calomel* in 5-cwt. lots.

Morphia.—Market remains very steady in face of the firmness of *Opium*, and a fair business has been done at unchanged prices, viz., 4s. 3d. to 4s. 6d. per oz. for the *Hydrochlorate powder*.

Oil Cloves—Has been advanced again in consequence of the rapid rise in Zanzibar cloves. Quotations for English drawn oil range now from 2s. 9d. to 2s. 10d. per lb., according to quantity.

Oils (Fixed) and Spirits.—*Linseed* : The market is lower and closes quiet at £15 10s. for pipes on the spot ; barrels, £16. *Rape* : Dull and lower ; ordinary brown on the spot, £22 15s. ; refined, £24 5s. *Cotton* rather easier ; crude London spot, £12 12s. 6d. ; refined, £14 10s. *Olive* : Spanish and Levant, £33. *Cocoa-nut* : Ceylon on the spot, £22 10s. ; Cochin, £28. *Palm* unchanged at £23 10s. for Lagos on the spot. *Turpentine* quiet ; American spot, 24s. 3d. per cwt. *Petroleum Oil* dull ; Russian spot, 4¼d. per gallon ; American, 4½d. per gallon ; water white, 5¼d. per lb. *Petroleum Spirit* : American, 5½d. per gallon.

Opium.—Market has been fairly active for *druggists* and *manufacturing* kinds at 9s. to 10s. 6d. per lb. for the former, and 8s. 9d. to 9s. 3d. for the latter, a report having been current that the autumn sowings had been seriously damaged, if not destroyed, by frost, while the spring sowings are also stated to have suffered. Should this report be confirmed, it will no doubt mean a further considerable advance in value of the article in view of the fact that prices are still very moderate, while stocks are by no means excessive. Of course, the possible absence of demand from America must not be overlooked, as this is a by no means unimportant factor in the matter. For *soft shipping* the demand remains restricted, prices being nominally 10s. 6d. to 12s. 6d. per lb. *Persian* is quiet at unchanged rates, say 10s. to 11s. per lb.

Phenacetin.—The pressure to sell on part of manufacturers continues, and for really large quantity it would be possible to buy below 4s. per lb. for both *crystals* and *powder*.

Pilocarpine.—Makers now decline to sell below 18s. 6d. per oz. for both the *Hydrochlorate* and the *Nitrate*.

Potash Compounds.—*Chlorate* quiet and rather easier at 3½d. per lb. on the spot. *Iodide* quiet with a hand to mouth business at 9s. 9d. to 10s. 3d. per lb., according to quantity. *Bromide* firm at 1s. 10d. per lb. for quantities less than 1 cwt. *Permanganate* weak at 70s. per cwt. for large and 65s. per cwt. for small crystals. *Cyanide* : 1s 2d. to 1s. 3d. per lb. for the 98-100 per cent. cake. *Prussiate* unchanged at 6¾d. per lb. for *yellow* and 1s. 2½d. per lb. for *red* on the spot. *Oxalate* : Neutral 5d. per lb.

Quicksilver.—The market is quiet but firm at £7 per bottle from first hands, whilst second hands offer at 6d. per bottle less.

Quinine.—Market is quiet, but firm, people appearing to be like Mr. Micawber, "waiting for something to turn up." Manufacturers still quote 1s. 1d. per oz. in

1000-oz. lots for best German brands, but are apparently not free sellers at this price. It is stated that large speculative purchases have been made at this figure from second hand, from which it would appear that some people believe in the possibility of an advance in value of the article in the not too-remote future. Everything depends, however, upon the course of prices for *Bark*. One thing would appear certain, viz. : that an advance in value of Quinine is more probable than a decline.

Resin Scammony—Is easier at 6s. 3d. per lb., in consequence of the increasing supplies of roots and the slightly lower rates obtainable for same.

Santonine—Is steady at 4s. 5¼d. per lb. for 3-cwt. lots in original cases. In view of the reduced price buyers can hardly be wrong in securing a fair stock, especially as an advance to something like former figures would appear to be only a question of time.

Shellac.—At the fortnightly sales on Tuesday good supplies were catalogued, but a dull tone prevailed throughout. Holders on the whole were firm and as buyers declined to operate unless at a reduction only one-fourth of the whole passed the hammer at a reduction of 2s. per cwt. on the previous sales. A total of 1522 cases offered and 373 cases sold. *Fine Orange* : One case fine pale G, in double-triangle sold at 88s. *Second Orange* : Of 983 cases 263 cases sold, good bright at 71s., fair bright red flat at 66s. to 67s., fair bright little matted at 66s., fair flat red at 65s., reddish curly matted at 64s., bronzy reddish free at 63s. to 64s., shivered reddish at 63s., free livery at 62s., dark red cakey at 60s. *Garnet* : 90 cases offered and bought in, fine free flat *AC* at 77s., blocky *AC* at 72s., and common hard block *OCC* at 61s. *Button* : Of 448 cases 109 sold, good pale cakey A1 at 75s., palish hard block at 70s., ordinary blocky 1 at 65s., pure stamped No. 2 at 82s., ordinary to fair No. 2 at 70s. to 74s., blocky ditto 65s., flint block ditto 60s., circle 4's common at 36s. to 39s.

Soda Compounds.—*Crystals* steady at 55s. to 60s. per ton ex-ship terms. *Bicarbonate* firm at £7 15s. per ton for 98 per cent. and 18s. 6d. per cwt. for the fully bicarbonated. *Caustic* quiet at £7 10s. per ton for 70 per cent. and £6 10s. for the 60 per cent. *Acetate* : The pure has been reduced to 30s. per cwt. *Hyposulphite* : 5s. 6d. to 8s. per cwt. according to brand.

Spices (Various).—*Black Pepper* : 378 bags Penang bought in at 5d. ; 16 bags damaged Singapore sold at 3⅞d. ; 228 bags Wynaad mostly sold at 4d. to 4⅛d. *White Pepper* : 130 bags fine Singapore sold at 7¾d. to 8d. ; also 40 cases very fine bold bright in at 8⅝d. to 9⅛d. *Chillies* : 7 cases fine Japan sold at 45s. 6d. *Capsicums* : 32 bales brownish *E.I.* bought in at 25s., also 3 bags *Natal* at 75s. *Cassia Lignea* : Quiet at about 49s. *Cinnamon chips* : 100 bags ordinary Ceylon bought in at 3d. ; 19 bags quillings sold at 8½d. to 8¾d. *Mace* : Penang bought in at 1s. 6d. to 1s. 8d. ; 8 packages West India sold at 1s. 4d. to 1s. 6d. *Pimento* : Of 296 bags offered, 23 bags sold at 4⅞d. to 5d.

Sulphate of Copper.—Whilst unchanged from last week's quotations of £16 to £17 10s. per ton, according to brand, the market has been very quiet.

Sulphonal.—Both makers hint at the probability of a decided advance in price of this article ere long, reiterating that at present figure they are actually losing money on what they sell. They are, however, still accepting orders for limited quantities at 7s. 3d. per lb.

To-day's drug auctions passed off somewhat quietly, a number of the lots having been bought in. Cardamoms and Tinnevelly Senna sold fairly well, while Ipecacuanha was very firm, and again higher in price. The following are some of the particulars :—

Aloes.—12 cases *Cape* bought in at 24s. for good hard bright, good livery *Curacoa* at 32s. 6d. to 35s., dark at 26s., dark ditto in gourds at 25s. per cwt., 55 boxes dark livery selling cheaply at 14s. to 15s. per cwt.

Areca Nuts.—10 bags fair quality sold at 17s. 6d. per cwt.

Argol.—1 bag *Cape* held for 45s. per cwt.

Buchu Leaves.—3 bales good green rounds sold at 5½d. per lb.

Camphor Oil.—13 cases black held for 4½d. per lb. 10 cases white *Japan* refined bought in at 30s. per cwt.

Cardamoms. — Nearly 300 cases were offered, the bulk selling at steady to rather dearer prices. 4s. 3d. per lb. was paid for very fine bold pale *Ceylon-Mysore*, 3s. 11d. per lb. for same character but rather less bold, and 3s. 6d. to 3s. 7d. per lb. for medium size. Brownish *Malabars* realised 2s. 8d. per lb., while fair bold pale plump *Malabar* character sold at 3s. 8d. per lb., second size at 3s. 4d. to 3s. 5d. per lb., decorticated slightly easier at 3s. 2d. to 3s. 4d. per lb.

Cascarilla Bark.—Medium to fair quality sold at 35s. per cwt., balance being held for higher prices up to 52s. 6d. for good quality.

Cascara Sagrada.—42 bales were taken out at the fancy price of 32s. per cwt., 20 bales good quality being also bought in at 24s.

Castor Oil.—Yellow *Calcutta* held for 3¾., *French* for 3½d. per lb.

China Soy.—50 casks were held for 1s. per gallon.

Cinchona Bark.—Fair *Crown* bark sold at 8½d. down to 4½d. for damaged ; balance held for 9d. to 1s. per lb., 6 serons *Loxa*, containing also some *Huanuco*, at 1s. 3d. 8 packages *Red* bark sold at 1s. 6d. to 3s. 6d. per lb., down to 6d. for inferior and damaged. *Carthagena* held for 6d., low damaged selling at 1d. per lb.

Civet.—2 horns good fair quality bought in at 15s. per oz.

Coca Leaves.—39 bales fair *Truxillo* part rather brownish held for 6½d. to 8d. per lb.

Cod-Liver Oil.—19 casks fair *Norwegian* bought in at 70s.

Colocynth.—Two cases broken *Spanish* sold cheaply without reserve at 4½d. per lb. 9 cases fair *Turkey* apple held for 1s. 2d. per lb.

Cuscus Root.—95 bales of heavy held at 5s. per cwt.

Dragon's Blood.—2 cases in reed, well packed but rather dull, are held for £9 per cwt., at which the rest of the parcel had been sold previously. 4 cases dull seedy lump held for £6 10s. per cwt., and 1 case block mixed in quality was taken out at £6 10s. per cwt.

Ergot of Rye.—Good sound fairly bold *Russian* held for 10½d. per lb. ; 10 cases very weevilly *Spanish* bought in at 8½d.

Fennel Seed.—10 bags bought in at 16s. per cwt.

Gum Arabic.—2 cases good grain taken out at £6 10s., 2 cases pale ditto at £6 15s., bold yellow picked pea-size to bold at £10 10s., ditto rather smaller at £7 ; good *Turkey* sorts at 82s. 6d. per cwt.

Gum Benjamin.—Of 168 cases very fine seconds *Sumatra* realised £11 ; ditto, good, £9 12s. 6d. to £9 15s. ; good ditto but slightly brown at corners, nice centres but part false packed, £7 to £7 10s., rather lower quality fetching £6 to £6 15s. Common bought in at 60s. Glassy *Palembang* held for 60s. per lb.

Gum Guaiacum.—One cask fair block sold at 11d. per lb.

Gum Kino.—2 cases rather blocky *Australian* held for 5s. per lb. ; 3 cases *African* taken out at 4s. 6d.

Gum Myrrh.—5 casks good pale, rather small, bought in at 76s. ; low siftings sold at 15s. per cwt.

Gum Sandrac.—11 casks were bought in at 65s. per cwt.

Honey.—Of 169 cases *Honolulu*, part sold at 24s. per cwt., remainder being bought in at 26s., fair white set *Italian* at 40s.

Ignatius Beans.—93 bags fair, part rather small, bought in at 4d. per lb.

Ipecacuanha—Is held for long prices, and many buyers are holding off. Fair thin *Rio*, slightly damaged, sold at 7s. 10d. to 8s. per lb., whilst really good root was held for 8s. 3d. to 8s. 6d. per lb. *Carthagena* quality held for 6s. 6d. to 7s. per lb., a decided advance on last sales.

Kamala.—2 cases low dull quality taken out at 3d. per lb.

Lime Juice.—83 casks *New Zealand* all bought in at 10d. per gallon. 7 puncheons *West Indian* sold at 10d., and 4 puncheons at 9¾d.

Liquorice Root.—10 bales rough decorticated *Russian* bought in at 35s. per cwt.

Musk.—Good old-fashioned *Tonquin* small to bold dampish, fine flavoured, held for 62s. 6d. per oz. ; ditto Pile 3 rather damp for 27s. ; 1 tin thin skinned grey, fairly dry, part broken, for 70s. ; 1 tin ditto, doubtful and damp, a few pasty, for 35s. ; 1 tin low grain, for 12s. 6d. per oz.

Oils (Essential).—10 cases *Cajeputa* held for 4s. per bottle ; 5 cases of *Cinnamon* bought in at 4¼d. per oz. ; 5 cases good *Portuguese Eucalyptus* taken out at 2s. 6d. per lb. ; *Globulus* held for same price, fair commercial selling without reserve at 10d. to 10½d. *Peppermint Eucalyptus* held for 1s. 8d. per lb. 15 cases *Lemongrass* held for 10d. per oz. 10 cases *H.G.H. Peppermint* 5s. 6d. per lb.

Orange Peel.—Good new thin cut was held for 10d., rather dark ditto for 9½d. per lb.

Orris Root.—20 bags fair *Verona* were taken out at 30s., and 25 bags medium *Florentine* at 37s. per cwt.

Patchouli Leaves.—34 bales, all more or

less country damaged and mixed with sand, were taken out, 3½d. to 4d. being the price which would probably have been accepted.

Pistachio Nuts.—2 cases fair Syrian were taken out at 1s. 4d. per lb.

Rhubarb.—Good medium high dried held for 1s. 1d. per lb., dull ditto, with very little colour selling at 10d.; round horny ditto held for 9d.: good rough round *Shensi* for 2s. 2d. to 2s. 4d; rough medium ditto for 1s. 3d. to 1s. 4d. per lb.

Saffron.—55 tins *Valencia* bought in at 30s. per lb.

Sarsaparilla.—7 bales fair *Jamacia*, 6 sold at 1s. 6d. to 1s. 8d., 4 bags fair native ditto at 1s., 2 bales good *Guayaquil* at 1s. 3d., 3 bags coarse *Lima* bought in at 1s. 2d., 1 seron low *Honduras* at 1s. 2d., fair ditto at 1s. 10d. per lb.

Seneka Root.—12 bales very chumpy held for 1s. 3d. per lb., 4 bales selling cheaply without reserve at 1s.

Senna.—Rather more than 250 bales *Tinnevelly* were offered, but the quality was very poor, yet it was all bought up, with good competition at dearer rates. Low, small, discoloured leaves realised 1¼d. to 2d. per lb., whilst 2¼d. to 3d. was paid for medium quality. Fair boldish sold at 4¼d. per lb.; pods, 1½d. per lb. *Alexandrian* remains very dull, and no fine leaf was offered.

Squills.—29 bags held for 2½d. for fair and 1¼d. per lb. for dark.

Strophanthus Seed.—3 bags fair *Kombé* bought in at 3s. 2d. per lb.

Tamarinds.—64 barrels *West Indian* rather dry sold cheaply without reserve at 4s. 9d. to 5s. per cwt., fair *ditto* being held for 8s.

Tonquin Beans.—5 cases frosted *Para* sold cheaply at 1s. per lb., subject, however, to owner's approval.

Vanilla.—About 200 tons were offered. Of the Mauritius and Seychelles varieties the bulk sold at about steady rates, but for *Tahiti* there was very little demand, buyers expecting to do better by waiting.

Vermillion.—9 cases *Chinese*, unworked, bought in at 2s. 1d. per lb.

Wax.—4 bags good *Australian* realised £6 5s. to £6 12s. 6d. 15 cases *East Indian* held for £7. Fair *Zanzibar* sold at £6 5s. down to £5 12s. 6d. per cwt. for medium. Dark *Carnauba* held for 40s. per cwt.

NEWCASTLE CHEMICAL REPORT.

February 2, 1898.

A quiet tone continues on this market for all classes of heavy goods. Soda Crystals and Caustic Soda are more dealt in, but only for inland use. Prices unchanged as follow:—Alkali: 52 per cent., £5 5s. Caustic Soda: 70 per cent., £7 10s. to £7 15s. Soda Crystals: 42s. 6d. to 57s. 6d., according to markets. Sulphur: £5. Soda Ash: 52 per cent., £4 5s. Bleaching Powder, £6 5s. to £6 15s. per ton.

MANCHESTER CHEMICAL REPORT.

February 2, 1898.

Inquiries on 'Change show that Alkalies continue firm, especially Ammonia Alkali and Bleaching Powder. Bichromates tend lower owing to the continuance of competition amongst the makers. In other respects various articles are in fair report, especially Sulphate of Copper, which is in active demand for the Continent. Locally the price varies from £17 10s. to £18 for best brands delivered in Manchester district. Brown Acetate of Lime is unchanged at £6 10s. per ton, and there is no confirmation of the rumours of a large advance in American. Pitch has gone up to 18s. per ton, *f.a.s.*, Manchester Ship Canal, and Coal Tar Products generally are fairly steady. Yellow Prussiate still firm at 7d. Acetates of Lead in somewhat better demand. Green Copperas steady.

LIVERPOOL REPORT.

February 2, 1898.

Ammonium Salts.—*Carbonate*: 3d. per lb. *Sal ammoniac*: 31s. and 33s. per cwt. *Sulphate* is dearer, £10 5s. per ton.

Beeswax.—18 packages of Gambia sold at £6 12s. 6d. per cwt.

Bleaching Powder—Is unchanged at £6 5s. per ton.

Canaryseed—Is quiet at 25s. 6d. to 26s. 6d. per 464 lbs. for Turkish, but no sales are reported.

Copperas—Is very firm at 36s. and 38s. per ton for Welsh and Lancashire respectively.

Copper Sulphate—Is easier in price at £16 10s. to £16 15s. per ton.

Kola Nuts.—Lots of 35 and 23 packages and 1 ton respectively, dried, sold for 2d. per lb.

Linseed—Continues scarce. 200 tons Calcutta near at hand sold for 37s. 9d. per 416 lbs., and 800 bags Turkish at 36s. 6d. to 40s. per 416 lbs.

Oils (Fixed) and Spirits.—*Castor oil* is in fair demand at 3⅝d. per lb. for Calcutta "good seconds" and French 1st pressure. *Olive oil* is quoted at £34 5s. to £34 10s. per tun for Candia, and £34 for Spanish. *Linseed oil* is steady at 16s. 6d. to 17s. per cwt. *Cottonseel oil*, Liverpool refined, is quiet at 14s. 9d. to 15s. 6d. per cwt. *Spirits of Turpentine* is firmly held for 24s. 9d. per cwt.

Soda Salts.—*Bicarbonate*: £6 15s. per ton. *Borax* is firmer at £13 5s. per ton. *Crystals* are dearer at £2 17s. 6d. per ton. *Caustic*: 76 to 77 per cent., £8 15s. per ton; 70 per cent., £7 5s. per ton. *Nitrate*: 7s. 6d. to 7s. 9d. per cwt.

PARTNERSHIPS DISSOLVED.

(From the London Gazette.)

W. H. Brodie and Wm. Escombe, Physicians, etc., carrying on business at Robertsbridge and Battle, Sussex. Debts will be received and paid by W. H. Brodie, who will continue the business.

George Walker and Charles Troke (trading as Walker, Troke & Co.), Wholesale Druggists, 2, Bath Street, City Road, E.C.

RECEIVING ORDER IN BANKRUPTCY.

(From the London Gazette.)

John Kelsey, Herbalist and Drug Vendor, The Drug Stores, Doncaster Road, Stairfoot, near Barnsley, Yorks.

William H. G. Wilkes, Surgeon, carrying on business at 256, Broad Street, and residing at 363, Dudley Road, Birmingham.

John A. Priestley, Chemist and Druggist, 25, Liverpool Road, Stoke-on-Trent.

DIARY FOR THE WEEK.

Saturday, February 5.

Pharmaceutical Football Club v. Metropolitan College of Pharmacy, at Wormholt Farm, Shepherd's Bush. Kick-off at 3.

Monday, February 7.

Bradford and District Chemists' Association.
"The Scottish Alps" (illustrated), by W. L. Howie (Mechanics' Institute).

Society of Chemical Industry, at 8 p.m.

Tuesday, February 8.

Pharmaceutical Society, at 8 p.m.
"Bacteriology for Pharmacists," by Leo Atkinson.

Glasgow and West of Scotland Pharmaceutical Association, at 8 p.m.
Annual Supper. (Grand Hotel.)

Royal Institution, at 3 p.m.
"The Simplest Living Things," by Professor E. Ray Lankester (Lecture IV.).

Wednesday, February 9.

Brighton Junior Association of Pharmacy, at 8 p.m.
"The Pharmacy Stakes: A Straight Tip!" by A. T. Jeeves.

Junior Chemists' Ball, at the Portman Rooms, Baker Street, W.

Manchester Pharmaceutical Association, at 7.30 p.m.
Paper by Mr. Grier. (Victoria Hotel.)

Midland Chemists' Assistants' Association, at 9.15.
Musical and Social Evening.

Newcastle-on-Tyne and District Chemists' Association, at 8 p.m.
"Tour Through Scotland" (Illustrated), by Robert Davidson. (Church Institute.)

Sheffield Pharmaceutical and Chemical Society.
"The P.A.T.A.," by J. W. J. Turnor. (37, New Surrey Street.)

Thursday, February 10.

Cambridge Pharmaceutical Society, at 8.45 p.m.
Annual Dinner. (Victoria Assembly Rooms.)

Chemists' Assistants' Association, at 9 p.m.
Short Papers by Members.

Sheffield Pharmaceutical and Chemical Society.
First Annual Ball. (Masonic Hall.)

Friday, February 11.

Aberdeen Junior Chemists' Association, at 9.30 p.m.
Questions and Hat Night.

Edinburgh Chemists', Assistants', and Apprentices' Association, at 9.15 p.m.
Communications by Alex. J. Dey and J. Harris Burns.

EXCHANGE.

OFFERED.

Miscellaneous.

Best Cash offer, 100 ozs. original tin Howard's Quininc.—Endle, Chemist, Boscombe.

Microscopical Slides.—Six dozen sections materia medica, superbly mounted by Rödig, Vienna. In pine cabinet, price £3.—A. J. Callaway, Salisbury.

Magic Lanterns, second-hand; triples and biunials; oxyhydrogen microscope; marvellous pamphengos oil; lantern, gives 14-ft. picture; 60,000 slides and effects; 4-in. 4-wick lanterns, 18s. 6d. each, bargains; illustrated list post free, 2d.—Hughes, Brewster House, 82, Mortimer Road, Kingsland, N.

Shop Fittings.

Complete Fittings of chemist's shop (except bottles), including drawers, counters, shelving, showcases, carboys, etc., to be sold in a few weeks, suitable for branch, £30; detailed list on application.—Morgan, Chemist, Burton-on-Trent.

One 2-gall., two 1½-gall. window carboys and 14 dozen shop-rounds free on rail at Redditch for £4, all packages free; address—Ramsay, Redditch.

WANTED.

For Cash, old electric lamps and scrap platinum.—P. Rowsell, 14, Walcot Square, Lambeth, S.E.

Mr. A. P. Nosworthy, chemist, of Preston Street, Brighton, has opened a branch establishment at Portslade, near Brighton.

The first part of Prof. Dragendorff's work on medicinal plants of all times and peoples has just been published by Messrs. Enke, of Stuttgart.

Mr. E. W. Morris, pharmaceutical chemist, of St. Thomas's Hospital, London, who has just been appointed pharmaceutist to the London Hospital, will carry with him to his new sphere of work a host of good wishes for his future success.

Messrs. Willows, Francis, Butler & Ayscough Thompson had their premises at 101, High Holborn, W.C., burnt out on Thursday morning. We understand, however, that this unfortunate accident will not interfere with the execution of orders by the firm, as arrangements have been made to conduct the business at 78 and 80, York Road, King's Cross, where the firm was preparing to remove shortly. All communications should be sent to the new address. The fire is supposed to have originated in the tincture room.

Davy, Hill's Cricket Club held their Second Annual Dinner on the 5th inst., at the Falstaff Hotel, and the evening was a most enjoyable one. Mr. C. A. Hill took the chair and songs by Messrs. J. T. Alderman, R. F. S. Edward, Arnold Lewis, and others were greatly appreciated. Mr. G. Wallis toasted the "Club" and pointed out that the season of 1897 had been a very successful one; eleven matches having been played with clubs connected with the drug trade—seven were won, three lost, and one was drawn.

A Special Issue of 17,000 Copies of the Journal will be published the week after next, when not less than 17,000 copies will be circulated. Every chemist and druggist throughout Great Britain will have a copy forwarded to him, in addition to many other persons directly interested in the drug and chemical trades. A large number of copies will also be sent to the Colonies and abroad. Communications for this special issue should reach the Editor not later than Tuesday the 22nd inst.

The Seventeenth Junior Pharmacy Ball was held on Wednesday, February 9, at the Portman Rooms, Baker Street, W. Amongst those present were Mr. Walter Hills, President of the Pharmaceutical Society, and Mrs. Hills, Mr. Arthur L. Savory and Mrs. Savory, Messrs. R. Bremridge, W. Warren, W. H. Francis, A. W. Tanner, J. C. Umney, E. W. Lucas, and Morley Taylor. Mr. C. W. Martin efficiently performed the duties of M.C. in the absence of Mr. T. C. W. Martin.—Mr. Walter Hills occupied the chair at supper, and in proposing the toasts of "Success to the Junior Pharmacy Ball" and the "Health of the Ladies," remarked that the Ball, now at the age of "sweet seventeen," was on this occasion a record one, nearly 400 tickets having been given up at the doors. Great credit was due for this gratifying result not only to the present management, but also to the energy of workers in former years, and to the excellent Secretary for the past six years, Mr. H. A. Robinson. Their present Secretary, Mr. H. W. Henson, had worked hard for the success of that night, and he would ask him to reply for the "Junior Pharmacy Ball," whilst he would couple with "The Ladies" the name of Mr. Robinson. It was with great regret that he noticed the absence from amongst them of their genial M.C., Mr. T. C. W. Martin.—The toasts of "The Ladies" and the "Junior Pharmacy Ball" were most enthusiastically received, the latter being followed by prolonged cheering.—The Hon. Secretary, Mr. H. W. Henson, in reply, acknowledged his indebtedness to the hard-working stewards forming the Committee. Their only fault was that they would sell too many tickets, but that was a most gratifying proof of the success and popularity of the ball.—Mr. H. A. Robinson then replied for the ladies.—Dancing was continued until 4 a.m.

The School of Pharmacy Annual Dinner will be held in the Duke's Salon, Holborn Restaurant, on Wednesday next, February 16, and past and present students who have not yet obtained tickets should apply without further delay to the Hon. Sec., Mr. T. Edward Lescher, 17, Bloomsbury Square, W.C. The chair will be taken on this occasion by the Dean of the School, Professor Henry G. Greenish, who will be supported by Mr. Walter Hills, the President of the Pharmaceutical Society, Mr. Michael Carteighe, Professor Collie, Dr. Attfield, Mr. Wm. Martindale, Mr. G. S. Taylor, Mr. Wm. Arkinstall, Mr. W. M. Holmes, and other prominent pharmacists.

The Cambridge Pharmaceutical Association held its annual dinner at the Victoria Assembly Rooms, Cambridge, on Thursday evening last. The event, which passed off most successfully, was attended by Mr. Walter Hills, President of the Pharmaceutical Society, Dr. Paul, Editor of the *Pharmaceutical Journal*, and other visitors, as well as most of the local pharmacists.

In connection with the firm of Messrs. David Thom, Domeier & Co., Limited, of Manchester and London, a list of applications for shares was opened on Tuesday, February 8. The share capital is £180,000, divided into 18,000 6 per cent. cumulative preference shares of £5 each and 18,000 ordinary shares of £5 each. The number of shares issued was 16,000 6 per cent. preference shares at par, and 16,000 of the ordinary shares at par. The balance of the preference and ordinary shares are reserved for future issue as and when found necessary. The vendors to the Company were prepared to take at par one-third of the present issue of ordinary shares as part payment of the purchase price. The preference shares are entitled to a cumulative preferential dividend of 6 per cent. per annum, and rank as regards capital, as well as dividend, in priority to the ordinary shares, but are excluded from sharing in surplus assets. The dividend on the preference shares will be payable on January 1 and July 1 in each year, and will be first due on July 1, 1898. There were no debentures issued.

The Elliman Painting Book, published by Messrs. Elliman, Sons & Co., Slough, England, is intended for the use of boys and girls learning to paint, and contains nine coloured hunting scenes and nine black with white copies of the same to colour. The painting book will not be issued free to the public, but will be supplied wholesale at the rate of threepence per copy for any number, large or small, to be sold to the public at sixpence.

PARTNERSHIPS DISSOLVED.

(From the London Gazette.)

T. Nelson White and Jemima S. Andrews (trading as the Spring Water Co.), 453, Holloway Road, N., so far as regards T. Nelson White.

Robert B. Ferry and Robert Manners (trading as Robert Baily Ferry), Chemists and Druggists, The Claremont Pharmacy, 46A, Coatsworth Road, Gateshead. Debts will be received and paid by Robert B. Ferry.

John Ballardie and Moses Holden (trading as Ballardie, Holden & Co.), Manufacturing Chemists, etc., Clyde Works, Marybone, Liverpool. Debts will be received and paid by John Ballardie, who will continue the business.

Edgar J. Harris and P. H. Parr, Elastie Web Manufacturers, Wellington Street, Leicester. Debts will be received and paid by Edgar J. Harris, who will continue the business.

Francis Knoeferl, Mechanical Engineer, 100, Bolsover Street, Marylebone, W., and John H. Gartrell, Dental Surgeon, 47, Chapel Street, Penzance, carrying on business as Mechanical Engineers at 106, Great Portland Street, W., and 100, Bolsover Street, Marylebone, W., under the style of the Dental Engineering Co. Debts will be received and paid by John H. Gartrell.

James McDougall Tudge and Geo. Severs, Surgeons, 47, Gerrard Street, Soho, W.

Wm. B. Benjafield and James Heath, Surgeons, Edmonton, Middlesex.

RECEIVING ORDERS IN BANKRUPTCY.

(From the London Gazette.)

Wm. L. Aspell (trading as W. L. Aspell & Co.), Box Manufacturer, residing at 10, West Street, Leicester, and carrying on business at Mansfield Street, Leicester.

Charles M. Fegen, Surgeon, Toddington, Bedford, and lately residing at Addington Road, Bow, Middlesex.

Thomas Green, Veterinary Surgeon, etc., Hucknall Torkard, and at Calverton, Notts.

Wm. A. Selvey, Dentist, residing at Osborne Villas, Ombersley Road, Worcester, and carrying on business at 30, The Cross, Worcester, and 24, High Street, Kidderminster.

Market Report and Prices Current

Specially compiled for the Pharmaceutical Journal

The quotations here given are in all cases the lowest cash prices for bulk quantities, and often the articles quoted have to be sorted in order to suit the requirements of the retail pharmacist. The cost of freightage from the chemical and drug works to the various distributing centres must also be considered. It is important that these conditions should be borne in mind in making any comparison between the prices quoted and those of the wholesale drug trade.

LONDON REPORT.

February 10, 1898.

Business has been excessively quiet during past week, while the changes which have taken place have been comparatively quite unimportant. A considerable speculative demand appears to have set in for Ginger, owing partly, no doubt, to a report that the Jamaica crop will be short, and people who have the credit for knowing what they are about are stated to be picking up parcels as offered, and putting them aside. The advance in Cloves has also been maintained Pilocarpine is dearer, but price is apparently not yet fixed. Cocaine was reduced, but has since practically been put back to its former level. Calumba Root appears to be weaker. It was, however, hardly probable that the high prices ruling would be maintained for very long. Quinine is quiet. Opium, Morphia, and Codeia unchanged. Cream of Tartar, Acid Tartaric and Acid Citric dull. Iodide and Iodides so far still unaltered. Lithia and Bismuth, Quicksilver and Mercurials also without change, as also is Sulphonal. Phenacetin and Potash Permanganate very weak. Acetanilid rather firmer. Cod-liver Oil dull. Glycerin steady. Bromine and Bromides firm. The following are the prices actually ruling :—

Acetainilide.—This article seems to have taken a turn for the better, and 1s. 1d. appears to be now the price for 10-cwt. lots in bulk.

Acid Boracic—Unchanged at 24s. per cwt. for *crystals*, and 25s. per cwt. for *powder*.

Acid Carbolic—Quiet at 6⅞d. to 7d. per lb. for 35 to 36° C. *ice crystal* in bulk ; other qualities and packing in proportion. *Crude* : 60° F., 2s. 2d. ; 75° F., 2s. 11d. per gallon. *Liquid* : 95 per cent. of pale straw colour, 1s. 3d. per gallon in 40-gallon casks.

Acid Citric—Is very dull of sale, and quotations for English *crystals*, whilst remaining nominally unchanged at 12½d., to 1s. 1d. per lb., could probably be shaded somewhat.

Acid Tartaric—Continues very quiet, and transactions are limited. Quotations are 1s. 1d. per lb. for English and 12½d. per. lb. for foreign.

Ammonia Compounds.—*Sulphate* is quiet and slightly easier at £10 2s. 6d. per ton for gray prompt 24 per cent. London. *Sal ammoniac* firm at last week's advance, 35s. per cwt. for sublimed firsts and 33s. per cwt. for seconds. *Bromide* unchanged at 2s. 2d. per lb. *Iodide* unchanged at 14s. 6d. per lb. *Chloride* steady at 26s. to 26s. 6d. per cwt., for the 98 per cent. free from metals, and 33s. per cwt. for the chemically pure small crystals.

Asafœtida.—There is more disposition on the part of holders to sell, but very little is doing. A further arrival of 121 cases has taken place, the stock being now considerably larger than same time last year. Quotations range from 35s. to 100s. per cwt., according to quality.

Atropine—Firm at 12s. 6d. for the *P.B.* quality in quantity and in bulk.

Bleaching Powder — Quiet at £7 per ton in bulk and quantity on the spot.

Bismuth—Remains still unchanged at 5s. for the *metal* and 4s. 10d. per lb. for the *subnitrate salt* in 5-cwt. lots.

Borax—Very quiet at 14s. per cwt. for *crystals*, and 14s. 6d. per cwt. for *powder*.

Bromides—Without change at 1s. 10d. for *Potass.* and 2s. 2d. per lb. for *ammonia* and *soda*.

Buchu Leaves.—No advices have yet been received on the subject of the new crop. There have been some small inquiries this week, and quotations remain firm at 5½d. per lb. for good green round, 5d. for pale green, and 3d. to 4d. for yellow to yellowish ditto.

Calumba Root. —This is more freely offered, and prices appear to be giving way. For ordinary natural root, for which 60s. to 65s. per cwt. has been asked and paid lately not more than 40s. per cwt. could now be obtained, but we hear of no actual business resulting from the lower offers.

Camphor.—*Crude* : The demand is slow, but quotations are steady to rather firmer for shipment. *Japan*, February to March steamer, 95s. per cwt., and *China*, 88s. per cwt., *c.i.f.*

Castor Oil.—Quiet, but high prices continue to rule. *Calcutta* firsts 5¼d. per lb., seconds, 3¾d. per lb.

Cloves.—*Zanzibar* are in continued good demand. Prices have fluctuated slightly, but are again higher. Business includes spot, 4¼d. to 4⅜d. ; February to April delivery, 4¼d. ; March to May, 4⅜d. to 4 11/32d. ; April to June, 4⅜d. to 4⅞d. ; June to August, 4 17/32d. to 4⅝d. At auction only 93 bales *Zanzibar* offered, and 11 bales damaged sold. Of *Penang* 3 cases good picked sold at 1s.

Coal Tar Distillation Products.—*Toluol* : 2s. per gallon. *Benzole* : 50 per cent., 1s. 8d. ; 90 per cent., 1s. 5d. *Crude Naphtha* : 30 per cent. at 120° C., 10d. *Solvent Naphtha* : 95 per cent. at 120° C., 2s. per gallon.

Cocaine.—One of the makers suddenly reduced his price to 9s. 5d. per oz. for 100-oz. lots, hoping, it is assumed, to thereby steal a march on his competitors. The other makers, however, promptly followed suit, result being that the article was obtainable from the makers generally at above figure, while second-hand holders would probably have accepted a little less. It was stated that the position of the *crude* by no means warranted the reduction in price. The maker in question has since advanced his price to 10s. per oz., so that we are now again practically in the same position as regards the article as we were last week.

Codeia—Is firm at 11s. 3d. to 11s. 6d. per oz., according to quantity.

Cod-Liver Oil.—Market is very quiet, old *Norwegian*, in view of the heavy stocks, being obtainable at 62s. 6d. per barrel, and possibly even lower for large quantity, while for the new, 70s. to 72s. 6d. is asked, it being stated that prevailing stormy weather is interfering with the catch.

Cream of Tartar—Is slow of sale but without actual change in quotations, as given last week, of 75s. 6d. per cwt. for first white French *crystals*, and 78s. to 79s. per cwt. for *powder*.

Dandelion Root—Is very scarce and dear, holders asking 42s. 6d. to 45s. per cwt. for fair quality *whole* root, the *cut* being dearer in proportion.

Galls.—*China* are firmer for arrival, with good sales for January to February shipment at 52s. per cwt., *c.i.f.*, whilst direct China quotations come dearer at 54s., *c.i.f. Persian* in slow demand with rather freer sellers of blues, but quotations are nominally unchanged.

Ginger.—The market for *Cochin* has improved, there being a better demand and firmer rates prevailing. At auction 530 bags sold, cuttings, 15s. ; shrivelled, 17s. 6d. ; ordinary small and lean wormy rough, 17s. to 18s. 6d. ; ordinary to good fair washed rough, 28s. to 28s. 6d. Of cut kinds 136 cases sold also at full rates, including 64 cases new, as follows : Small, 35s. ; medium, 46s. to 47s. ; bold, 70s. to 72s. ; selected bold, 90s. to 92s. ; the remainder, old ordinary cut small and ends, 29s. 6d. to 33s. ; C cut, 46s. to 46s. 6d. ; fine selected bold, 100s.

Glycerin.—Market is quiet but steady, *German* brands being quoted 52s. 6d. to 56s. per cwt. for the best white double-distilled chemically-pure 1·260 quality in tins and cases. *English* in same packing being offered at 50s. to 52s. 6d. per cwt.

Hypophosphites—Are in good demand at unchanged prices, say 3s. 3d. per lb. for the *Lime Soda* and *Potash Salts* in 10-cwt. lots.

Insect Flowers.—Quotations are firm at 125s. per cwt. for closed flowers, 110s. per cwt. for flowers partly open, and 60s. to 62s. 6d. per cwt. for open flowers.

Insect Powder.—There has been some considerable demand lately for powder of really good quality, and stocks of same have been almost exhausted. Quotations range from 60s. per cwt. for "commercial" to 160s. for really genuine.

Iodine—Still unchanged at 7½d. per oz., *Iodide of potassium* being still quoted 9s. 9d. per lb. for 2-cwt. lots. Very little confidence is, however, felt in the stability of the article, and only from hand-to-mouth orders are being placed for *Iodides* generally.

Ipecacuanha—Continues scarce, and a fair business is said to have been done at rather dearer rates.

Japan Wax—Remains very quiet, good squares on the spot are quoted 34s. 6d. per

Monthly Statement of Drugs, etc., Warehoused in London.—February 1, 1898.

		January, 1898.		Stocks, Jan. 31, 1898.				January, 1898.		Stocks, Jan. 31, 1898.	
		Arrivals.	Deliveries.	1898.	1897.			Arrivals.	Deliveries.	1898.	1897.
Aloes (all kinds)	packages	224	190	5,103	6,144	Gum, Mastic	packages	10	4	6	11
Balsams ,,	,,	31	114	345	763	Myrrh	,,	1	12	545	605
Cinchona Bark	,,	2,501	179	18,817	21,560	Olibanum	,,	1,409	143	2,197	1,739
Quinine Sulphate	ounces	134,240	12,224	1,661,280	1,362,320	Tragacanth	,,	337	613	2,447	3,584
Beeswax	packages	516	434	2,395	1,416	Ipecacuanha	,,	36	81	218	488
Camphor	,,	134	115	11,457	11,665	Jalap	,,	—	2	340	321
Cardamoms	,,	604	243	831	611	Nux Vomica	,,	—	24	105	452
Cochineal	,,	308	142	2,695	2,574	Oils, Castor	,,	145	91	547	1,120
Colombo Root	,,	8	—	31	223	Olive	,,	125	129	641	1,149
Cubebs	,,	220	14	595	373	Aniseed	,,	—	2	139	110
Dragon's Blood	,,	17	28	49	55	Cassia	,,	10	11	129	70
Galls (all kinds)	,,	284	448	3,607	6,161	Rhubarb	,,	20	81	909	389
Gum, Ammoniacum	,,	—	—	29	38	Saltpetre	tons	2,399	1,429	3,438	4,488
Arabic, all kinds	,,	1,959	1,537	12,902	12,627	Sarsaparilla	packages	178	106	256	245
Asafœtida	,,	245	6	729	473	Senna	,,	393	314	1,436	2,710
Benjamin	,,	90	345	2,118	3,474	Shellac	,,	4,854	3,762	53,040	41,817
Galbanum	,,	—	—	—	1	Terra Japonica, Gambier	tons	1,503	1,189	2,019	1,031
Gamboge	,,	—	7	283	179	Cutch	,,	23	93	1,347	1,820
Guaiacum	,,	20	8	78	45	Turmeric	,,	1	34	285	879
Kino	,,	3	1	23	23						

The stocks of camphor, oils of aniseed and cassia are incomplete, some warehouses not making returns

cwt., whilst for arrival February to March shipment sellers ask 32s. 6d. per cwt., *c.i.f.*

Lithia—Steady at 10s. 8d. per lb. for the *Carbonate* in quantity.

Menthol.—Dull at 7s. 3d. per lb. on the spot, whilst for arrival 6s. 9d. to 7s. per lb. *c.i.f.* is quoted from Japan.

Mercurials—Are unchanged, *corrosive sublimate* being quoted 2s. 2d. to 2s. 5d., and *Calomel* 2s. 6d. to 2s. 10d. per lb., according to quantity.

Morphia—Quiet at unchanged prices, the *Hydrochlorate powder* being quoted 4s. 3d. to 4s. 6d. per oz., according to quantity.

Oils Essential.—*Peppermint*: American H.G.H. is slow of sale at 5s. 6d. per lb. on the spot; other qualities quite neglected. *Star Aniseed* slow of sale, spot nominally 7s. 3d. to 7s. 6d. per lb., February-March steamer 6s. 6d. per lb. *c.i.f.* *Cassia* quiet but steady, 70 to 75 per cent. 5s. 2d. per lb., whilst for arrival 4s. 6d., *c.i.f.*, is still quoted. *Citronelle* steady at 1s. 2¾d. per lb. *Cloves* very firm at 2s. 10d. per lb. *Lemongrass* lower at 5d. per oz. on the spot.

Oils (Fixed) and Spirits.—*Linseed*: Business has been good this week, prices have advanced, closing on the spot, pipes £15 15s., barrels, £16 5s. *Rape* firm at last week's reduction; ordinary brown on the spot, £22 15s.; refined, £24 5s. *Cotton* steady but unchanged at £12 12s. 6d. for crude London spot; refined, £14 10s. *Olive*: Both Spanish and Levant are quoted £33. *Cocoanut*: Ceylon on the spot, £22 10s.; Cochin, £28, being unchanged. *Palm*: Lagos, on the spot, £23. *Turpentine* very firm and dearer at 24s. 6d. per cwt. for American on the spot. *Petroleum Oil* very flat at 4¼d. per gallon for Russian, and 4⅜d. per gallon for American on the spot; water white, 5½d. per gallon. *Petroleum Spirit*: American, 5½d. per gallon; deodorised, 6d. per gallon.

Opium.—No change has taken place in the position of this article, prices remaining practically the same as those given last week. From *Smyrna* more favourable news has been received as to the prospects of the new crop, which if confirmed may mean lower prices for the article.

Orris Root.—Rather firmer at 38s. 6d. to 45s. for fair *Florentine*, according to quantity.

Permanganate of Potash.—The pressure to sell on the part of the various makers has had the effect of frightening buyers. It is said that offers of large quantity for delivery during the year have been made at 60s. per cwt. for small crystals, without, however, leading to any business of importance.

Phenacetin.—The pressure to sell on the part of manufacturers continues, and for a large quantity it would be possible to buy at 3s. 9d. per lb., and perhaps even a little below this.

Pilocarpine—Is at last again tending upward, one maker having withdrawn his quotations, prices so far remaining, however, nominally 20s. per oz. both for the *Hydrochlorate* and the *Nitrate* salt.

Podophyllin.—Makers ask 12s. 6d. to 14s. according to quality for the *P.B.* quality, while the not fully soluble *American* article is quoted 11s. to 11s. 6d. per lb.

Potash Compounds.—*Chlorate* very dull, nominal quotations 3½d. per lb. on the spot. *Iodide* dull, but unchanged at 9s. 9d. to 10s. 3d. per lb., according to quantity. *Bromide* steady at 1s. 10d. per lb. for less than 1 cwt. lots. *Permanganate* weak at nominally 63s. 6d. for small crystals, and 67s. 6d. per cwt. for large crystals in quantity, which marks further reduction. *Cyanide*: 1s 2d. to 1s. 3d. per lb. for the 98-100 per cent. cake; market is firm. *Prussiate* is steady at 6¾d. per lb. for *yellow* and 1s. 2½d. per lb. for *red*.

Quinine—Has been exceedingly quiet during past few days, makers' prices for best *German* brands remaining unchanged at 1s 1d. per lb. for 1000-oz. lots, in 100-oz. tins, while as regards second hand, although there are at the moment few buyers, it would be difficult to buy any quantity at an even only slightly lower figure than that quoted by the makers themselves.

Quicksilver. — Unchanged from first hands at £7 per bottle, whilst from second hands quotations are the shade easier at £6 19s. per bottle.

Saffron.—Market is firm with an upward tendency, finest *Valencia* being held for 38s. to 40s per lb.; second quality for 36s. to 37s. 6d. per lb.; *Alicante* for 26s. to 27s. 6d. per lb.

Santonin—Quiet but firm at 4s. 5¼d. per lb. for 3-cwt. lots, smaller quantities being dearer in proportion.

Senna.—There has been a fair demand for *Tinnevelly* privately since the auctions, and some business has been done at full prices. So far practically nothing has come forward for next week's sales, so that offerings thereat will be mainly of second-hand parcels. There is every probability, it is said, of very high prices ruling before the new crop comes in six months hence.

Shellac.—The tone of the market is quiet, and prices, if anything, are the shade easier since last week. There is a demand for fine cakey *second Orange*, but of this kind there is very little offering, and consequently transactions have been small. For arrival no sales are reported in *TN*, but about 200 cases have been sold for February to April shipment, *AA* in circle at 75s. 6d., and *G* in double triangle at 86s. 6d. per cwt., *c.i.f.* The speculative market is quiet but steady, moderate sales have taken place, including *TN Orange*, March delivery, at 66s. 6d. to 67s. per cwt.

Soda Compounds.—*Crystals* unchanged at 55s. to 60s. per ton ex-ship terms. *Bicarbonate* steady at £7 15s. per ton for 98 per cent. and 18s. 6d. per cwt. for the fully bicarbonated. *Caustic* firm at £7 15s. per ton for the 70 per cent. and £6 15s. for the 60 per cent. *Hyposulphite* in rather better inquiry, but prices are unchanged at 5s. 6d. to 8s. per cwt., according to brand.

Spices (Various).—*Black Pepper* mostly bought in, Lampong at 3⅞d., Singapore at 4⅛d. *White Pepper*: Of Penang only 50 bags sold at 6⅜d., and of Singapore 71 bags sold, good, 7½d., fine bright bold, 8¼d. *Chillies*: 42 bags Japan sold at 48s. to 50s. *Cassia Lignea* is dearer, and firm at 50s. to 51s. *Mace*: 3 cases Penang pickings sold at 1s. 4½d.; 8 packages West India sold at 1s. 4d. to 1s. 6d. *Nutmegs* dull, a few cases Bombay sold, 95's at 1s. 5½d.; 45 packages West Indian also sold, 73's at 1s. 10d.; 75's and 77's at 1s. 6d. to 1s. 7d.; 104's at 1s. 3d.; 114's

at 1s. *Pimento* : 300 bags fair, 1896 import, sold at 4¾d. to 4⅞d.

SULPHATE OF COPPER — Is quiet at £16 2s. 6d. to £17 per ton, according to brand.

SULPHONAL.—Makers are still accepting orders for limited quantities at 7s. 3d. per lb. for both *crystals* and *powder*.

TURMERIC—Is steady but quiet, fair *Bengal*, 14s. 6d. per cwt. ; *Madras* finger, 17s. to 19s. per cwt , according to quality.

NEWCASTLE CHEMICAL REPORT.

FEBRUARY 9, 1898.

This market has a somewhat healthier tone, with the bulk of business fairly in keeping with the season's average. A new departure is being made by the United Alkali Association. That is to say, quotations on the cost, freight, and insurance line are being made direct to consumers abroad of Caustic Soda and Soda Crystals. This practically means the abolition of middle hands and spot agents. Quotations are given as follows, and according to destinations :—Bleaching Powder, £6 5s. to £6 10s. Soda Crystals : Basis, 45s. to 57s. 6d., Caustic Soda : 70 per cent. basis, £7 10s. to £7 15s. Soda Ash : 52 per cent., £4 5s. Alkali : 52 per cent., £5 5s. Sulphur : £4 15s. to £5 per ton.

MANCHESTER CHEMICAL REPORT.

FEBRUARY 9, 1898

The Board of Trade Returns indicate a more satisfactory condition of the heavy chemical trade, and the exports, especially to the United States, do not exhibit the heavy decline of the previous month. In this market makers of 70's White Caustic Soda are asking 2s. 6d. per ton more for home consumption, and as stocks in the States are low, this may be expected to be maintained. Sulphate of Copper is very uncertain and prices are nominal, varying from £17 10s. to £18 per ton for best brands here. Brown Acetate of Lime is firm at £6 to £6 10s. Naphthas and Benzols are steady. Glycerin is a shade quieter, but Yellow Prussiate is firm at 7d. per lb. for best Lancashire make. Chlorate of Potash weaker. Aniline oil and salt still rule low.

LIVERPOOL REPORT.

FEBRUARY 9, 1898.

AMMONIUM SALTS. — *Carbonate* : Still quoted at 3d. per lb. *Sal ammoniac* : Has advanced £2 per ton, now selling at £33 to £35 per ton. *Sulphate* : £10 5s. per ton.

BEESWAX.—Chilian £7 per cwt., and 10 packages assorted Chilian at £6 15s. to £7 per cwt.

BLEACHING POWDER—Is quiet at £5 12s. 6d to £6 5s. per ton.

CANARYSEED—40 bags Spanish sold at 37s. per 464 lbs. ; 100 bags Turkish, rather poor average, sold at 26s. 6d. per 464 lbs. The quotation lies between 25s. 6d. to 26s. 6d. per 464 lbs.

CASTOR SEED.—263 bags Parahyba sold at 10s. 1½d. per cwt.

COPPERAS.—36s. to 38s. per ton.

COPPER SULPHATE—Is quiet at £16 10s. to £16 15s. per ton.

COCHINEAL.—Silver grain Teneriffe has been selling at 11d. per lb. ; black is held for 11d. to 1s. per lb.

KOLA NUTS.—23 packages of dried sold for 2¼d. per lb., and 27 bags ditto for 2d. per lb.

LINSEED.—25 tons of River Plate sold at 36s. per 416 lbs., and 150 bags at 36s. 6d. January shipment is quoted at 34s. 3d., and February at 33s. 6d. ; 140 bags of Turkish sold at 38s. 6d. per 416 lbs.

OILS (FIXED) AND SPIRITS.—*Castor oils* exhibit a firmer feeling, and are quoted sparingly to arrive, being held for 3⅝d. per lb. on the spot for both Calcutta "good seconds" and French 1st pressure. *Olive oil* is non-existent here just at the moment, and Spanish oils to arrive are priced at from £33 10s. to £34 per ton. *Linseed oil* of Liverpool make packed in export casks is selling at 16s. 6d. to 17s. per cwt., for which price it is very firmly held. *Cottonseed oil* is quietly steady at 14s. 9d. to 15s. 6d. per cwt. for Liverpool refined oil. *Spirits of Turpentine* has advanced to 25s. per cwt., at which price it is firmly held.

POTASH SALTS.—*Bicarbonate*, 30s. per cwt. *Bichromate*, 4d. per lb. *Chlorate*, 3½d. per lb. *Cream of Tartar* is steady at a quotation of 76s. per cwt. *Pearlash* continues firm at the recent advance to 37s. and 37s. 6d. per cwt. *Potashes* enjoy a fair demand at 20s. per cwt. *Saltpetre*, 21s. 6d. per cwt.

SODA SALTS.—*Bicarbonate* : £6 15s. per ton. *Caustic* is firmer at £8 12s. 6d. per ton for 76 to 77 per cent. ; £7 5s. to £7 10s. for 70 per cent. ; and 60 per cent., £6 5s. to £6 10s. per ton. *Crystals* firm at £2 17s. 6d. per ton. *Nitrate* in fair demand at 7s. 6d. to 7s. 9d. per cwt.

EXCHANGE.

OFFERED.

Miscellaneous.

Magic Lanterns, second-hand ; triples and biunials ; oxyhydrogen microscope ; marvellous pamphengos oil lantern, gives 14-ft. picture ; 60,000 slides and effects ; 4-in. 4-wick lanterns, 18s. 6d. each, bargains ; illustrated list post free, 2d.—Hughes, Brewster House, 82, Mortimer Road, Kingsland, N.

Overstocked.—Superfine oil of lemon, 8½ lbs., in copper, delivered free for 21s. Sample pound, idelivered free for 3s. Cash with order.—Moss, 34 Avondale Road, Chorley.

Cwt. Bigg's Sheep-dip, 7 and 14 lb. jars and tins ; also 2 cwt. Clarke's carbolised wheat-protector ; what offers?—Potts, Ilkeston.

Taree splendid, large, beautifully-engraved specie jars for sale, very cheap ; also three clear glass specie jars, different sizes, and one large show bottle ; offers invited.—Henry Brett, Fakenham, Norfolk.

Roscoe & Schorlemmer's 'Chemistry,' Vol. I., Non-Metals ; Vol. II., Metals (in two parts). Published at 21s., 18s., and 18s. In perfect condition. What offers?—Johnson, 155, Lea Road, Wolverhampton.

Upright Mahogany Counter-case, 5 ft. by 2 ft. 10 in. by 9 in., slide back, bent-glass ends, with mirror backs, carved tablets, glass shelves, polished edges ; good condition ; price 50s —Robinson, Chemist, Moss Side, Manchester.

WANTED.

Camwal Shares Wanted.—Lowest price to Blount, Chemist, 4, Fenham Road, Newcastle-on-Tyne.

For Cash, old electric lamps and scrap platinum. —P. Rowsell, 14, Walcot Square, Lambeth, S.E.

SATURDAY, FEBRUARY 12.

PHARMACEUTICAL FOOTBALL CLUB v. "MUTER'S," at Wormholt Farm, Shepherd's Bush. Kick-off at 3 p.m.

TUESDAY, FEBRUARY 15.

ROYAL INSTITUTION, at 3 p.m.
"The Simplest Living Things" (Lecture V.), by Professor E. Ray Lankester.

ROYAL PHOTOGRAPHIC SOCIETY, at 5 p.m.
"Process Reproduction from an Editor's Point of View," by Wallace L. Crowdy, Editor of the *Artist*.

WEDNESDAY, FEBRUARY 16.

BRIGHTON JUNIOR ASSOCIATION OF PHARMACY.
Social Evening.

PHARMACEUTICAL SOCIETY (North British Branch).
Evening Meeting.
"Fluid Extract of Liquorice," by Peter Boa.
"The Quantitative Determination of Sugar in Urine by the Kinninmont Method," by Arthur McKellar.
Additions to the Library and Museum.

ROYAL MICROSCOPICAL SOCIETY, at 8 p.m.
"Essay in Micro-Crystallography" (Illustrated), by T. C. White, followed by an exhibition of miscellaneous lantern slides, by J. E. Barnard.

SCHOOL OF PHARMACY.
Annual Dinner (Duke's Salon, Holborn Restaurant).

WESTERN CHEMISTS' ASSOCIATION (OF LONDON), at 9 p.m.
Discussion on the New Pharmacy Bill, opened by R. H. Parker.

THURSDAY, FEBRUARY 17.

CHEMICAL SOCIETY, at 8 p.m.
"Some Lecture Experiments," by J. Tudor Cundall.
"Observations on the Influence of the Silent Discharge of Electricity on Atmospheric Air," by W. A. Shenstone and W. T. Evans.

CHEMISTS' ASSISTANTS' ASSOCIATION, at 9 p.m.
"Formaldehyde in Dispensing," by G. Roe.

GLASGOW AND WEST OF SCOTLAND SCHOOL OF PHARMACY, at 8.30 p.m.
Social Meeting and Supper. (Trades' House Restaurant, 89, Glassford Street.)

LINNEAN SOCIETY OF LONDON, at 8 p.m.
"On the Genus Arenaria," by F. N. Williams.
"On the Histology of the Salivary and Other Glands of the Colubridæ," by G. S. West.

MIDLAND PHARMACEUTICAL ASSOCIATION, at 8.30 p.m.
Paper by Mr. J. Barclay (Mason College).

FRIDAY, FEBRUARY 18.

ABERDEEN JUNIOR CHEMISTS' ASSOCIATION, at 9.30 p.m.
Magazine Evening.
Editor, P. D. Milne.

ROYAL INSTITUTION, at 9 p.m.
"A Yorkshire Moor," by Professor L. C. Miall.

SHEFFIELD MICROSCOPICAL SOCIETY, at 8 p.m.
Exhibition Night.
Demonstration by Dr. Andrew Walker.

Football.

The match arranged for Saturday last between the Pharmaceutical Football Club and "Watson Will's" was scratched.

NEWS IN BRIEF

An Action to Recover Damages was brought against Samuel James Coley, chemist and druggist, Stroud, before Justice Day and a special jury, at the Gloucester Assizes, on Wednesday, February 16, to recover damages for alleged negligence. The evidence was to the effect that the plaintiff, Mrs. Nolan, of Stroud, sent to one of the defendant's shops for some carbolised oil to apply to a cut finger. The defendant's assistant dispensed a liniment containing carbolic acid in the proportion of 1 in 2 instead of 1 in 20, with the result that the plaintiff, on applying the liniment, suffered injury to her finger-joint. The defendant admitted negligence by his assistant, but denied the alleged injury to the plaintiff's finger. The jury found for the plaintiff, with £40 damages.

Mr. George Breeze, J.P., has disposed of "The Borough Pharmacy," Catherine Street, Devonport, to Mr. J. Reed, of Halsworthy.

Messrs. Breeze & Co., Devonport, have removed their baking and egg powder works to more commodious and central premises at Station Road, Union Street, Plymouth.

Supposed Poisoning by Ptomaines.—On Monday, February 7, Mr. G. P. Wyatt concluded an inquiry at the Streatham Town Hall, respecting the death of Captain Thomas Malcolm Dickenson, 32, of the Royal Engineers, who died after a railway journey during which he ate some tinned apricots. On arriving at his destination he had complained of being fatigued, had a light supper and retired to bed. Next morning he went about as usual, but later in the day he became ill, suffering from pain in the abdomen, accompanied with sickness and diarrhœa. He was put to bed and every attention was given him, but death occurred the following morning. Deceased attributed his illness to "the beastly tinned food," and a post-mortem examination showed that the intestines were congested, and bore signs of irritation. The cause of death in the doctor's opinion was ptomaine poisoning. On behalf of the Midland Railway Company it was stated that ten other persons partook of the same food that deceased did in the train and that there had been no other complaint. The verdict of the jury was that "Deceased met his death from syncope and enteritis, consequent upon taking something of a poisonous nature, but what that was there was no evidence to show."

Protection of Trade.—At the annua meeting of the Exeter branch of the London Association for the Protection of Trade on Monday last, Alderman H. Gadd, J.P. (ex-President of the Exeter Association of Chemists and Druggists, and of the firm of Messrs. Evans, Gadd & Co., wholesale chemists and druggists of Exeter and Bristol) was elected on the Committee for the ensuing year.

PARTNERSHIPS DISSOLVED.

(From the London Gazette.)

Mary Hale and George Thompson (trading as W. Hale and Thompson), Chemical Manure Manufacturers, 60, Mark Lane and Abbey Lane, West Ham. Debts will be received and paid by George Thompson.

Edward G. P. Arnall and Sydney L. Stephens, Veterinary Surgeons, Bodmin and Wadebridge, Cornwall.

Thomas Lakey, George Lakey, George Edwards, and W. T. Seager (trading as George Edwards & Co.), Specialists in Foods and Medicines for Birds, etc., 39, Paradise Street, Lambeth, S.E., so far as regards Thomas Lakey and George Lakey.

Geo. A. Merchant and Jos. Mercer (trading as Tamplin & Co.), Mineral Water Manufacturers. Debts will be received and paid by Jos. Mercer, who will carry on the business under the same title.

EXCHANGE.

OFFERED.

Miscellaneous.

Magic Lanterns, second-hand; triples and biunials; oxyhydrogen microscope; marvellous pamphengos oil lantern, gives 14-ft. picture; 60,000 slides and effects; 4-in. 4-wick lanterns, 18s. 6d. each, bargains; illustrated list post free, 2d.—Hughes, Brewster House, 82, Mortimer Road, Kingsland, N.

Overstocked.—Superfine oil of lemon, 8½ lbs., in copper, delivered free for 21s. Sample pound, delivered free for 3s. Cash with order.—Moss, 34 Avondale Road, Chorley.

Microscopical Slides.—Six dozen section materia medica, superbly mounted by Rödig, Vienna. In pine cabinet, price £3.—A. J. Callaway, Salisbury.

WANTED.

Wanted.—Green's 'Botany,' volume ii.—A. M. Ashwin, Tiddington, Stratford-on-Avon.

Wanted.—Second-hand Hooker's 'Students' British Flora,' 'Selecta è Prescriptis,' and Ince's 'Latin Grammar.'—Communicate with prices and dates to—F. Porter, 40, Upper Charnwood Street, Leicester.

Pair Specie-Jars, small, good condition; sell or exchange Stokes's till in working order.—Beal, 446, Rochdale Road, Manchester.

Camwal Shares Wanted.—Lowest price to Blount, Chemist, 4, Fenham Road, Newcastle-on-Tyne.

For Cash, old electric lamps and scrap platinum.—P. Rowsell, 14, Walcot Square, Lambeth, S.E.

MARKET REPORT and Prices Current

Specially compiled for the Pharmaceutical Journal

The quotations here given are in all cases the lowest cash prices for bulk quantities, and often the articles quoted have to be sorted in order to suit the requirements of the retail pharmacist. The cost of freightage from the chemical and drug works to the various distributing centres must also be considered. It is important that these conditions should be borne in mind in making any comparison between the prices quoted and those of the wholesale drug trade.

LONDON REPORT.

February 17, 1898.

Business has been quiet during the past week, the unsettled appearance of the political horizon having, in combination with other circumstances, tended to restrict transactions. The changes of the week are not very important. Quinine is quiet. Opium, Morphia, and Codeia unchanged. Quicksilver rather dearer, but no alteration in price of Mercurials. Bismuth unaltered. Bromine and Bromides, Iodine and Iodides without change. Cream of Tartar and Acid Tartaric quiet. Acid Citric firm, with higher prices expected. Sulphonal unchanged. Phenacetin weak. Cod-liver Oil very dull. Permanganate of Potash weak. Borax and Acid Boracic quiet, but steady. Sulphate of Ammonia again slightly easier. Cocaine steady. The following are the prices actually ruling for articles of chief interest.

Acetanilid—Is quiet at 1s. 1d. to 1s. 2d. per lb. according to quantity and make.

Acid Boracic—Dull of sale at 24s. per cwt. for crystals and 25s. per cwt. for powder.

Acid Carbolic—Is dull at 6¾d. to 7d. per lb. for the 35° to 36° C. *ice crystals* in large bulk. *Crude*: 60° F., 2s. 1d. per gallon; 75° F., 2s. 10d. *Liquid*: 95 per cent. of pale straw colour, 1s. 2d. to 1s. 3d. per gallon in 40-gallon casks.

Acid Citric.—Price remains nominally 1s. 0½d. per lb., but makers will no longer book orders at this figure, and a decided advance in price is confidently predicted for the near future.

Acid Lactic.—One maker is quoting this article in smaller quantities at 2s. per lb.; for the best make, however, 2s. 3d. to 2s. 6d. per lb., according to quantity, is the price.

Acid Tartaric—Very quiet at 12½d. to

1s. 1d. per lb. for foreign and English respectively.

Ammonia Compounds.—*Sulphate* is quiet and lower at £10 per ton for gray prompt 24 per cent. London. *Bromide* steady at 2s. 2d. per lb. on the spot. *Iodide* quiet at 14s. 6d. per lb. *Sal-ammoniac* steady at 35s. per cwt. for sublimed firsts and 33s. per cwt. for seconds. *Chloride* firm at 26s. to 26s. 6d. per cwt. for 98 per cent. free from metals, and 33s. per cwt. for chemically pure small crystals.

Antipyrin.—The patent for this article having expired, the price of *Antipyrine Knorr* has been reduced 6d. per oz. On the other hand, makers of *Phenazone*, which is practically identically the same thing, are offering at a much lower figure, and it remains to be seen whether the demand for Dr. Knorr's article at a fancy price will continue.

Atropine—Firm at 12s. 6d. per oz. for the *P.B.* quality in large bulk.

Bismuth—Without change at 5s. per lb. for the *metal*, and 4s. 10d. for the *subnitrate* in 5-cwt. lots.

Bleaching Powder—Steady at £7 per ton in bulk and for quantity.

Borax.—Demand fairly good at 14s. per cwt. for crystals and 14s. 6d. per cwt. for powder.

Bromine and Bromides—Firm at 2s. 2d. per lb. for the former, and 1s. 10d. for *Pot. Bromide.*

Camphor.—*Crude* is inactive, but quotations remain unaltered. *Japan* for arrival is quoted at 95s., *China* 87s. 6d. per cwt., *c.i.f.* terms. *Refined* unchanged.

Cantharides.—*Russian* are held for 1s. 9d. per lb. in quantity.

Cinchona Bark.—At the London auctions on Tuesday supplies were but moderate, amounting to 2128 packages, as compared with 3466 packages at the preceding sale. A dull tone prevailed throughout, due probably to a desire on the part of the manufacturers to depress prices in anticipation of the more important sales which are taking place in Amsterdam to-day—only one-third selling at barely last rates. *Ceylon*: 169 bales and 2 cases offered and 42 bales sold, according to analysis; Succirubra, stem chips and shavings, ordinary to fair at 3d. to 3⅝d., renewed ditto 3½d. to 3¾d; Officinalis, renewed chips and shavings at 4½d. *East Indian*: Of 917 bales and 32 cases offered 402 bales and 8 cases sold; red stem chips, good at 4d., good silvery mossy quill at 8d., mixed at 3½d.; Officinalis, good quilly chips at 4d., fair chips and shavings at 4¼d. to 4½d., ordinary chips and branch at 2⅝d. to 2¾d., good broken quill at 4½d.; renewed chips and shavings, fair to good rich at 4¼d. to 6¼d., ordinary, 3d. to 3⅝d. Ledger, good natural stem chips at 6d. *Java*: 58 bales and 100 bags offered and sold, good Ledger stem chips and branch at 5½d. to 7½d. *South American*: 309 bales Bolivian cultivated Calisaya quills offered and bought in. 171 bales flat Calisaya offered and sold at 4¼d. to 8½d. 29 bales Carthagena and 164 serons Cuprea were all bought in. *African:* Of 177 bales 63 sold, fair quill at 5⅞d. to 6¼d., broken quill at 4¾d. to 5¾d.

Cloves.—Privately the market for *Zanzibar* has been easier, and prices declined somewhat, but are now firm at a slight recovery. Business includes March to May delivery at 4 13/16d., April to June 4 15/32d., and June to August at 4⅜d. At auction 266 bales *Zanzibar* offered were mostly bought in, only quite small lots sold at 3¼d. to 4¼d. 17 bags *Seychelles* bought in at 5d., also 14 boxes old *Java* at 7d.

Coal Tar Distillation Products.—*Toluol*, 1s. 11d. *Benzole*: 50 per cent., 1s. 8d.; 90 per cent., 1s. 5d. *Crude Naphtha*: 30 per cent. at 120° C., 10d. *Solvent Naphtha*: 95 per cent. at 160° C., 2s. per gallon.

Cocaine—Is quiet but steady, maker's price being 10s. to 10s. 6d. according to brand for 100-oz. lots in bulk packing, while from second hand limited quantity could be bought somewhat below these figures.

Codeia—Is steady at 11s. 3d. to 11s. 6d. per oz. for quantity and in bulk packing.

Cod-Liver Oil.—Stormy weather on the Norwegian coasts fail to cause firmer rates for cod-liver oil, the huge stock of old here acting as a drag on the market. For fine new non-freezing quality prices range from 65s. to 75s. per barrel, according to brand.

Coriander Seed.—Selling fairly well at 8s. 6d. to 9s. for good *Morocco.*

Cream of Tartar—Fairly steady at 75s. per cwt. for first white *crystals* on the spot, and 77s. to 79s. per cwt. for *powder.*

Eserine.—Makers appear to have advanced their price to 1s. 6d. per gramme for the *Sulphate*, the reason given for the advance being that as a result of excessive competition between the comparatively few makers of the article, the price had been reduced to an unremunerative level. Price of the *Salicylate* will no doubt be the same as the *Sulphate*, the *pure*, which is in very limited demand, being dearer in proportion.

Ginger.—At auction 1153 bags and 336 cases *Cochiu* offered, chiefly old import in second hands, but holders being firm only 240 bags and 63 cases sold, small and dull washed rough in bags 27s. to 29s., small native part cut in cases 34s. to 37s. Cut 39s. 6d. Of 425 bags limed *Japan* 110 bags sold at 20s., slightly mouldy 19s. Of *Jamaica* 160 barrels sold irregularly, chiefly new, low, and common, lean dark Rhatoon at 57s. 6d. to 66s., a few lots old middling to good washed at 79s. to 88s.

Glycerin—Quiet at 52s. 6d. to 60s. according to quantity for the *German* double distilled chemically pure white 1·260 quality in tins and cases, *English* being offered at somewhat cheaper rates.

Gum Mastic—Is strongly held at 2s. per lb. for good clean pale tear, but buyers hold off.

Iodine and Iodides—Still unchanged at 7½d. per oz. for *Iodine*, and 9s. 9d. per lb. for *Pot. Iodide* in 2-cwt. lots.

Japan Wax—Is rather dearer at 36s. per cwt. for good squares.

Lithia Salts—Unchanged at 10s. 8d. per lb. for the *Carbonate* in 2 cwt. lots.

Matico Leaves.—Good green can now be had on the spot at 10d. to 1s. per lb. according to quantity.

Menthol—In more demand; quotations range from 7s. 3d. to 7s. 6d. per lb. according to quantity and position.

Mercurials.—Makers have so far made no alteration in their prices, which remain at 2s. 2d. to 2s. 5d. for *Corrosive sublimate*, and 2s. 6d. to 2s. 9d. for *Calomel*, according to quantity and packing.

Morphia—Is quiet and unchanged at 4s. 3d. to 4s. 6d. for the *Hydrochlorate Salt* in powder for quantity and bulk.

Oils (Essential).—*Peppermint*: H.G.H. quiet at 5s. 6d. per lb. on the spot. *Japan* 3s. 1½d. per lb. for dementholised. *Star Aniseed*: Steady at 7s. 6d. per lb. on the spot. *Citronella*: Rather easier at 1s. 2½d. for drums and tins. *Cinnamon*: Steady, good and fine qualities quoted 1s. 6d. to 2s. 6d. per oz., common 5d. per oz., leaf oil 3¼d. per oz. *Lemongrass*: Tending lower, 4¾d. per oz. is now the quotation. *Eucalyptus*: A good business doing at 1s. to 2s. 6d. per lb., according to quality.

Oils (Fixed) and Spirits.—*Linseed* is firm at £15 17s. 6d. for pipes on the spot, and £16 5s. for barrels, same position, whilst for forward delivery more money is asked. *Rape* is steady at a slight advance, ordinary brown being now quoted £23 on the spot, and refined £24 10s. *Cotton* is also slightly dearer at £12 15s. for crude, and £14 10s. for refined. *Olive*: Spanish and Levant unchanged at £33. *Cocoanut*: This market is firmer for forward positions with a good business passing. Ceylon on the spot £22 10s., and Cochin £28. *Palm*: Lagos is dearer at £23 10s. on the spot. *Turpentine*: Quiet and rather easier at 24s. 4½d. per cwt. on the spot. *Petroleum Oil*: Very quiet at 4¼d. per gallon for *Russian* and 4⅜d. per gallon for *American*, both on the spot. *Petroleum Spirit*: Unchanged at 5½d. per gallon for American. *Castor Oil*: Steady. French and Belgian first pressing 30s. 6d. per cwt., second pressing 29s. 6d. per cwt. on the spot.

Opium.—In spite of the repeated reports of damage to the crops by frost, market remains in *statu quo*, there being absolutely no change to report.

Orris Root—Quiet at about 40s. to 45s. per cwt. for fair *Florentine.*

Phenacetin—Continues weak at 4s. per lb. The competition between the various makers continues, and threatens to force the price of the article down to an even lower level.

Pilocarpine.—In consequence it is stated of the scarcity of really good *Jaborandi leaves*, combined with the poor yield of the larger portion of the raw material available, which is offering, makers successively advanced their price, and are now quoting 28s. per oz. for the *hydrochlorate* and *nitrate salt*, it being stated that even higher prices are not improbable. It will be remembered that not so very long since for similar reasons as are given above, the high price of 160s. per oz. had to be paid for *Pilocarpine salts.*

Potash Compounds.—*Chlorate*: Quiet and without change at 3½d. per lb. on the spot. *Iodide*: Quiet at 9s. 9d. to 10s. 3d. per lb., according to quantity. *Bromide*: Unchanged at 1s 10d. per lb. for quantities under 1 cwt. *Permanganate*: Dull of sale at nominally 65s. for *small* and 70s. per cwt. for *large* crystals. *Cyanide*: 1s. 2d. to 1s. 3d. asked for 98-100 per cent. cake. *Prussiate*: Unchanged at 6¾d. per lb. for *yellow* and 1s. 2½d. per lb. for *red.*

Potash Permanganate—Continues weak at unchanged figures, price being nominally

65s. and 70s. per cwt. for *small* and *large* crystals respectively.

Quicksilver.—After doing a large business at their old price, importers raised the figure to £7 2s. 6d. per bottle, second hands following to £7 2s.

Quinine—Remains very quiet and nominally unchanged at 1s. 1d. per oz. for best *German* brands in 1000 oz. lots in large tins. From second-hand it would be possible to buy limited quantities at somewhat below this figure.

Rose Leaves.—*French* are very firm at 1s. 8d. per lb. *Dutch* can be bought relatively cheaper at 1s. 2d. to 1s. 3d. per lb. *Pale*: 8d. to 9d. per lb.

Saffron—Is very firm to rather dearer. Prices range from 36s. to 42s. 6d. per lb. for Valencia kinds according to quality and quantity. *Alicante* at 26s. to 27s. 6d. per lb.

Santonine.—Price is still 4s. 5¼d. per lb. for quantity in large bulk packing.

Shellac.—Business on the spot is very quiet, and shows no improvement. *Second orange TN* quoted 66s. for short prompt and *AC Garnet* at 75s. per cwt. for good free. There is a firmer tone for arrival with dearer prices in Calcutta, but only a small business has been done, which includes *TN Orange*, April-June steamer, at 65s. *c.i.f.* At the auctions on Tuesday small supplies were catalogued. Fair competition prevailed for *Second Orange* and about one-half sold at an advance of about 1s. per cwt. A total of 521 cases offered and 240 cases sold. *Second Orange*: Of 375 cases 209 sold, middling to fair bright free at 65s. to 67s., bright curly, little matted, at 66s., fair cakey reddish at 65s. to 66s., reddish livery free at 64s. to 65s., middling flat reddish, without reserve, at 62s. to 63s., broken livery at 62s., fair block at 60s. *Garnet*: Of 62 cases 3 sold, KG in circle, flat weak ruby at 62s.; the remainder bought in, including fair frec curly AC at 75s. Of 84 cases 28 sold in small lots, fair pale firsts at 80s. to 81s., purc stamped circle 2's at 77s., ordinary to fair circle 2's at 64s. to 67s.

Soda Compounds.—*Crystals* remain steady at 55s. to 60s. per ton *ex* ship terms. *Bicarbonate* quiet at £7 15s. per ton for 98 per cent., and 18s. 6d. per cwt. for the free from monocarbonate quality. *Caustic* steady at £7 15s. per ton for 70 per cent., and £1 per ton less for 60 per cent. *Hyposulphite* firm at 5s. 6d. to 8s. per cwt., according to brand. *Bromide* steady at 2s. 2d. per lb.

Spices (Various).—*Black Pepper*: At auction 1472 bags mostly bought in; Penang, 3⅝d.; good, 4⅜d.; Lampong, 3⅞d. to 4d.; 90 bags Singapore sold, chiefly first-class sea-damaged, 4⅛d. *White Pepper* firmly held, and mostly bought in; Palembang, 6⅜d.; Penang, 6½d; 70 bags Singapore, good bold, sold at 8½d.; one lot, 8⅝d. *Cayenne Pepper*: 2 cases Natal sold at 1s. 3d. *Chillies*: 133 packages fine bright Japan sold at 50s. *Capsicums*: One bale ordinary Natal sold without reserve at 41s. *Cassia Lignea*: 330 bales broken bought in at 34s. *Nutmegs* steady. *Mace*: 2 cases Penang sold, good bright pale and red, part wormy 2s. 1d.; fine bright palish 2s. 9d.; 30 packages West Indian sold at 1s. 4d. to 1s. 7d. *Pimento*: 128 bags new sold at 4½d. to 4⅝d. *Kola Nuts*: 1 case Grenada sold, at spice auctions, at 4d.

Sulphate of Copper—Is firmer, although quotations remain unchanged at £16 2s. 6d. to £17 per ton, latter price being for 98 to 99 per cent.

Sulphonal.—The two chief makers are still executing orders for limited quantity at 7s. 3d. per lb. for *crystals* and *powder*.

Turmeric—Remains quiet; in auction 984 bags *Bengal* were offered, but the whole was bought in at 14s. 6d. to 15s. per cwt. *Cochin* slow of sale; fair split bulbs bought in at 8s. 6d. to 9s. per cwt. *Madras*: Damaged finger and bulbs sold at 10s. per cwt.

To-day's drug auctions went off very quietly. The changes, which were mostly in a downward direction, not being very important, the following are the particulars of prices paid, or required.

Aconite Root.—12 bags fair *Japan* were bought in at 27s. 6d. per cwt.

Aloes.—Fair to good livery *Curacoa* in tins sold at 25s. to 30s. per cwt. 100 boxes fair dark livery ditto bought in at 35s. 15 kegs good *Socotrine* held for 80s. 8 cases *Cape* part sold at 23s. for fair hard bright, rest held for 24s. per cwt. 3 cases *Zanzibar* sold at 82s. 6d.

Anatto Seed.—4 bags bought in at 6d. per lb.

Argol.—20 bags *Cape* bought in at 40s. to 50s. per cwt.

Asafœtida.—Practically the whole of 118 cases offered were bought in at 60s. for good bright almondy part free, down to 37s. 6d.; a limited portion of the best lots being held as high as 65s. per cwt.

Balsam Tolu.—6 cases held for 2s. 3d. per lb., 4 cases taken out at 2s. 2d.

Balsam Peru.—5 cases were bought in at 8s. 6d. per lb.

Buchu Leaves.—5 bales good green rounds held for 5d. per lb., a bid of 4¾d. being declined; 2 bales ditto selling at 4¾d., and 1 bale pale green ditto at 4d.

Cardamoms.—Of the 175 cases offered only a portion sold at fairly steady prices; good bold, pale *Mysores*, 4s. per lb.; second size, 3s. 9d. per lb.; small, 2s. 11d. to 3s. 5d. per lb. Decorticated held for 3s. 2d. per lb. A parcel of 51 packages sold "without reserve" ex the "Kawachi Maru," lately on fire in the London Docks, and soaked with water, realised very good prices considering the condition, viz., 2s. 4d to 2s. 6d. for fair brownish medium-sized *Mysore*. Good, undamaged seed, 3s. 1d. per lb. It was understood that these lots should be reweighed and retared directly after the sale.

Cascara Sagrada.—42 bales good thin old bark held for 22s. 6d. per cwt.

Cascarilla Bark.—8 bales bought in at 50s. per cwt. for fair quilly, and 35s. for dusty.

Castor Oil.—Somewhat irregular, *Calcutta* firsts held for 4d., seconds for 3¾d. Yellow selling at 2d. to 2⅛d. per lb.

Cinchona Bark.—10 bales bold *Carthagena* were held for 5d. per lb. 7 packages *Crown Bark* taken out at 9d. 42 serons *Peruvian* part sold at 8d. to 10½d. per lb.

Civet.—This article is freely offered in the drug auctions, but no sales seem to take place publicly, the offering in the sales taking the form of advertisement, we suppose. Finest is held for 17s. 6d. to 18s. per oz., according to quantity; good, 15s. to 16s., whilst soft, of fair flavour, can be obtained at 13s. to 14s. per oz.

Colocynth.—5 cases *Turkey* medium apple held for 1s. 1d. per lb., 4 boxes *Spanish* pulp for 3s.; 14 cases low broken ditto bought in at 7d. per lb.

Colombo Root,—3 bales washed, rather mixed, were held for 65s. per cwt.

Cubebs.—65 bags greyish black, part small, were held for 40s. per cwt., a bid of 32s. 6d. being refused. Fair, but rather stalky held for 35s.

Cummin Seeds.—20 bags *Malta* taken out at 25s. per cwt., 25 bags of lower quality being held for 19s.

Cuttle Fish.—5 bags dirty sold at 1d. per lb.; 136 mats fair bold held for 3½d.

Dill Seed.—2 bags sold at 17s. per cwt.

Dragon's Blood.—2 cases very scedy and dullish lump sold at £5 15s. per cwt. Fine lump remains scarce, and is much inquired for.

Ergot of Rye.—10 cases very weevily *Spanish* is held for 6d. per lb., but no buyers could be found. 17 bags slight weevily held for 8½d. per lb.

Essential Oils.—*West Indian Oil of Limes* sold at 3s. 5d. to 3s. 7d. per lb. 1 tin *Bay Oil* taken out at 7s. per lb., 1 case of *Dodge & Olcott's* being held for 9s. 6d. per lb. 3 coppers *Oil of Lemon* held for 2s. 9d. per lb. 1 case *Dodge & Olcott's Oil of Wintergreen* for 5s. 6d. per lb. 11 cases fair quality *Oil of Eucalyptus* for 2s. down to 1s. 3d. for commercial, 6 cases *globulus* for 2s. 3d. per lb., 5 cases *cedar wood* for 1s. per lb., 2 cases *Grasse geranium* for 30s.

Fennel Seed.—8 bags of fair quality sold at 16s. 6d. per cwt., lower quality realising 11s. to 11s. 6d.

Galls.—206 bags fair *Bagdad* were held for 57s. per cwt.

Gamboge.—Of the 28 cases offered only 5 cases good pickings sold cheaply at £6 15s., good bright slightly soft grain pipe held for £8 5s. per cwt., dull Saigon held for £5 5s. to £6 10s. per cwt.

Gentian Root.—10 bales medium quality held for 22s. 6d. per cwt., fair dry selling at 24s.

Golden Seal Root.—6 bags fair fibry sold at 1s. 10d. per lb.

Guaza.—20 bales fair quality, but very dusty, held for 6d. per lb.

Gum Ammoniacum.—3 cases good clean seed to bold drop held for 60s. per cwt.

Gum Benjamin.—24 cases good even seconds *Sumatra* fetched £9 to £9 2s. 6d., low ditto being held for 75s. per cwt., medium selling partly without reserve at £4 15s. to £7 5s.; good ditto held for £11. *Palembang* for 22s. 6d. per cwt.

Gum Guaiacum.—Fair glassy block held for 1s. 3d. per lb., fine glassy for 2s. 6d.

Gum Myrrh.—Good sorts held for 70s., low to dark for 21s. to 40s. per cwt.

Honey.—Ordinary *Jamaica* bought in at 25s. per cwt., 20s. being accepted for eight packages of somewhat inferior quality, and 20s. for a rather better lot, six half-barrels *Greek* bought in at 19s.

Ignatius Beans.—20 bags good fairly bold held for 3d. per lb.

Ipecacuanha. The offerings consisted of 47 bales *Rio* and 16 bales *Carthagena*;

nothing of the former quality could be had under 8s. per lb., but only a few bales sold at from that price to 8s. 1d. per lb. Picked held for 9s. per lb. *Carthagena* did not sell, being held for very long prices.

JALAP.—29 bales small heavy, part wormy, tubers held for 6½d. per lb.

KOLA NUTS.—Of 9 packages 6d. was the price required for fair dry, rather dark, a bid of 3½d. per lb. being declined. 3 barrels very mouldy were bought in, only 1d. per lb. being offered; 1 bag bold dry dull realised 2½d. per lb.; 5 bags good washed were taken out.

KAMALA.—4 cases fair bright bought in at 1s. per lb.

LICORICE ROOT.—7 bags crushed taken out at 19s. per cwt.

MUSK.—1 tin thin skin grey *Tonquin*, small to bold, fairly dry, part dark bought in at 70s. per oz. 1 tin ditto, Pile 3, a few pasty at 40s. 1 tin common grain being held for 12s. per oz.

ORANGE PEEL.—38 cases good thin cut held for 9d. per lb.; later in the sale lower prices were accepted, thin cut selling at 7½d. per lb.

ORRIS ROOT.—20 bags fair *Verona* held for 28s. per cwt. 50 bags *Florentine* sold at 40s. to 41s. for good pale down to 27s. to 29s. for inferior discoloured.

PISTACHIO NUTS.—2 cases fair *Syrian* held for 1s. 5d. per lb.

QUILLAIA BARK.—5 bales of fair quality, part dark, bought in at 30s. per cwt.

QUINCE SEED.—5 barrels red *Spanish*, slightly mouldy, sold at 1s. 2d. to 1s. 3½d. per lb.

QUININE SULPHATE.—3 cases labelled "Sulfate de Quinine de la Chinin fabrik," in tins, without, however, giving any indication as to which of the "Chinin fabriks," were withdrawn at 1s. 1d. per oz.

RHUBARB.—medium round *Shensi* was taken out at 2s., medium flat ditto for 1s. 9d., small ditto, part trimmings, for 3s., and pickings for 1s. per lb., good bold flat *high dried* three quarter pinky, quarter dark fracture fetched 1s. 2d., small ditto, 1s. 1d.; good bold round *Canton*; fair pinky and grey fracture held for 1s. 4d., small trimming selling at 1s. 5d.; good flat *Canton* held for 1s. 3d. per lb.

SARSAPARILLA.—12 serons *Honduras* taken out at 1s. 9d. per lb. 12 bales *Lima* held for 1s. 2d. to 1s. 4d. per lb.

SCAMMONY ROOT.—50 bags were held for 30s. per cwt.

SENEKA ROOT.—12 bales very chumpy bought in at 1s. 3d. per lb.

SENNA.—*Tinnevelly*: Only 15 bales were offered to-day by importers, and these were as usual sold at 1½d. to 2¼d. for small spotty discoloured leaves; 1 bale fair bold slightly yellowish sold at 4½d. per lb., a very full price. *Alexandrian*: 6 packages in all were offered, but bought in at 7½d. for good green leaf, and 6d. for small part broken.

SIMAROUBA BARK.—2 bales, of which no sample was forthcoming, were held for 9½d. per lb.

STAR ANISEED.—23 cases *China* bought in at 105s. per cwt.

STROPHANTHUS SEEDS.—3 bags fair *Kombé* were taken out at 3s. 3d. per lb.

TAMARINDS.—20 casks fair *West Indian* bought in at 8s. per cwt.

TONQUIN BEANS.—16 cases sold at 1s. 1d. to 1s. 3d. for fair small, crystallised, foxy selling at 6d. per lb., good frosted held for 1s. 9d.

TURMERIC.—8 bags more or less water damaged was bought in at 8s. 6d. per cwt.

VANILLA.—188 tins in all were offered, the bulk selling at fairly steady prices, except for the *Tahiti* kind, which were all bought in, 8s. being asked. *Mauritius* sold well at steady rates, 23s. being paid for good 7½-inch beans, 22s. 6d. for 7-inch, 20s. 6d. for 6½ inch, 18s. 6d. for 5½ to 6 inch, and 18s. for 4½d. to 5 inch. *Seychelles* sold at 22s. for 7½ inch, 19s. for 5½ to 6½ inch, and 14s. for splits. *Madagascar*: 7 to 7½ inch of good flavour sold at 21s. per lb., 5 inch, part split and mouldy sold at 14s. 6d. to 15s. per lb.

WAX.—Four cases *Calcutta* bought in at £6 5s., fair to good *Jamaica* sold at £6 17s. 6d. to £7 2s. 6d., showing a decline in value of about 2s. 6d. per cwt., low *Zanzibar* sold, subject to approval, at 92s. 6d., good being held for £6 10s. to £7, yellow *East Indian* held for £5 10s. per cwt., a bid of £5 being refused.

NEWCASTLE CHEMICAL REPORT.

FEBRUARY 16, 1898.

More is doing in Crystal Soda for home use. Caustic Soda is moving somewhat better, but prices all round remain unchanged. Quotations are: Soda Crystals: 45s. to 57s. 6d. Bleaching Powder, £6 5s. to £6 10s. Caustic Soda: 70 per cent., £7 10s. to £7 15s. Soda Ash: 52 per cent., £4 5s. Alkali: 52 per cent., £5 5s. Sulphur: £4 15s. to £5 per ton.

MANCHESTER CHEMICAL REPORT.

FEBRUARY 16, 1898.

There was some slight flutter caused on 'Change to-day by a report that the price of Bleaching Powder had, owing to further competition from electrolytic process makers, dropped another pound per ton. Inquiries in different quarters, however, showed that it was only rumour, and that it must have referred to the previous reduction at the commencement of the contract season. The quotations are £5 2s. 6d. to £5 5s. per ton, soft wood casks on rails. Caustic Soda, both high and low strengths, is firm, and Soda Ash and Crystals are also unchanged. Sulphate of Copper is lower, and £17 is the figure for best brands, delivered Manchester. Brown Acetate of Lime is also easier and in better supply at about £6 per ton for best American *c.i.f.* and Welsh at station. Yellow Prussiate is firm at 7d., and Green Copperas is unchanged. Anilines are very quiet, and Oil and Salt are selling at even lower figures than those quoted last week.

LIVERPOOL REPORT.

AMMONIUM SALTS—Are unchanged, except Sulphate, which is 2s. 6d. per ton easier, viz., £10 2s. 6d. per ton here.

BEESWAX. Niger has been selling in small quantities at £6 per cwt.

BLEACHING POWDER—Continues quiet at £5 12s. 6d. to £6 5s. per ton.

CANARYSEED—Enjoys a better inquiry, and sales have been made at better prices; some 250 bags of Turkish of fair average to good quality sold for 26s. per 464 lbs.

CASTORSEED.—330 bags of Pernambuco sold at 10s. 4½d. per cwt., and 156 bags of Maranham at 10s. 3d.

CARNAUBA WAX.—150 bags of grey changed hands at 41s. 6d. per cwt.

CHILLIES.—80 bags of Sierra Leone sold ex store at 32s. 6d. to 40s. 6d. per cwt.; 33 bags ditto sold at 36s and 132 bags ditto at auction were disposed of at 42s. 6d. to 43s. per cwt.

COPPERAS—Continues in good demand at 38s. per ton for Lancashire, and 36s. for Welsh.

OILS (FIXED) AND SPIRITS.—*Castor oils* have not risen in price, as was anticipated, but are steady at the firmly maintained price of 3⅝d. per lb. for both Calcutta "good seconds" and French "first pressure." *Olive oils* are selling only in retail quantities, though Spanish oils are being inquired after for shipment. In a circular of Messrs. Harpen & Co. attention is drawn to the excellent quality of Spanish oils this year, stating that their acidity averages from 1·50 per cent. to 3 per cent., instead of 15 to 40 per cent., as was the case in the bad season 1895-6, and suggesting that as the Gallipoli oils used in wool working are unobtainable through failure of the crops, Spanish oils can be substituted without risk, owing to their high quality. *Linseed Oil* of Liverpool make is firm at 16s. 9d. to 17s. per cwt. *Spirits of Turpentine* has receded in price 3d. per cwt., and now sells steadily at 24s. 9d. per cwt.

POTASH SALTS.—*Potashes* have risen in price to 22s. and 22s. 6d. per cwt. *Pearlash*: 37s. 6d. to 40s. per cwt. Other salts unchanged.

SODA SALTS—Are unchanged, with the exception of borax, which is now at £13 10s. to £13 15s. per ton.

TUESDAY, FEBRUARY 22.

BRADFORD AND DISTRICT CHEMISTS' ASSOCIATION.
Lecture by W. M. Gardner.

GLASGOW AND WEST OF SCOTLAND PHARMACEUTICAL ASSOCIATION, at 9 p.m.
Short Papers by Members.

WEDNESDAY, FEBRUARY 23.

BRIGHTON JUNIOR ASSOCIATION OF PHARMACY.
Short Papers by Messrs. S. Ching and A. S. Kent.

MIDLAND CHEMISTS' ASSISTANTS' ASSOCIATION, at 9.15. p.m.
Short Papers by Members.

THURSDAY, FEBRUARY 24.

CHEMISTS' ASSISTANTS' ASSOCIATION, at 9 p.m.
Discussions on "Trade Unionism in Pharmacy," opened by the President, and on "The New Pharmacy Bill."

FRIDAY, FEBRUARY 25.

ABERDEEN JUNIOR CHEMISTS' ASSOCIATION, at 9.30 p.m.
Concert.

EDINBURGH CHEMISTS', ASSISTANTS', AND APPRENTICES' ASSOCIATION, at 9.15 p.m.
"The Simpler Plants and Animals" (illustrated), by George Senter.

PUBLIC DISPENSERS' ASSOCIATION, at 8 p.m.
"The Art of Dispensing, Its Demands, Claims, and Responsibilities," being the inaugural address by Dr. H. Macnaughton-Jones.

THE BENEVOLENT FUND

OF THE

PHARMACEUTICAL SOCIETY OF GREAT BRITAIN.

LOCAL LIST OF SUBSCRIPTIONS AND DONATIONS

RECEIVED DURING 1897.

FOR LIST OF SUBSCRIBERS RESIDING ABROAD SEE PAGE 182t.

	£	s.	d.
Aberavon.			
Loveluck, G. D.	0	15	6
Williams, Rev. M.	0	5	0
Aberchirder.			
Smith, W. M.	0	5	0
Aberdare.			
Francis, J.	0	2	6
Jones, D. W.	0	5	0
Jones, W. H.	0	5	0
Aberdeen.			
Bonner, A. C.	0	15	6
Bruce, A. L	0	5	0
Cardno, R. C.	0	5	0
Clark, J.	0	5	0
Coutts, C.	0	5	0
Craig, A.	0	5	0
Cran, N. B.	0	2	6
Cruickshank, Geo. P.	0	5	0
Cruikshank, J.	0	5	0
Dugan, A. F.	0	5	0
Dunn, J.	0	5	0
Fearnside, J.	0	5	0
Giles, William	0	5	0
Johnston, John	3	3	0
Kay, H. G.	0	10	6
Kay, James P.	0	10	6
Kemp, James	0	2	6
Mortimer, D. A.	0	5	0
Paterson, J.	0	5	0
Paterson, W. and Sons	0	10	6
Petrie, J. J.	0	5	0
Reid, W.	0	5	0
Ritchie, D.	0	5	0
Simpson, C.	0	5	0
Spence, J.	0	5	0
Strachan, Alexander	0	5	0
Urquhart, R.	0	5	0
Wallace, W.	0	5	0
Weir, A. S.	0	5	0
Aberdovey.			
Evans, J.	0	2	6
Aberfeldy.			
Macnaughton, H. B.	1	1	0
Abergavenny.			
Pryer, Henry	0	10	6
Shackleton, G. W.	0	10	6
Williams, R. M.	0	2	6
Aberlour.			
Smith, John	0	6	0
Abertillery.			
Prichard, T. H.	0	5	0
Aberystwith.			
Ellis, Robert	0	2	6
Lewis, D. (Llanrhystyd)	0	2	6
Wynne, Edward P.	0	10	6
Abingdon.			
Smith, William F.	0	5	0
Airdrie.			
Hart, T.	0	2	6
Harvie, J.	0	10	6
Alcester.			
Adcock, H. D.	0	5	0
Overbury, Henry	0	5	0
Aldborough (Yorks.).			
Andrews, H. A.	0	2	6
Aldeburgh.			
Cooper, F. T.	0	2	6
Aldershot.			
Williams, James	0	10	6
Alexandria (N.B.).			
McFarlane, Peter	0	5	0
Alfreton.			
Evison, Alfred	0	2	6
Alness.			
MacKenzie, G. G.	0	5	0
Alnwick.			
Newbigin, James L.	0	10	6
Newbigin, Lesslie	0	5	0
Alresford.			
Chaston, G. H.	0	5	0
Richardson, J. H.	0	5	0
Willis, William	0	5	0
Alsager.			
Sant, E.	0	5	0
Altrincham.			
Burgess, A. H.	0	10	0
Dean, J.	0	2	6
Reed, J. W.	0	5	0
Unsworth, J. W.	0	5	0
Alyth.			
Adam, A. A.	0	5	0
Ambleside.			
Herd, Henry W.	0	2	6
Robinson, J. H.	0	5	0
Amersham.			
Haddon, A. H.	0	2	6
King, E. T.	0	5	0
King, T. H.	0	2	6
Ammanford.			
Evans, E.	0	5	0
Ampthill.			
Brown, J.	0	5	0
Andover.			
Bienvenu, John	1	0	0
Gradidge, W. T.	0	5	0
Annan.			
Crail, J.	0	5	0
Arbroath.			
Burn, David H.	0	5	0
Jack, J	0	5	0
Naysmith, Andrew	0	5	0
Robertson, John	0	5	0
Tytler, W. W.	0	5	0
Whyte, J. S.	0	5	0
Arlesey.			
Kent, T. W.	0	5	0
Arundel.			
Neale, M. H.	0	5	0
Ashbourne.			
Osborne, James	0	5	0
Ashburton.			
Evans, D. O.	1	1	0
Ashby.			
Fletcher, J.	0	2	6
Ashby-de-la-Zouch.			
Bullen, George W.	1	1	0
Ashford (Kent).			
Forth, W. P.	0	5	0
Ingall, Joseph	1	1	0
Stedman, F. W.	0	5	0
White, A. E.	0	2	6
White, Charles Thomas	0	5	0
Ashton-under-Lyne.			
Belfield, William	0	5	0
Bostock, J. W.	0	5	0
Bostock, William	0	10	6
Hall, J.	0	2	6
Hill, D. C.	0	5	0
Jackson, F. W.	0	2	6
Phillips, J. J.	0	5	0
Sharp, S.	0	5	0
Waterhouse, J. and Co.	0	10	6
Atherstone.			
Parkinson, F. W.	0	7	6
Atherton.			
Fletcher, Ellis	0	5	0
Stothert, J.	0	5	0
Attleborough.			
Robinson, C. M.	0	2	6
Auchmill.			
Wilson, J. M.	0	2	6
Auchterarder.			
Dougall, W. R. B.	0	5	0
Aylesbury.			
Palmer, Edwin T.	0	5	0
Ratherham, W.	0	5	0
Surfleet, W.	0	5	0
Wood, J.	0	5	0
Ayr.			
McGregor, A.	0	5	0
Bagshot.			
Copestake, H. H.	0	5	0
Bakewell.			
Carrington, Edward G.	0	5	0
Bala.			
Williams, J.	0	5	0
Banbury.			
Bartlett, H.	0	5	0
Gilkes, Fredk. G.	0	5	0
Banchory.			
Lunan, Alexander	0	5	0
Banff.			
Alexander, W.	0	5	0
Bangor.			
Jones, Owen	0	5	0
Webster, Thomas	0	5	0
Barking.			
Ridley, C. H.	0	5	0
Barnard Castle.			
York, F.	0	10	6
Barnet.			
Grosvenor, T. C.	0	5	0
Huggins, S.	0	10	6
Silversides, R. B. G.	0	10	6
Barnsley.			
Billington, H. P.	0	10	6
Barrowford.			
Swinglehurst, J.	0	10	0
Barnstaple.			
Curtis, W.	0	10	6
Goss, Samuel	0	10	0
Hickin, J.	0	2	6
Partridge, James	0	5	0
Pratt, Edward	0	5	0
Tremeer, J. J.	1	1	0
Barton-on-Humber.			
Smith, Richard F.	0	5	0
Basingstoke.			
Mares, J.	0	10	6
Bath.			
Alcock, Henry	0	10	0
Appleby, E. J.	1	1	0
Bright, W.	0	5	0
Clarke, B. G. K.	0	5	0
Dunn, Richard	0	10	6
Gare, G. H.	0	5	0
Griffin, Alfred W.	0	5	0
John, B	1	1	0
Marsh, John H.	1	1	0
Masters, Henry James	0	5	0
Neave, A. R.	0	5	0
Partington, J. J.	0	10	0
Snow, A. L. (Widcombe)	0	2	6
Symons, Dr W. H.	1	1	0
Thomas, Henry J.	0	10	6
Walters, J. L.	0	2	6
Whiston, E.	2	2	0
Williams, Mrs. Sophia	0	10	6
Wilson, Joseph	1	1	0

Batley.	£	s.	d.
Broadhead, R.	0	5	0
Bawtry.			
Nettleship, T. W.	0	5	0
Beaumaris.			
Roberts, W. E.	0	2	6
Plater, John	1	0	0
Bebington (Cheshire).			
Fawcett, J.	0	10	6
Beccles.			
Flower, William	0	5	0
Plumbly, Walter	1	6	0
Bedale.			
Swinbank, J.	0	5	0
Bedford.			
Anthony and Biss	0	10	0
Cameron, William Alexander	0	5	0
Carruthers, E. M.	0	5	0
Corrie, A. A.	0	2	6
Corrie, Isabella A.	0	5	0
Ekins, John	0	10	6
Hester, Charles	0	5	0
Lloyd, J. H.	0	5	0
Norman, Joseph S.	0	5	0
Taylor, J. B.	0	5	0
Thompson, H.	0	5	0
Bedlington.			
Foggan, George	0	10	0
Belfast.			
Green, Thomas	0	5	0
Leslie, J.	1	1	0
Stratton, W. G.	0	2	6
Yoxall, Henry	0	5	0
Bellshill (N.B.)			
Lawson, W.	0	5	0
Belper.			
Burkinshaw, W. T.	0	5	0
Calvert, James	0	5	0
Berkeley.			
Noak, W. F.	0	5	0
Berkhampstead.			
Cooper, W., and Nephews	1	1	0
,, (Donation)	21	0	0
King, C. E.	0	5	0
Berwick.			
Lyle, W.	0	5	0
Macintyre, J.	0	5	0
Miller, T.	0	2	6
Bethesda.			
Jones, R. C.	0	2	6
Bexley Heath.			
Mason, Alfred J.	0	5	0
Bicester.			
Bates, John	0	10	6
Sandiland, R. B.	0	10	6
Bideford.			
Hogg, Mrs. Mary	0	5	0
Tovey, A.	0	5	0
Underwood, G.	0	5	0
Biggar.			
Eunson, J.	0	2	6
Billericay.			
Nix, J. B.	0	5	0
Birkenhead.			
Breeze, J. A. E.	0	5	0
Dutton, H. O.	1	1	0
Dutton, John	0	10	6
Ellithorne, A. H.	0	10	6
Wynne, W. A.	0	5	0
Birmingham.			
Arblaster and Churchill	1	1	0
Atkins, W. S.	0	10	6
Ayris, H. C.	0	2	6
Bates, J.	0	5	0
Bates, S. L.	0	2	6
Barker, Thoma	0	10	6
Bayley, R.	0	10	6
Bellamy and Wakefield	2	2	0
Bird, Alfred	1	1	0
Blackbourne, A.	1	6	0
Blackwell, Hayes, and Spilsbury	1	1	0

Birmingham—contd.	£	s.	d.
Boucher, H.	0	5	0
Brady, B. F.	0	10	6
Bramley, W. M.	0	5	0
Branford, F. G.	0	2	6
Brewitt, W. Y.	1	1	0
Brunt, G. H.	0	10	6
Canning and Co.	1	1	0
Cattell, J. T.	0	2	6
Cattell, T. B.	0	5	0
Chapman, T. W.	0	5	0
Chase, Thomas	1	1	0
Chesterton, W. P.	0	10	6
Clayton, Francis Corder	1	1	0
Collier, F. T.	0	2	6
Cooper, H. S.	0	2	6
Corfield and Corfield	1	1	0
Cox, W. F.	0	2	6
Critchlow, H.	0	5	0
Cross, F. G., and Son	0	5	0
Evans, J. C.	0	2	6
Evans, W. B.	0	5	0
Featherstone, W. B.	0	5	0
Foden, T. H.	0	2	6
Foster, Alfred H. (Executors of)	0	5	0
Foster, F.	0	2	6
Foster, James Alfred	0	5	0
Gaskin, J. H.	0	5	0
Gibson, F. T.	1	1	0
Greatrex, H.	0	5	0
Griffin, J. F.	0	5	0
Ground, T.	0	5	0
Hall, S. W.	0	2	6
Harries, A. H.	0	5	0
Harris, P. and Co.	1	1	0
Hill, J.	0	5	0
Horton, J. J.	0	5	0
Hurst, J.	0	2	6
Jacombs, W. H.	0	5	0
Jarvis, C. F.	0	10	0
Kennard, J.	0	2	6
Landor, W. E.	0	5	0
Lawton, H. S.	0	5	0
Lowther, T. W.	0	15	6
Lucas, J.	0	10	6
Mackenzie, J. C.	0	5	0
Magor, M.	0	10	6
Marshall, G. G.	0	5	0
Morris Banks and Co.	1	1	0
Naish, C. E.	1	1	0
Onion, J.	0	2	6
Otty, W. H.	0	5	0
Owen, G.	0	5	0
Page, C.	0	10	6
Pennistone, W.	0	5	0
Perkins, Catherine S.	0	2	6
Perry, George E.	0	10	6
Place, E. B.	0	2	6
Playfoot, F. H.	0	2	6
Poole, J.	0	10	0
Price, W.	0	5	0
Prosser, Frank H.	1	1	0
Radford, J. A.	0	10	6
Reeve, T. L.	0	5	0
Richards, F. J.	1	11	6
Roberts, J., and Sons	0	5	0
Salt, J. W.	0	5	0
Scott, G. F.	0	2	6
Selby, J.	0	2	6
Shakespear, W.	0	2	6
Shaw, W. A.	0	3	6
Simmons, A.	0	5	0
Smith, F.	0	10	0
Smith, F. A.	0	5	0
Southall Bros. and Barclay	3	3	0
,, (Donation)	10	10	0
Spilsbury, J.	0	5	0
Thompson, Blanche E.	0	2	6
Thompson, Charles	1	1	0
Thompson, William	0	5	0
Tomlinson, G.	0	5	0
Wakefield, T.	0	5	0
Weaver, T.	0	5	0
Whitehouse, J.	0	5	0
Wilkes, G. W.	0	5	0
Winfield, G. F.	0	5	0
Woolf, E.	1	1	0
Bishop Auckland.			
Dobinson, Thomas	0	5	0
Harburn, Alfred	0	5	0
Bishop's Stortford.			
Milbank, S. T.	0	15	6
Palmer, G. W.	0	10	0
Bishop Sutton.			
Dudden, R. M.	0	5	0

Blackburn.	£	s	d.
Ainsworth, B.	0	2	6
Baxter, G. B.	0	2	6
Butterfield, William	0	5	0
Clayton, Jowett and Ward	0	10	6
Critchley, T.	0	5	0
Eatough, Bros.	0	10	0
Farnworth, Walter	1	1	0
Garland, A. P.	0	5	0
Harrison, J.	0	2	6
Highton, E.	0	2	6
Hindle, H.	0	5	0
Hindle, Joseph	0	5	0
Holden, J.	0	2	6
Paffard, Frank	0	5	0
Pickup, W.	0	5	0
Wells, W.	0	2	6
Whitehead, F. N.	0	5	0
Yates, D.	0	5	0
Blackpool.			
Carter, Thomas	0	10	6
Henderson, A.	0	5	0
Howorth, H. C.	0	2	6
Jackson, Joseph	0	5	0
Jackson, O. L.	0	2	6
Johnson, H. M.	0	5	0
Keeley, J. P.	0	2	6
Laurie, John	0	15	6
Porter, T.	0	15	6
Richardson, W. C.	0	10	0
Sankey, J.	0	15	0
Sedgwick, J.	0	5	0
Taylor, W. C.	0	2	6
Turnbull, J.	0	5	0
Turver, C. H.	0	5	0
Wilkinson, W. F.	0	2	6
Blaenau-Festiniog.			
Gratton, G. E.	0	2	6
Jones, H.	0	5	0
Blaenavon.			
Thornton, W.	0	3	6
Blandford.			
Groves, Richard H.	1	1	0
Bloxham.			
Cherry, F.	0	5	0
Blundellsands.			
Stockdale, R.	0	5	0
Blyth (Northumberland).			
Cormack, G.	0	5	0
Keith, J.	0	2	6
Bognor.			
Long, Alfred T	0	10	6
Bollington.			
Andrew, J. H.	0	2	6
Bolton.			
Arrandale, J. S.	0	2	6
Blain, William	0	10	6
Blain, W. R.	0	5	0
Dearden, W.	0	10	6
Hart, F.	0	10	6
Knott, H. (Donation)	5	5	0
Mather, James	0	10	6
Orrell, W. H.	0	2	6
Rawsthorne, W.	0	5	0
Shallcross, J. R.	0	2	6
Teebay, J.	0	5	0
Watkinson, H. A. (Lt. Hulton)	0	13	0
Bo'ness.			
Tweedie, A.	0	2	6
Bonnyrigg.			
Hutcheon, W.	0	10	6
Boston (Lincs.).			
Bullivant, W.	0	5	0
Grimble, Albert	0	10	6
Haller, F. W.	0	5	0
Horry, W. T.	0	2	6
Kent, B. J.	0	10	6
Page, W. I.	0	5	0
Bourne (Lincs.).			
Judge, E. H.	0	5	0
Mills, Robert M.	0	10	6
Bournemouth.			
Beale, J. H. T.	0	5	0
Bignell, J. H.	0	2	6
Bilson, F. E.	1	1	0
Bridge, G. E.	1	1	0
,, (Donation)	5	5	0
Endle, F.	0	10	6
Hardwick, Stewart	0	10	6

Bournemouth—contd.	£	s.	d.
Hazard, J. D.	0	5	0
Jones, William	1	1	0
Kelf, H. D.	0	2	6
Morris, J. H.	0	5	0
Rye, F.	0	5	0
Robinson, J. L.	0	2	6
Spinney, Frank	0	10	6
Tame, T.	0	5	0
Taylor, George	0	5	0
Toone, J. A.	0	10	6
Williams, J. H.	0	5	0
Yates, S. P.	0	5	0
Bourton-on-Water.			
Hardy, J.	0	5	0
Bowdon.			
Paine, Standen	1	1	0
,, (Donation)	21	0	0
White, W. S.	0	2	6
Bracknell.			
Sandwith, W. H.	0	5	0
Bradford (Yorks.).			
Alexander, E. G.	0	10	6
Calvert, F. C. and Co. (Donation)	5	5	0
Calvert, J.	0	5	0
Cocker, Justus J.	0	5	0
Collins, H. S.	0	10	0
Firth, M.	0	5	0
Forshaw, T. G.	0	2	6
Gordon, J.	0	2	6
Gott, A. T.	0	5	0
Greenwood, S.	0	2	6
Harrison, Parkinson and Co.	2	2	0
Holmes, J.	0	2	6
Kershaw, J.	0	2	6
Lister, Simeon (Great Horton)	0	10	6
Mackay, E.	0	5	0
Mitchell, J. A.	0	5	0
Moulson, J. O.	0	5	0
Newbould, J. M.	0	5	0
Priestley, D. S.	0	5	0
Rimmington and Son	1	1	0
Silson, R. W.	0	10	6
Snow, C. M.	0	2	6
Stephenson, Robert	0	5	0
Waddington, A. H.	0	5	0
,, Proceeds of Mr. Howie's lecture	10	10	0
Watts, John	0	10	6
Wilcock, F. A.	0	5	0
Wilson, D. W. R.	0	5	0
Brading (I.W.).			
Bonn, J. E. J.	0	5	0
Braintree.			
Row, George C.	0	5	0
Brampton.			
Younger, W. E.	0	5	0
Brechin.			
Hodgeton, D.	0	5	0
Brecon.			
Meredith, John	0	10	6
Morris, J. C. B.	0	5	0
Tudor, W. T.	1	1	0
Brentford.			
Hawthorne, A.	0	5	0
Wood, A.	0	5	0
Bridgend.			
Jenkins, D.	0	5	0
Bridgwater.			
Basker, J. A	0	5	0
Bridlington Quay.			
Dickins, F.	0	2	6
Gatenby, R. (Bridlington)	0	5	0
Jackson, Henry J.	0	5	0
Bridport.			
Beach and Barnicott	1	1	0
Beach, James	0	10	6
Brighouse.			
Wood, C.	0	2	6
Brighton.			
Adams, F.	0	10	6
Ashton, C. S.	0	10	6
Barton, Charles	0	10	6
Barton, Henry	0	10	6
Bathe, R. S.	0	10	6
Beckwith, C.	0	5	0
Black, —	0	5	0
Blacklock, P. W.	0	2	6
Blamey, C. A.	0	5	0

Brighton—continued.	£	s.	d.
Brighton Junior Association of Pharmacy	4	5	0
Brown, R. E.	0	10	6
Caton, E. C.	0	10	6
Chambers, Herbert	0	5	0
Churchill, H.	0	10	6
Cooper, —	0	2	6
Costerton, H.	0	10	6
Crawhall, T. C.	0	5	0
Edwards, J.	0	10	6
Else, William	0	10	6
Feltwell, J. G.	0	10	0
Gibson, W. H.	0	5	0
Glaisyer, T.	0	10	6
Gray, C.	0	2	6
Greening, B. C.	0	5	0
Guy, Frederick	0	10	6
Guy, F. G.	0	10	6
Gwatkin, James Ross	1	1	0
Hardcastle, S. B.	1	11	6
Heselton, C. J.	0	5	0
Hickley, G.	0	10	6
Jeeves and Son	1	1	0
Jenkins, H.	0	5	0
Levett, H.	0	15	0
Marten, J. R.	0	5	0
Metherell, K.	1	1	0
Miller, J.	1	1	0
Mills, C. T.	0	2	6
Muston, G. G.	0	5	0
Neville, T. C.	0	5	0
Padwick, John	0	10	6
Pears, H. W. K.	0	10	6
Pears, Kilby	0	10	6
Perress, J. C.	0	10	0
Salmon, E. F.	0	10	6
Savage and Co.	1	1	0
Savage, G. B.	0	2	6
Smith, Walter Henry	1	1	0
Smithson, J.	0	10	6
Stableforth, J. W.	0	5	0
Vizer, Edwin B.	1	1	0
Williamson, J.	0	5	0
Yates, C. G.	1	6	0
Brill (Bucks).			
Holmes, F. G.	0	10	6
Bristol.			
Allen, Benjamin	1	1	0
Allen, J.	0	2	6
Bagshaw, G. W.	0	2	6
Barton, J. B. (Kingswood)	0	5	0
Berry, William	0	10	6
Blissett, F. H.	0	5	0
Bristol Pharmaceutical Association (Donation)	5	5	0
Boorne, H. E.	0	5	0
Boucher, C. E.	0	5	0
Boucher, J. M.	0	5	0
Boucher, John	1	1	0
Brinsford, J. A.	0	5	0
Burnett, A. E.	0	2	6
Buxton, T.	1	1	0
Chandler, J.	0	5	0
Dawney, C. B.	0	2	6
Dibble, J. W.	0	10	6
Evans, J.	0	5	0
Fardon, A. E.	0	10	6
Freestone, R. H.	0	5	0
Frowd, E. F. (Portishead)	0	10	6
Good, J. T.	0	10	6
Harris, E. T. J.	0	5	0
Howell, H.	0	5	0
Humpage, Miss A.	1	1	0
Isaac, G. W.	0	10	6
Jeffery, Henry	0	10	6
Jennings, T. H.	0	5	0
Keen B.	0	10	6
Kenderdine, A. G.	0	5	0
Llewellyn, David	0	5	0
Long, John T.	0	10	6
Maish, W.	0	10	6
Moore, J. E.	0	10	6
Nethercott, W. J.	0	5	0
Newman, Robert	0	5	0
Pinch, J. E.	0	5	0
Pitchford, William	0	10	0
Pitman, John	1	1	0
,, (Donation)	5	5	0
Plumley, James G.	0	10	6
Presley, Edward	0	5	0
Price, C. C. (Horfield)	0	7	6
Sleight, F.	0	5	0
Spill, Thomas	0	10	6
Stroud, John	1	1	0
Thomas, W.	0	5	0
Townsend, Charles	1	1	0
Townsend, Henry H.	1	1	0
Trew, H. E.	0	5	0

Bristol—continued.	£	s.	d.
Troake, R. J.	0	10	6
Turner, George T.	1	1	0
Wade, Thomas T.	0	5	0
Warren, Algernon	1	1	0
Watts, J. W.	0	5	0
White, James W.	0	10	6
Wills, A. G.	0	5	0
Young, E. F.	0	10	6
Briton Ferry.			
Olive, W. T.	0	5	0
Broadstairs.			
Horrell, A. C. J.	0	2	6
Bromley (Kent).			
Baxter, W., jun.	0	5	0
Baxter, W. W.	0	5	0
Goulden, Herbert	0	5	0
Shillcock, G.	0	5	0
Skinner, Richard	0	10	6
Bromyard.			
Davies, J. B.	0	2	6
Jones, Charles	0	5	0
Brora.			
Donaldson, W.	0	5	0
Broughty Ferry.			
Fleming, E.	0	5	0
Miller, J. H.	0	5	0
Park, William	0	5	0
Broxburn.			
Stewart, F.	0	5	0
Bruton.			
Osborne, G. C.	0	10	0
Brynmawr.			
Evans, Alfred E.	0	5	0
Jones, Alfred M.	0	10	6
Buckhurst Hill.			
Bull, E. J.	0	5	0
Buckingham.			
Kingerlee, George	1	1	0
Buckley.			
Hughes, H.	0	5	0
Burgess Hill.			
Beck, N. G.	0	5	0
Clarke, W.	0	2	6
Burley-in-Wharfedale.			
Lockwood, J.	0	2	6
Burnham (Bucks).			
Heald, Alfred J.	1	1	0
Burnham (Somerset).			
Pumphrey, A.	0	7	6
Burnley.			
Brown, J.	0	5	0
Cowgill, Brian H.	0	10	6
Dodsley, C. E.	0	5	0
Heaton and Son	0	5	0
Heaton, J.	0	5	0
Hitchin, Robert	0	5	0
Parkinson, I.	0	5	0
Parkinson, William	0	5	0
Tomlinson, N.	0	2	6
Wright, John W.	0	2	6
Burntisland.			
Bisset, James	0	2	6
Burry Port.			
Thomas, T. Rees	0	10	6
Burslem.			
Charles, T.	0	10	6
Hewitt, J. F.	0	5	0
Leicester, T.	0	10	6
Oldham, William	0	10	6
Parker, B.	0	2	6
Wardle, Thomas	0	2	6
Burston Hall.			
Eldridge, J. H.	0	5	0
Burton-on-Trent.			
Green, W.	0	2	6
Morgan, R. B.	0	2	6
Norris, A. B.	0	5	0
Ottey, Thomas	0	5	0
Staley, H.	0	2	6
Wright, George	0	10	6

Bury.	£	s.	d.
Crompton, H.	1	1	0
Hulme, T.	0	10	6
Bury St. Edmunds.			
Brain, G. F.	0	5	0
Clark, Owen A.	0	5	0
Crassweller, C. W.	0	5	0
Crassweller, W. E.	0	5	0
Hardwicke, J. E.	0	5	0
Kirkham, F.	0	2	6
Kirkham, Thomas	0	2	6
Skoulding, W. G.	0	5	0
Thacker, C. B.	0	5	0
Youngman, Edward	0	5	0
Youngman, W. E.	0	2	6
Buxton (Derbyshire).			
Bowden, F. H.	0	5	0
Hobson, G. W.	0	10	6
Wright, Robert	0	10	6
Caerphilly.			
Knight, G. T.	0	2	6
Cambridge.			
Beall, George	0	5	0
Beall, Samuel S.	0	5	0
Bryant, J. B.	0	5	0
Campkin, A. S.	0	5	0
Church, E. H.	0	2	6
Church, H. J.	2	2	0
Cook, H. F.	0	5	0
Deck, A. A.	0	2	6
Deck, Arthur	0	10	0
Field, E.	0	5	0
Flanders, H.	0	5	0
Greenwood, D.	0	10	6
Ivatt, A.	0	5	0
McAvoy, G.	0	2	6
Pain, Walter E.	0	5	0
Parson, H. J.	0	5	0
Peck, E. S.	1	1	0
Peck, G.	0	10	0
Sturton, Richard	2	2	0
Wright, T.	0	2	6
Yeomans, John	0	5	0
Canterbury.			
Amos, Daniel	0	10	6
Biggleston, E. R.	0	5	0
Bing, Charles	0	5	0
Bing, Edwin	0	10	6
Crofts, R.	0	5	0
Drury, S.	0	5	0
Harris, F. R.	0	10	6
Lander, A.	0	5	0
Laybourn, R. G.	0	5	0
Reeve, W.	0	10	6
Cardiff.			
Anthony and Co.	1	1	0
Clark, C.	0	5	0
Coleman, Alfred	0	5	0
Coleman, E. J.	0	5	0
Drane, Robert	1	1	0
Duck and Son	0	5	0
Duck, W. G.	0	5	0
Fargher, C.	0	5	0
Fargher, H. S.	0	5	0
Farthing, H. W.	0	5	0
Greaves, John	0	5	0
Hagon, Albert	0	5	0
Harries, D.	0	5	0
Hicks and Co.	0	10	6
Hopkins, W. R.	0	2	6
Howell, Thomas	0	5	0
Hughes, J.	0	5	0
Joseph, L.	0	5	0
Lewis, D. J.	0	5	0
Lloyd, David	0	5	0
Mumford, Richard	0	5	0
Munday, John	0	10	6
Phillips, H.	0	5	0
Prust, Richard	0	2	6
Rees, J. A.	0	5	0
Sanders, W. J.	0	5	0
Thomas, D.	0	5	0
Treharne and Son	0	5	0
Wakeford, T.	0	5	0
Walklate and Co.	0	5	0
Williams, W. Jesse	0	10	6
Carlisle.			
Dalziel, C. M.	0	10	6
Fisher, Catherine Hodgson	0	5	0
Foster, James	0	5	0
Hallaway, John	0	5	0
Jefferson, J.	0	5	0
Leytham, T. A.	0	5	0
Nichol, A.	1	1	0
Parker, Edward J.	0	5	0
Pattinson, M. H.	0	5	0

Carlisle—continued.	£	s.	d.
Reay, J.	0	2	6
Ridley, T.	0	5	0
Robinson, J. J.	0	5	0
Robson, John	0	5	0
Simpson, P.	0	5	0
Strawson, F.	0	2	6
Thompson, Andrew	0	10	6
Carluke.			
Hinksman, John	0	10	6
Carmarthen.			
Arthur, A.	0	2	6
Davies, C. E.	0	7	6
Lloyd, Walter	1	6	0
Carnarvon.			
Francis, James	0	2	6
Jones, John	0	5	0
Lloyd, W.	0	5	0
Owen, G. C. R.	0	5	0
Roberts, R.	0	2	6
Castle Douglas.			
Veitch, A.	0	5	0
Walker, F.	0	2	6
Castle Hedingham.			
Webb, W. J.	0	5	0
Castleton.			
Pendlebury, J.	0	2	6
Catford.			
Abbott, A. A.	0	5	0
Morris, E. S.	0	5	0
Caton (Lancs.).			
Preston, W. L.	0	5	0
Chard.			
Churchouse, C. H.	0	5	0
Chatham.			
Lamb, Thomas C.	0	5	0
Morgan, Alfred W.	0	5	0
Chatteris.			
Whitlamsmith, W.	0	5	0
Chelmsford.			
Metcalfe, Wilson	0	10	6
Tomlinson, James	0	10	6
Warren, F.	0	10	6
Cheltenham.			
Balcomb, John	0	10	6
Barron, William	0	10	6
Beetham and Son	1	1	0
Butcher, Thomas	1	1	0
Codling, A. J.	0	10	6
Dolman, Mrs.	0	5	0
Fitt, C. H. C.	0	5	0
Flemons, E. B.	0	2	6
Fletcher and Palmer	1	1	0
Forth, W.	1	1	0
Goodwin, F. A.	0	2	6
Hands, William	0	5	0
Harrison, J.	0	2	6
Hill, Arthur	0	5	0
Hill, W. H.	0	5	0
James, C. H.	0	2	6
Jeffrey, Thomas A.	0	10	6
Kersey, O	0	2	6
Mansbridge, M. C.	0	10	6
Mowatt, J. R.	1	1	0
Palmer, F. T.	0	10	6
Packer, C.	0	5	0
Parrott, W.	0	2	6
Pattison, Thomas	1	1	0
Pirie, G. F.	0	2	6
Purnell, Mrs.	0	5	0
Reeves, H.	0	2	6
Saxby, A. C.	0	5	0
Smith, Nathaniel and Co.	1	1	0
Smith, W. S. and H.	0	2	6
Stewart, James	1	1	0
Thomas, J. A. and J. P.	0	10	6
Westmoreland, W. H.	0	2	6
Chepstow.			
Clarke, C. H.	0	5	0
Chertsey.			
Birch, C.	0	2	6
Boyce, George	0	5	0
Dunsford, F. W.	0	5	0
Gerrard, A. W.	2	2	0
Jago, C. A.	0	5	0
Littleboy, J.	0	5	0
Chesham.			
Elliman, E. G.	0	10	6

Chester.	£	s.	d.
Baxter, George	0	5	0
Carter, T.	0	5	0
Cheers, S.	0	5	0
Davidson, W.	0	5	0
Dickenson, D.	0	5	0
Donald, A.	0	5	0
Hodges, W.	0	5	0
Hopley, J. H.	0	5	0
Huke, James W.	0	5	0
Kemp, G.	0	10	0
Roberts, R. R.	0	5	0
Roberts, W.	0	5	0
Shepheard, W. F. J.	0	5	0
Shrubsole, A.	0	5	0
Spencer, J. H.	0	5	0
Turver, W.	0	5	0
Young, W. J.	0	10	6
Welsh, J.	0	5	0
Chesterfield.			
Barfoot, J. R. D.	0	5	0
Booth, George	0	10	6
Bradley, T. H.	0	2	6
Elliott, Thomas (Newbold)	0	5	0
Furness, Thomas	0	10	6
Greaves, A. W.	0	5	0
Roe, R. P.	0	2	6
Sampson, George	0	5	0
Wright, G.	0	5	0
Chester-le-Street.			
Greenwell, Richard Henry	0	5	2
Chichester.			
Baker and Son	0	10	6
Charge, A. W.	0	10	6
Chippenham.			
Coles, John C.	0	10	6
Neale, E.	0	5	0
Turpin, A. B.	0	5	0
Chipping Ongar.			
Ward, David	0	10	6
Chipping Sodbury.			
Jones, Richard	1	1	0
Chorley.			
Dorning, H. R.	0	2	6
Hill, William	0	5	0
Oakes, G.	0	5	0
Wilson, J. A.	0	2	6
Christchurch (Hants.).			
Green, H. S.	0	2	6
Green, J.	0	2	6
Owen, A. H.	0	2	6
Chulmleigh.			
Joint, Robert James	0	6	0
Cirencester.			
Griffiths, Waldron	0	10	6
Kinch, Professor E.	0	10	6
Paternoster, J. and Son	0	10	6
Smith, C. W.	0	10	6
Clacton-on-Sea.			
Mann, William	0	7	6
Clare (Suffolk).			
Stokoe, T.	0	2	6
Claverley (Salop).			
Wilson, R.	0	5	0
Claycross.			
Lloyd, Robert	0	10	6
Smith, John	0	10	0
Clevedon.			
Hart, J. H.	0	5	0
Clun.			
Darroll, William	1	1	0
Clynderwen.			
James, H. P.	0	5	0
Coalville.			
Brunt, F.	0	5	0
Coatbridge (N.B.).			
King, J.	0	5	0
MacDonald, A.	0	2	6
Cockermouth.			
Bowerbank, Joseph	1	1	0
,, (Donation)	5	5	0
Brown, R. F.	0	2	6
Robinson, William	0	5	0
Scott, W. S.	0	2	6

Codnor (near Derby).	£	s.	d.
Farnsworth, Thomas	0	5	0
Colchester.			
Andrews, W.	0	5	0
Baker, H. E.	0	5	0
Bates, Thomas W.	0	5	0
Davies, Rees	0	5	0
Duffield, H. D.	0	5	0
Everitt, W. E.	0	5	0
Marlar, J. F.	0	5	0
Prosser, Mrs. J.	0	5	0
Shenstone, J. C.	0	5	0
Smith, W.	0	5	0
Weddell, Arthur	0	5	0
Coldstream.			
Elliot, W. M.	0	5	0
Collu pton.			
Foster, J.	0	5	0
Foster, M. T.	0	2	6
Colne.			
Hirst, E.	0	2	6
Colwyn.			
Hannah, C.	0	10	6
Hunt, J. L.	0	5	0
Colyton.			
Skinner, A. J. P.	0	5	0
Congleton.			
White, J. T.	0	5	0
Coningsby.			
Brown, Leonard H.	0	10	6
Consett.			
Milner, T.	0	3	0
Corwen.			
Jones, William	0	10	6
Cosham.			
Baker, T. B.	0	5	0
Cottingham.			
Kirk, G.	0	5	0
Coventry.			
Axford, J. W.	0	10	6
Bailey, E.	0	2	6
Bampton, G. F.	0	2	6
Bird, Frederick	0	2	6
Brawn, H. S.	0	2	6
Brown, John	0	5	0
Glover, Henry	0	2	6
Hinds, James	0	10	6
Jelly, George William	0	5	0
Lengden, D. M.	0	2	6
Newton, Alfred H.	0	2	6
Sellors, Thomas	0	2	6
Welton, H.	0	2	6
Wyleys and Co.	1	1	0
Cowes (Isle of Wight).			
Haythornthwaite, W.	0	5	0
Cranbrook.			
Hudson, A. W.	0	5	0
Turner, John	0	5	0
Crawley.			
Leach, John	0	5	0
Crediton.			
Bastow, S.	0	2	6
Jackson and Sons	1	1	0
Crewe.			
Booth, E.	2	2	0
Cumming, J.	0	2	6
Dale, J. A.	0	3	6
Donellan, A. W. E.	0	10	6
Harrop, Mrs.	0	2	6
Laing, J. L. L.	0	2	6
Crewkerne.			
Catford, O. W.	0	5	0
Criccieth.			
Bowen, J. W.	0	2	6
Cromer.			
Davison, D.	0	5	0
Dulley, D.	0	5	0
Cromford (Derbyshire).			
Nicklinson, T.	0	5	0
Croydon.			
Batty, G. A.	0	2	6
Clarke, Josiah	3	3	0
Crafton, R. F.	1	1	0
Culverwell, John S.	0	5	0

Croydon—continued.	£	s.	d.
Dickinson, C.	0	5	0
Dix, T. H.	0	5	0
Gill, W. H.	0	10	6
Green, J. W.	0	5	0
Grimwade, E. H.	0	10	6
,, (Donation)	5	5	0
Hart, A.	0	10	6
Long, Henry	0	10	6
Marshall, H. B. K.	0	5	0
Neal W.	0	5	0
Nichols, A. F.	0	5	0
Perkin, R. J.	0	5	0
Phillips, W. C.	0	5	0
Pretty, C. J. R.	0	2	6
Ray, C.	0	2	6
Roberts, D. P.	0	10	6
Russell, C. J. L.	0	10	6
Cuckfield (Sussex).			
White, W. E.	0	5	0
Cullen (N.B.).			
Seivwright, George	0	10	6
Cumnock.			
Kay, W.	0	5	0
Dalbeattie.			
Ewart, S.	0	2	6
Kerr, H.	0	2	6
Darlington.			
Best, G.	0	5	0
Bosher, A.	0	5	0
Cranston, J.	0	5	0
Nicholson, Richard	0	9	0
Pullin, W. H.	0	5	0
Raw, James H.	0	5	0
Robinson, James	0	5	0
Watkins, H. B.	0	2	6
Wilson, J.	0	5	0
Dartford.			
Brown, J.	0	5	0
Cann, James	0	5	0
Goff, W. E.	1	1	0
Hill, A. T.	0	5	0
Horrell, A. E.	0	5	0
Idenden, R. F.	0	2	6
Williams, W. L.	1	1	0
Dartmouth.			
Humphry, H.	0	5	0
Rees, Colin A.	0	5	0
Rees, William H.	0	10	0
Darwen.			
Lomax, W. H.	0	5	0
Shorrock, R.	0	5	0
Datchet.			
Willcocks, A. S.	0	5	0
Daventry.			
Hawksworth, J. L.	0	2	6
Deal.			
Dunn, George S.	0	10	0
Green, John	0	10	6
Johns, T.	0	5	0
Debenham.			
Babb, W. W.	0	5	0
Dedham.			
Gooch, W. H.	0	5	0
Saunders, A. W.	0	5	0
Denton.			
Oldfield, W.	0	2	6
Derby.			
Ashley, William	0	5	0
Blunt, Walter B.	0	2	6
Booth, C. W.	0	2	6
Clifton, Frederick	0	5	0
Cope, J. A.	0	10	6
Dawson, H. G. W.	0	5	0
Frost, George	0	10	6
Hart, C. D.	0	5	0
Hefford, Charles	0	2	6
Hodgkinson, T.	0	5	0
Hughes, John S.	0	2	6
Machon, Edward	0	5	0
Monkhouse, Henry	0	5	0
Pemberton, F. P.	0	2	6
Sherwin, Samuel	0	2	6
Sonley, W.	0	5	0
Stevenson, Richard W.	0	5	0
Devizes.			
Edwards, T. R.	0	2	6
Lemon, H. A.	0	10	6

Devonport.	£	s.	d.
Breeze, George	0	10	0
Davey, H. D.	0	2	6
Hodge, E. A.	0	2	6
Kelly, P. A.	0	5	0
Lamble, John A.	0	5	0
Perkins, S. A.	0	5	0
Rendle, R. H.	0	5	0
Ryall, F. J.	0	5	0
Swainson, J. W. B.	0	5	0
Didsbury.			
Bates, John F.	0	5	0
Diss.			
Cupiss, Mrs. E.	0	10	6
Gostling, T. P.	1	1	0
,, (Donation)	5	5	0
Whitrod, H. F.	0	5	0
Doncaster.			
Bellamy, R. A.	0	2	6
Brooke, T. N.	0	5	0
Connor, Thomas H.	0	10	6
Howorth, James	0	10	6
Jaques, George	0	10	6
Kay, C. W.	0	2	6
Parkin, Charles	0	5	0
Plant, W. E.	0	2	6
Stiles, M. H.	0	10	6
Taylor, F. H.	0	2	6
White, W. H.	0	5	0
Wyatt, S.	0	2	6
Dorchester.			
Pearce, William L.	0	5	0
Dorking.			
Clark, W. W.	0	10	6
Curry, F.	0	2	6
Doubleday, F. W.	0	5	0
Steeds, F. G.	0	2	6
Douglas (Isle of Man).			
Aspell, G. S.	0	5	0
Clugstone, W.	0	5	0
Frowde, J. J.	0	5	0
Garner, E. J. F.	0	5	0
Gelling, J. A.	0	2	6
Greensill and Son	1	1	0
Hemensley, A. P.	0	5	0
Kerruish, H.	0	2	6
Maley, G. J.	0	5	0
Matthews, J. G.	0	5	0
Qualtrough, T. S.	0	2	6
Radcliffe, J. C.	0	5	0
Young, John	0	5	0
Dover.			
Barnes, William James	0	5	0
Bottle, Alexander	1	1	0
,, (Donation)	5	5	0
Brown, Joseph Fred.	1	1	0
Corfe, J. M.	0	2	6
Dickeson, Sir Richard	1	1	0
Dixon, W.	0	5	0
Ewell, Richard M.	0	5	0
Hambrook, E. O.	0	5	0
Hambrook, John Barber	0	5	0
Kay, A. C.	0	2	6
Leigh, H. M.	0	2	6
Peake, Henry	1	1	0
Thompson, A. L.	0	5	0
Thompson, Edward	0	10	6
Dowlais.			
Rees, R. P.	0	5	0
Driffield.			
Parkinson, Thomas	0	5	0
Scotchburn, A.	0	2	6
Droitwich.			
Harris, S.	0	5	0
Dudley.			
Shelley, G.	0	10	6
Dufftown (N.B.).			
MacPherson, W.	0	2	6
Dumbarton.			
Babtie, John	0	5	0
Hudson, S.	0	5	0
Dumfries.			
Allan, William	0	5	0
Johnstone, T. F.	0	2	6
Tocher, J.	0	5	0
Turner, A.	0	5	0
Dunbar.			
Wilson, W. P.	0	5	0

Dundee.	£	s.	d.
Anderson, J.	0	2	6
Cummings, W.	0	2	6
Forsyth, J.	0	5	0
Hardie, J., and Son	1	1	0
Hardie, James	0	10	6
Hardie, James M.	0	10	6
Hodge, J.	0	5	0
Kerr, C.	1	6	0
Stephen, C.	0	2	0
Walker, W.	0	2	6
Williamson, J.	0	2	0
Dunfermline.			
Gilmour, David	0	5	0
Seath, J. A.	0	5	0
Dunkeld.			
McDonald, Kenneth	0	10	6
Dunstable.			
Flemons, J.	0	5	0
Herington, J. H.	0	5	0
Durham.			
Rollin, John G.	0	5	0
Sarsfield, John	0	2	6
Wise, Joseph N.	0	5	0
Ealing.			
Binley	0	2	6
Hardy, G. H.	0	2	6
Harding, C. T.	0	5	0
Hayles, J.	0	10	6
Houfe, R. W.	0	5	0
Lewis, D. L	1	1	0
Spear, F. A.	0	2	6
Thomas, Richard	0	10	6
Tisson, E.	0	2	6
White, C. E.	0	5	0
Earlstown.			
Peake, Arthur	0	5	0
Eastbourne.			
Andrews, H. T.	0	10	6
Andrews, J. F.	0	10	6
Bayley, E. G.	0	5	0
Browne, Henry R.	1	1	0
Crook, Herbert	1	1	0
Gibbs and Son	1	1	0
Harmer, G. A.	0	10	6
Marchant, D.	0	10	6
Price, W.	0	5	0
Senior, J.	0	10	6
Temple, C. H.	0	5	0
Trickey, R. H.	0	5	0
Willett, Dr. E.	1	1	0
East Dereham.			
Peck, Edward	1	11	6
Eastleigh (Hants).			
Van, F. W. S.	0	5	0
Wedge, G. D.	0	2	6
East Molesey.			
Daniel, W. R.	0	2	6
Kent, W. H. P.	0	5	0
Longtoft, W.	0	5	0
Eastwood (Notts).			
Chambers, J.	1	1	0
Skelton, J. H.	0	5	0
Eccles.			
Blackburn, A. E. H.	1	6	0
Bomford, A. C.	0	5	0
Bowden, W. (Patricroft)	1	1	0
Do. Employees of	0	7	6
Fletcher, J. E.	0	15	6
Howie, W. L. (Monton)	1	1	0
,, (Donation)	10	10	0
Oldfield, F.	0	5	0
R. T. H.	0	10	6
Scholes, W. I.	0	15	6
Swindells, T.	0	5	0
Taylor, J.	0	5	0
Edenbridge.			
Arnold, J.	0	10	6
Edgware.			
Williams, H.	0	5	0
Edinburgh.			
Aitcheson, J. T.	0	5	0
Alexander, T.	0	5	0
Baildon, H. C. and Son	1	1	0
Baker, W. C.	0	10	0
Bannerman, J. M.	0	2	6
Birnie, A. S.	0	5	0
Blenkiron, J.	0	5	0

Edinburgh—continued.	£	s.	d.
Boa, Peter	0	5	0
Brindle, E.	0	5	0
Brown, John	0	10	0
Buchanan, James	1	1	0
Butchart, R.	0	10	0
Burley, William	1	1	0
Cameron, J. M.	0	2	6
Campbell, C.	0	10	6
Center, J. A.	0	5	0
Clark, Andrew	0	10	0
Clark, Dr. William Inglis	0	10	6
Coates, E.	0	2	6
Coull, G.	1	1	0
Cowie, G.	0	10	0
Cowie, W. B.	1	1	0
Cowper, D. R.	0	2	6
Dawson, A. F.	0	10	0
Dewar, F. L.	0	10	6
Dey, A. J.	0	5	0
Dick, J.	0	5	0
Dick, Robert	3	3	0
Dott, David B.	1	0	0
Duff, W.	1	1	0
Dunn, R.	0	5	0
Duncan, Flockhart, Powell and Co. (Donation)	26	5	0
Edinburgh Chemists' Assistants' and Apprentices' Association, per Mr. A. Murray	2	16	0
Edinburgh District Chemists' Trade Association, per C. F. Henry	5	5	0
Edinburgh and Leith Drug Co., Ltd.	0	10	6
Edinburgh Royal Dispensary Students	2	15	4
Edward, W. L.	0	5	0
Ewing, James L.	1	1	0
,, (Donation)	10	10	0
Finlay, J.	1	1	0
Fisher, W.	0	5	0
Forret, John A.	0	10	6
Forsyth, D. M.	0	5	0
Fraser, Alexander	0	5	0
Fraser, J. I.	0	5	0
Gibson, Adam	1	1	0
Gibson, J. A.	0	5	0
Glass, W. S.	0	5	0
Gorrie, D.	0	5	0
Grey, A.	0	5	0
Hall, G. and G.	0	5	0
Hendry, R. L.	1	1	0
Henry, C. F.	1	1	0
Hill, John R.	1	1	0
Hunter, A.	1	0	0
Innes, G.	0	5	0
Inman and Co.	2	2	0
Johnstone, J.	0	2	6
Kerr, R. M.	0	10	0
King, F.	0	10	0
Laird, G. H.	1	6	0
Laurie, J. M.	0	5	0
Lennox, J.	0	2	6
Lunan, G.	1	1	0
Lyon, W.	0	5	0
McBain, J.	0	5	0
McCall, J. and W. G.	1	1	0
McEwan, D.	0	2	6
McGibbon, G. L.	1	1	0
MacCallum, A. I.	0	10	6
MacDonald, D. F.	0	10	0
Macfarlan and Co.	7	7	0
,, (Donation)	10	10	0
Mackenzie, A.	0	5	0
Mackenzie, W. G.	0	5	0
McGlashan, J.	0	10	0
MacLaren, David	3	3	0
McPherson, Colin A.	0	7	6
Middleton, D.	1	1	0
Morison, J.	1	1	0
Morrison, J. N.	1	1	0
Murray, A.	0	2	6
Nelson, J. J.	0	7	6
Paton, J.	1	1	0
Pirie, J. M.	0	10	0
Pottage, J. C.	1	1	0
Prentice, J.	0	5	0
Purves, S.	0	5	0
Raimes, Clark and Co.	2	2	0
Reid, J. L.	0	2	6
Richardson, W. J.	0	2	6
Ritchie, J.	0	5	0
Robertson, G.	0	10	6
Robertson, John	0	10	0
Rowland, G. H. C.	0	2	6
Sangster, W.	0	2	6
Scobie, James	0	10	0
Scott, James	0	10	6
Sime, T.	0	7	6
Sinclair, G.	0	4	0

Edinburgh—continued.	£	s.	d.
Sinclair, J. D.	0	2	6
Smiles, J.	1	0	0
Smith, T. H., and Co. (Donation)	5	5	0
Smith, William	0	10	0
Spence, W.	0	10	0
Stephenson, J. B.	0	10	0
Stewart, A. K.	1	1	0
Stoddart, J. G. Y.	0	5	0
Sturrock, J. and L.	0	2	6
Swan, W.	0	5	0
Taylor, G.	0	2	6
Thomson, Isaac W.	0	5	0
Wilson, P.	0	10	0
Wright, G. V.	0	5	0
Young, J. R.,	3	3	0
Edmonton (Middlesex).			
Ragg, W.	1	1	0
Ragg, W. W.	0	10	0
Egham.			
Douglas, W. B.	0	5	0
Egremont.			
Clement, J. R.	0	10	0
Dand, A.	0	5	0
Elgin.			
Robertson, William	0	5	0
Thomson, Robert	0	5	0
Elland.			
Smithies, W. E.	0	2	6
Elstree.			
Bacon, H. J.	0	2	6
Eltham (Kent).			
Rawlinson, Mrs. M.	1	1	0
Ely.			
Howard, A.	0	5	0
Lincolne, William	0	10	6
Emsworth.			
Mumford, A.	0	10	6
Enfield.			
Dodd, W. R.	0	10	6
Goldby, F.	0	10	6
Morgan, E. B.	0	10	0
Epping.			
Rowland, T. W.	0	10	6
Epsom.			
Oxley, Frederic	0	5	0
Tottle, Henry John	0	5	0
Erith (Kent).			
Blomfield, F. H.	0	5	0
Esher.			
Chapman, J.	0	10	6
Exeter.			
Bartleet, John	0	5	0
Botting, Charles	0	7	6
Bulley, William H.	0	5	0
Flint, C.	0	2	6
Gadd, Henry	1	1	0
Gadd, H. W.	0	5	0
Harrold, C. J.	0	5	0
Hickman, F. S.	0	5	0
Joint, F. S.	0	10	0
Lake, John H.	1	1	0
Lake, J. W.	0	5	0
Lemmon, Eric	0	10	6
Menhinick, M.	0	2	6
Milton, Thomas C.	1	1	0
North, T. H.	0	5	0
Pasmore, George	0	5	0
Reid, D.	0	5	0
Richards, A.	0	5	0
Rowsell, P. F.	0	10	0
Stocker, George	1	1	0
Tighe, J. W.	0	5	0
Townsend, J. and Son	1	1	0
Vinden, F. W.	0	5	0
Ware, A. H.	0	5	0
Wearing, W. H.	0	5	0
Exmouth.			
Bickford, J. T.	0	10	6
Stephens, J. R. C.	0	5	0
Thornton, C. H.	0	5	0
Toone, A. H.	0	10	6
Eynsham.			
Howe, Henry A.	0	5	0
Falkirk.			
Murdoch, David	0	10	6

Falmouth.	£	s.	d.
Solomon, W. H.	0	10	6
Fareham.			
Batchelor, Alfred E.	0	5	
Franklin, Alfred	0	5	0
Faringdon.			
Cook, W. R.	0	5	0
Dawson, G. T.	0	2	6
Farnborough.			
Litchfield, E.	0	5	0
Farnham.			
Dunston, A.	0	10	6
Griffith, J.	0	10	6
Farnworth (Bolton).			
Bowker, J. T.	1	11	6
Faversham.			
Evans, W. J.	0	5	0
Jenkins, E.	0	5	0
Laxon, M.	0	5	0
Felixstowe.			
Douthwaite, H. F.	0	5	0
Brown, F. E.	0	5	0
Fenton.			
Knight, Jesse	0	5	0
Massey, S.-(Executors of)	0	5	0
Weston, J.	0	5	0
Finchley.			
Barrass, T. E.	0	5	0
Rutter, J.	0	10	0
Webb, J. J.	0	5	0
Fleckney (Leicestershire).			
Deacon, Fanny E.	0	5	0
Fleetwood.			
Lofthouse, J.	0	5	0
Flint.			
Jones, O. W.	0	5	0
Folkestone.			
Bishop, E. J.	1	1	0
Curtis, F. G.	0	10	6
Giles, J. J.	0	10	6
King, A. H.	0	10	6
Knight, J.	0	10	6
Ransford, W.	0	2	6
Stainer, John	0	10	6
Taylor, C. J.	0	5	0
Folkingham.			
Woodliffe, H. G.	0	5	0
Forfar.			
Fowler, G. R.	0	5	0
Forres.			
Anderson, G. W.	0	5	0
Fort William.			
MacFarlane, P.	0	5	0
Foulsham.			
Maddison, Mary	0	5	0
Fowey.			
Wellington, J.	0	2	6
Fraserburgh.			
Burnett, Robert	0	5	0
Friockheim.			
Buchan, D. D.	0	2	6
Frodsham (Cheshire).			
Jones, J. M.	0	5	0
Frome.			
Green, E. C. F.	0	10	6
Harrold, F.	0	10	0
Hodder, G. W.	0	5	0
Gainsborough.			
Forrest, Richard Wm. (Morton Hall)	0	10	6
Surfleet, A. G.	0	5	0
Galashiels.			
Cartwright, B.	0	5	0
Noble, A.	0	2	6
Poustie, J. H.	0	2	6
Ross, W.	0	5	0
Gareloch Head.			
Frazer, D.	2	2	0
Garston.			
Driver, J. G.	0	5	

Gateshead-on-Tyne.	£	s.	d.
Elliott, Robert	0	10	6
Greenwell, William C.	0	5	0
Glanamman.			
Jones, I. L.	0	5	0
Glasgow.			
Abbott, J.	0	5	0
Adam, T.	0	5	0
Alexander, J.	0	10	6
Boyd, A.	0	5	0
Bray, W.	0	5	0
Brodie, Robert	1	6	0
Carmichael, M. (Crossmyloof)	0	10	0
Conacher, D.	0	5	0
Cappell, R.	0	10	0
Crawford, David	0	2	6
Currie, John (Eglinton Street)	0	10	0
Currie, John (Bath Street)	0	5	0
Currie, W. L.	1	11	6
Dawson, P.	0	2	6
Dickie, James	0	10	0
Dobson, J.	0	2	6
Duncan, J.	0	10	6
Dunlop, Thomas	0	10	0
Farmer, J.	0	5	0
Fenwick, John	0	5	0
Foster, John	0	10	6
Garry, George	0	5	0
Glasgow Apothecaries' Co.	1	1	0
,, (Donation)	10	10	0
Glasgow Meeting British Pharmaceutical Conference	10	0	0
Glasgow Pharmaceutical Association Social Meeting	3	0	0
Gray, M.	0	5	0
Greig, W.	0	10	6
Harrower, P.	0	5	0
Keller, F.	0	5	0
Kitchin, G. S.	0	2	6
Lambie, Hugh	0	5	0
Laurence, John	0	10	6
Law, T. W. T.	0	15	6
McDonald, G.	0	10	0
Macfarlane, M.	0	2	6
Mackenzie, T.	0	5	0
McKellar, A.	0	5	0
McMillan, John	1	1	0
Miller, J. W.	0	15	6
Mitchell, G. A.	0	2	6
Moir, D.	0	10	0
Moir, J.	0	10	0
Morrison, A.	0	10	0
Neil, J.	0	5	0
Peacock, J. R.	0	5	0
Reid, D. S. C.	0	5	0
Robb, J.	0	10	0
Rodman, J.	0	5	0
Steven, E.	0	2	6
Sutherland, J. W.	0	5	0
Thomson, William	1	6	0
Waddell, J.	0	2	6
Walker, Mrs. A. M.	0	5	0
Wallace, M.	0	5	0
Watson, D.	0	5	0
Whitelaw, James	0	5	0
Gloucester.			
Beach, T. C.	0	2	6
Broad, H. R.	0	2	6
Curtis, J.	0	2	6
Franklin, James	0	5	0
Hargreaves, H.	0	5	0
Hughes, Evan G.	1	1	0
Meadows, Henry	0	10	6
Minchin, W.	0	10	6
Milner, H R.	0	5	0
Shepherd, R. J.	0	5	0
Slinn, H. E.	1	11	6
Stafford, William	1	0	0
Taylor, E. S.	0	5	0
Walwin, W.	0	5	0
Ward, Joseph	0	10	6
Wells, A. J.	0	5	0
Goole.			
Buck, W. H.	0	5	0
Gorebridge.			
McNab, W. G.	0	5	0
Gosforth.			
Gaitskell, James	0	5	0
Gosport.			
Gregson, J.	0	5	0
Houghton, R. W.	0	5	0
Mumby, Mrs. M. M.	5	5	0
Sturch, H. H.	0	5	0
Govan.			
Skinner, John	0	5	0

Grangemouth.	£	s.	d.
Baxter, J.	0	5	0
Grantham.			
Fillingham, J.	1	1	0
Hopkinson, H.	0	5	0
Redhead, J.	0	2	6
Skipworth, B. G.	0	2	6
Whysall, William	0	10	6
Wilkinson, W.	1	1	0
Grantown.			
Duncan, W.	0	5	0
Gravesend.			
Clarke, Richard F.	1	1	0
Sharman, C. R.	0	5	0
Great Bedwyn.			
Gerard, G. R.	0	5	0
Grimsby.			
Barker, William	0	10	6
Botterill, G. T.	0	5	0
Colley, H. W.	0	2	6
Cook, Robert	0	10	6
Jessup, R. M.	0	2	6
Mason, William D.	0	2	6
Robinson, Jonathan Scott	0	10	6
Wharton, J.	0	2	6
Willey, W.	0	5	0
Guernsey.			
Allez, P. A.	0	10	6
Anderson, Mrs.	0	5	0
Burgess, A. L.	0	5	0
Collenette, A.	0	10	6
Cumber, E. G.	0	5	0
Davies, W. H.	0	2	6
De la Rue, F. H.	0	5	0
Dupuy, A. E.	0	2	6
Dupuy, E., Sen.	0	2	6
Dupuy, E. W.	0	5	0
Gill, H.	0	5	0
Nickolls, J. B.	0	5	0
Guildford.			
Inman, T. L.	0	5	0
Jeffries, Henry	1	1	0
Long, A. J. T.	0	5	0
Martin, Mrs. W.	0	2	6
Thompson, Thomas	0	5	0
Wheeler, Frederick	0	5	0
Guisborough.			
Bancks, Mrs. M. R	0	7	6
Fairburn, Robert W.	0	5	0
Guiseley (Yorks).			
Lee, J. A. R.	0	5	0
Haddington.			
Gardiner, D.	0	5	0
Watt, James and J.	1	1	0
Hadfield.			
Richardson, J.	0	5	0
Hadleigh.			
Slater, W. M.	0	2	6
Hailsham.			
Parker, T. H.	0	5	0
Halesworth.			
Gostling, John H.	1	6	0
Halifax.			
Bancroft, J. and Son	0	2	6
Bell, —	0	2	6
Bottomley, W.	0	5	0
Brierley, H. C.	0	2	6
Brierley, J B.	0	2	6
Cobb, G.	0	2	6
Comyns, J. R.	0	2	6
Farr, J.	0	2	6
Fielding, C.	0	5	0
Haigh, W.	0	5	0
Hebden, W. C.	0	5	0
Higgins, C. A.	0	5	0
Jessop, R. H.	0	5	0
Mallinson, —	0	10	0
Oldroyd, G.	0	5	0
Patchett, J.	0	2	6
Pilling, J. W.	0	2	6
Seely, H. W.	0	5	0
Swire, Jabez	0	5	0
Thompson, W. S.	0	2	6
Hamilton.			
Hogg, J. T.	0	2	6
Lohoar, J.	0	2	6
Reekie, B.	0	2	6
Stewart, A. R.	0	2	6
Stewart, J.	0	5	0

Hanley.	£	s.	d.
Cornwell, T. C.	0	5	0
Elmitt, W.	0	5	0
Furnival, John D.	0	10	0
Hutchinson, J.	0	5	0
Insull, E. S.	0	5	0
Jones, E.	0	5	0
Moore, John William	0	5	0
Tirrell, J.	0	5	0
Waldron, J. H.	0	5	0
Harbury.			
Gollins, E. de T.	0	5	0
Harleston.			
Churchyard, A. E. I.	0	2	6
Fisher, W. H.	0	5	0
Woods, Charles	0	5	0
Harpenden.			
Busby, J.	0	5	0
Pound, H. W.	1	1	0
Harrogate.			
Atkinson, A.	0	5	0
Davis, Richard H.	0	10	6
Eynon, C. E. J.	0	5	0
Greenwood, Charles	0	10	6
Haward, G. R.	1	1	0
Maxwell, P. H.	0	10	6
Reynolds, Freshfield	0	10	6
Shaw, B.	0	10	6
Smith, W. D.	0	5	0
Walker, C.	0	2	6
Wells, J. J.	0	2	6
Weston, G.	0	10	6
Wilson and Son	1	1	0
Wood, A. W.	0	5	0
Harrow.			
Gunn, S. J.	0	10	6
Hartley, S.	0	5	0
Hartlepool.			
Horsley, J. (Donation)	5	5	0
Hartley Wintney.			
Machin, W. G.	0	5	0
Harwich.			
Glover, T. J.	0	2	6
Bevan, Charles F.	0	10	6
Bevan, W	0	10	6
Haslingden.			
Blayney, Joseph J.	0	5	0
Hastings and St. Leonards.			
Beck, Albert N.	0	5	0
Bolshaw, A. E.	0	5	0
Bolton, Thomas	0	5	0
Crisford, F. J.	0	2	6
Curtis, H. E.	0	5	0
Daws, W. K.	0	10	6
Edwards, H. C.	0	5	0
Emmons, C.	0	5	0
Hasselby, E. H.	0	10	6
Hepple, T.	0	5	0
Holmes, C. J.	0	10	6
Jones, T. W.	0	2	6
Maggs, A. S.	0	2	6
Maggs, F. W.	0	5	0
Maggs, Samuel B.	0	10	0
Ripley, E.	0	2	6
Rossiter, Frederick	0	10	6
Smith, R. S.	0	5	0
Snowdon, Robert	0	5	0
Tharle, C. A.	0	10	6
Tree, F.	0	10	6
Vint, Thomas D.	0	5	0
Haverfordwest.			
Jenkins, Jabez (Lysyfrân)	0	5	0
Saunders, Charles P.	0	10	6
Hawick.			
Craig, John	0	5	0
Turnbull, W. S.	0	5	0
Hay.			
Davies, J. F.	0	5	0
Hayle.			
Blewett, E.	0	5	0
Haywards Heath.			
Cripps, R. A.	0	10	6
Hays, R. T. O.	0	5	0
Hazel Grove (Staffs.)			
Sanderson, E. J.	0	5	0
Heaton Chapel.			
Gourlay, R. G.	0	5	0
Thorp, John	2	2	0

Hebden Bridge.	£	s.	d.
Hey, David	0	10	6
Wright, G. B.	1	1	0
Heckington.			
Sumners, Michael Cole	0	10	6
Heckmondwike.			
Barker, A. B.	0	5	0
Stead, W.	0	5	0
Hedon.			
Soutter, J. S.	0	10	6
Helensburgh.			
Harvie, George	0	5	0
McMurray, J.	0	10	0
Helmsley.			
Allenby, W.	0	10	6
Helston.			
Wakeham, Charles	0	5	0
Hemel Hempstead.			
Wilkinson, C. E.	0	5	0
Hemsworth (Yorks.).			
Hodgson, G.	0	10	6
Hendon.			
Goldfinch, G.	0	10	6
Hartridge, J. H.	1	1	0
Henley-on-Thames.			
Cartwright, A.	0	2	6
Green, G. T.	0	2	6
Hereford.			
Guy, E.	0	5	0
Jackson, J. J.	0	10	6
Kemp, C. T.	0	10	6
Walker, John	0	10	6
Williams, W. and H. B.	0	10	6
Herne Bay.			
Oldfield, M.	0	5	0
Hersham.			
Smith, W.	0	10	6
Hertford.			
Lines, G.	0	10	0
Hexham.			
Gibson, J. P.	0	10	6
Richardson, George	0	5	0
Riddle, W. R.	0	5	0
Heywood (Lancs.)			
Hazlitt, F.	0	5	0
Highworth (Wilts).			
Ballard, Edwin	0	5	0
High Wycombe.			
Butler, W. H.	0	2	6
Coley, R.	0	2	6
Hooper, L.	0	5	0
Wilford, J.	0	5	0
Young, H. E.	0	2	6
Hindon.			
Dear, Miss	0	5	0
Hitchin.			
Alexander, W. B.	0	10	6
Latchmore, A.	0	5	0
Pack, F. J.	0	2	6
Payne, W.	0	5	0
Ransom and Son	1	1	0
Ransom, F. (Donation)	5	5	0
Ransom, W (Donation)	5	5	0
Hoddesdon.			
Hayllar, J.	0	5	0
Holmfirth.			
Shaw, F. B.	0	5	0
Holyhead.			
Jones, T. J.	0	5	0
Roberts, T. J.	0	10	0
Holywood.			
Macaulay, J. J.	0	1	0
Honley.			
Broadbent, John B.	0	10	6
Horley.			
Walton, F. M.	0	5	0
Horncastle.			
Betts, William	0	5	0
Carlton, H.	0	10	6
Horsham.			
Kittle, E. J.	0	10	0
Horton (Bucks.).			
Passingham, G. W.	0	10	6

Horwich (Lancs.).	£	s.	d.
Pearce, J. H.	0	2	6
Houghton-le-Spring.			
Rowell, R. H.	0	10	6
Hounslow.			
Bowering, John	0	5	0
Cull, Joseph	0	10	6
Hoylake.			
Jennings, W. H.	0	5	0
Pask, T. C.	0	5	0
Huddersfield.			
Akam, A.	0	2	6
Buckley, H.	0	5	0
Bygott, W. T.	0	2	6
Cockcroft, J. W.	0	5	0
Cuthbert, R.	1	1	0
Duffin, T.	0	10	6
Fell, S.	0	5	0
Hanson, J.	0	2	6
Judge, J.	0	5	0
King, William	1	1	0
Lawton, C. E.	0	5	0
Needham, T.	0	5	0
Spurr, H. E.	0	5	0
Swift, C. H.	0	5	0
Sykes, H.	0	5	0
Walshaw, R. C.	0	10	6
Wheatley, Charles	0	10	6
Wheatley, J.	0	5	0
Wood, J. B.	0	2	6
Hull.			
Allison, E. and H.	1	1	0
Bell, Charles B.	2	2	0
Bousfield, W.	0	5	0
Brighouse, C. D.	0	5	0
Chapman, E. J.	0	5	0
Chapman, Joseph	0	5	0
Creasser, Matthew	0	5	0
Day, W.	0	5	0
Desforge, J. H.	0	5	0
Dodds, W.	0	2	6
Dyson, George	0	5	0
Fowler, E.	0	5	0
Gibson, C. P. (Trustees of)	0	5	0
Glover, A. S.	0	2	6
Gravill, E. D.	0	5	0
Grindell, John	1	1	0
Hall, Henry R. F.	0	5	0
Hammond, William H.	0	5	0
Hebblethwaite, G. A.	0	2	6
Johnson, F. E.	0	5	0
Kenny, Thomas	0	10	6
Kirton, C. H.	0	10	0
Knowles, C. H.	0	2	6
Lambert, F. E.	0	5	0
Lambert, O.	0	5	0
Lofthouse and Saltmer	1	1	0
Markham, A. D.	0	2	6
Metcalfe, A P.	0	5	0
Milner, J. G.	0	2	6
Mitchell, W.	0	2	6
Morrow, C.	0	5	0
Newton, G. R.	0	2	6
Oldham, James	0	5	0
Richardson, A.	0	5	0
Robinson, T. W.	0	5	0
Ryley, E.	0	5	0
Selle, L. S.	0	5	0
Shaw, Ward	0	5	0
Sheffield, A. J.	0	7	6
Stoakes, Benjamin M.	0	5	0
Tebb, John	0	5	0
Whiteside, R.	0	2	6
Wilson, F.	0	5	0
Hunstanton.			
Twiss, Wm.	0	10	6
Huntingdon.			
Baxter, Robert	0	10	6
Dalgleish, L. R.	0	2	6
Huntly (N.B.).			
Chalmers, G.	0	2	6
Husbands Bosworth.			
Clerke, W. B.	0	5	0
Hyde.			
Oldham, H.	0	2	6
Rideal, F.	0	2	6
Hythe.			
Lemmon, R. A.	1	1	0
Idle.			
W on, H. E.	0	5	0
Ilford.			
E. A.	0	5	0

Ilfracombe.	£	s.	d.
Crang, Walter	1	1	0
Moon, W. J.	0	5	0
Thornley, C.	2	2	0
Wheeler, James	0	5	0
Ilkeston.			
Potts, Charles	1	1	0
Wood, J.	0	5	0
Ilkley.			
Duckworth, A.	0	10	6
Worfolk, G. W.	1	11	6
Inverness.			
Allan, Alexander	0	10	6
Bethune, W. J.	0	5	0
Cameron, J.	0	5	0
Fraser, J.	0	10	6
Junor, J.	0	5	0
MacLeod, L.	0	5	6
MacRitchie, D.	0	5	0
Mitchell, D.	0	5	0
Mitchell, H.	0	10	6
Ogston, W.	0	5	0
Ipswich.			
Anness, Samuel R.	0	10	6
Clifton, E. S.	0	5	0
Eyre, H. R.	0	5	0
Grimwade, Ridley and Co.	0	10	6
Jackson, J. T.	0	5	0
Matcham, Edward	0	5	0
Miller, T. T.	0	5	0
Nunn, C. G.	0	5	0
Pain and Bayles	1	1	0
Palmer, F. E.	0	5	0
Palmer, F. H.	0	5	0
Symonds, J. A.	0	5	0
Wiggin, J. C.	0	10	6
Ironville.			
Greaves, W. S.	0	5	0
Irvine.			
Gillespie, James	0	2	6
Isleworth.			
Dunstan, J. F.	0	2	6
Iwerne Minster.			
Humby, L. W.	0	5	0
Jarrow-on-Tyne.			
Clark, R. U.	1	1	0
Hopper, Richard	0	5	0
Penman, E. W.	0	2	6
Rose, J. D., jun.	0	5	0
Jedburgh.			
Strachan, J.	0	2	6
Walker, A.	0	10	0
Jersey.			
Baker, J. T.	0	5	0
Cole, George	1	1	0
De Faze, F. G.	0	10	6
Le Seelleur, G.	0	2	6
Le Seelleur, T. J.	0	5	0
Millais, Mrs.	1	1	0
Miller, Henry	0	5	0
Piquet, F. G.	0	5	0
Piquet, J.	0	5	0
Poingdestre, C. R.	0	10	6
Johnstone.			
Merry, C.	0	2	6
Keighley.			
Fowlds, W.	0	5	0
Keith.			
Pirie, J.	0	5	0
Kelso.			
Maxton, W. M.	0	5	0
Kendal.			
Bateson, Thomas	1	11	6
Burton, Matthew	1	1	0
Rigg, G. F.	0	10	6
Severs, Joseph	0	10	6
Keswick.			
Townley, Thomas W.	0	10	6
Kettering.			
Baker, J.	0	10	6
Layng, R. C	0	5	0
Thursfield, John F.	0	10	0
Thursfield, J. H.	0	2	6
Kew.			
Edwards, J. E.	0	10	6
Mumbray, R. G.	0	10	0

Kibworth Beauchamp.	£	s.	d.
Freeland, A. J.	0	2	6
Kidderminster.			
Morgan, F. H.	0	10	6
Smith, M.	0	6	0
Kidsgrove.			
Griffiths, Edwin H.	0	10	6
Kidwelly.			
Jones, L.	0	2	6
Kilmarnock.			
Borland, John	1	1	0
Borland, John, jun.	0	10	6
McNay, D.	0	5	0
Rankin and Borland (Donation)	5	5	0
Kinghorn.			
McCorquodale, J. C.	0	2	6
King's Bromley.			
Moore, C. B.	0	5	0
King's Lynn.			
Atmore, E. A.	0	5	0
Kingston-on-Thames.			
Bond, C. R.	0	10	6
Brewster, William	0	10	6
Higgs, Alfred	0	5	0
Shepperd, W. J.	0	5	0
Walmsley, Samuel	0	7	6
Whaley, Edward	0	5	0
Kingstown (Co. Dublin).			
Strongitharm, W. G.	0	5	0
Kington.			
Lewis, A. J.	0	5	0
Kinross.			
Dow, William	0	5	0
Kirkby Lonsdale.			
Birkett, J.	0	5	0
Kirkcaldy.			
Adamson, A.	0	5	0
Allan, H. W. F.	0	5	0
Key, G. B.	0	5	0
Peebles, John	0	10	6
Pringle, G	0	5	0
Stewart, C.	0	5	0
Storrar, David	3	3	0
Kirkham.			
Jackson, T.	0	2	6
Knaresborough.			
Lawrence, W. P.	0	5	0
Knighton.			
Caunt, J. W.	0	5	0
Knutsford.			
Jackson, William	0	5	0
Silvester, Henry T.	0	5	0
Lampeter.			
Evans, R.	0	5	0
Lancaster.			
Arkle, William	0	5	0
Briggs, W.	1	1	0
Cuthbert, J. E.	0	5	0
Lund, W. J.	0	10	6
Troughton, Henry	0	5	0
Vince, James	0	5	0
Wilby, F. T.	0	2	6
Wyatt, W.	0	10	6
Langholm.			
Beattie, Thomas	0	5	0
Langside.			
MacVitae, J. B.	0	5	0
Largs (N.B.).			
Barr, Bryce	0	5	0
Lauder.			
Scroggie, J. H.	0	5	0
Laugharne.			
Johns, J.	0	2	6
Launceston.			
Downing, Frederick	0	5	0
Wise, William	0	5	0
Leamington.			
Barker, —	0	2	6
Barnitt, John	0	10	6
Barrett, J. R.	0	10	6
Barrett, Josephus T.	1	1	0
Bateson, A. C.	0	5	0
Bloomfield, E. J.	0	2	6
Butler, —	0	2	6

Leamington—continued.	£	s.	d.
Davis, C.	0	10	6
Fisher, G. R.	0	5	0
Flood, —	0	2	6
Griffiths, W. H.	0	5	0
Heath, W. G.	0	2	6
Higgins, —	0	2	6
Hutton, H.	0	10	6
Lenton, —	0	2	6
Lisle, F. R. de	0	5	0
Mannox, Gertrude A.	0	5	0
Marriott, T. E.	0	5	0
Price, J.	0	5	0
Sansom, Henry	0	2	6
Smith, Samuel A.	1	1	0
Smith, Samuel H.	1	1	0
Stanley, Herbert	0	10	6
Stent, F. R.	0	5	0
Wilson, G. P.	0	5	0
Wilson, J.	0	5	0
Ledbury.			
Freeman, Ernest	0	10	6
Leeds.			
Anning, J. J.	0	5	0
Barrow, E.	0	5	0
Baxter, W. S.	0	5	0
Beacock, J. H.	0	2	6
Bilbrough, A.	1	1	0
Branson, F. W.	0	10	6
Briggs, George	0	5	0
Brown, E.	0	10	6
Daisy, Limited	1	1	0
Drewry, J.	0	2	6
Exley, John	0	5	0
Fawthorp, James	0	5	0
Fearnley, F.	0	2	6
Fox, W. A.	0	2	6
Gee, T. H.	0	2	6
Goodall, Backhouse and Co.	2	2	0
,, (Donation)	10	10	0
Greasley, M. F.	1	1	0
Hardcastle, J.	0	5	0
Hardman, J. W.	0	10	6
Harvey, W.	1	1	0
Hirst, Brooke and Hirst	2	2	0
Hirst, David	0	5	0
Hobbs, H.	0	5	0
Holmes, Francis	0	5	0
Horsfield, E.	0	5	0
Jefferson, P.	0	10	6
Lister, R.	1	1	0
Metcalfe, H. T.	0	5	0
Pollitt, W. D.	0	10	0
Reynolds and Branson (Donation)	10	10	0
Reynolds, Richard	1	1	0
Reynolds, Richard F.	0	10	6
Robinson, W.	0	7	6
Saville, William	0	10	0
Smith, R. H.	0	2	6
Taylor, Samuel	1	1	0
Wilson, T.	0	5	0
Yewdall, E.	0	10	6
Leicester.			
Berridge, Alfred	0	5	0
Broof, R.	0	5	0
Burden, O.	0	5	0
Burford, S. F.	0	10	6
Butler, E. H.	0	10	6
Butler, J. A.	0	5	0
Butler, T. E.	0	5	0
Cadoux, S. H.	0	5	0
Clark, John W.	2	2	0
Clark, Walter B.	0	10	6
Clear, H. W.	0	2	6
Cleaver, Samuel	0	5	0
Cox, S. G.	0	10	6
Esam, Richard	0	10	6
Goodess, F. W.	0	5	0
Harvey, William R.	2	2	0
Hind, W. T.	0	5	0
Lloyd, T. H.	0	10	6
Ough, L.	0	10	6
Parry, J.	0	5	0
Pickering, Henry	0	5	0
Richardson, H. N. B	1	1	0
Rowe, W.	0	5	0
Thirlby, W.	0	2	6
Wand, Stephen	0	10	6
White, S. B.	0	5	0
Woolley, G. J. B.	0	10	6
Leigh (Lancs.).			
Bennett, J. W.	0	5	0
Boardman, F. J.	0	2	6
Leighton Buzzard.			
Herington, H. E.	0	5	0
Richmond, R.	0	10	6

Leith.	£	s.	d.
Alexander, W. G.	0	5	0
Blyth, J.	0	5	0
Blyth, W. B. A.	0	5	0
Bowman, J.	1	1	0
Clerry, G.	0	2	6
Coats, J. T.	0	7	6
Cook, R.	0	5	0
Crichton, Alexander	0	5	0
Currie, A.	0	2	6
Dudgeon, J.	0	5	0
Duncan, A.	0	5	0
Garvie, A.	1	1	0
Garvie, W. A.	0	10	6
Guthrie, A. D.	0	2	6
Lamont, W.	0	5	0
McDougall, R. I.	1	1	0
Marshall, R.	0	5	0
Mathewson, D.	0	2	6
Musham, G.	0	2	6
Robb, J.	0	5	0
Smart, —	0	2	6
Temple, A.	0	3	0
Turnbull, E. H.	0	5	0
Weir, T.	0	3	0
Lenzie (N.B.).			
Pettigrew, J. W.	0	5	0
Leominster.			
Buckham, J.	0	5	0
Ellwood and Son	0	10	6
Sandiland, Robert B.	0	10	6
Lerwick.			
Laing, A. L.	0	2	6
Porteous, Arthur A.	0	5	0
Leven.			
Buchanan, J.	0	4	0
Hogg, A.	1	15	0
Lewes.			
Head, John T.	0	10	6
Higham, T.	0	5	0
Lloyd, J. C.	0	5	0
Leyton.			
Seed, T. H.	0	2	6
Yewen, C. H. I.	0	2	6
Leytonstone.			
Bennett, C.	0	10	6
Blades, W. W.	0	2	6
Cleland, A. H.	0	5	0
Matthews, J. H.	0	10	6
Matthews, T.	0	2	6
Lincoln.			
Allison, H.	0	2	6
Battle, Son and Maltby	0	10	6
Birkbeck, J. T.	0	5	0
Cottingham, H.	0	5	0
Elmitt, G.	0	10	6
Grierson, G. A.	0	5	0
Harston, C. E.	0	5	0
Hill, W. E.	0	5	0
Tomlinson and Hayward	1	1	0
Walker, G. J.	0	2	6
Wark, D. S.	0	5	0
Wileman, F. W.	0	5	0
Wilmot, B.	0	5	0
Linlithgow.			
Spence, A.	0	2	6
Spence, A. Y. W.	0	2	6
Spence, C. M.	0	2	6
Spence, E.	0	2	6
Liskeard.			
Hook, R. G.	0	5	0
Young, R.	0	2	6
Litcham (Norfolk).			
White, W.	0	5	0
Littleborough.			
Hall, Samuel	0	5	0
Littlehampton.			
Longman, J. H.	0	4	0
Smart, C. F.	1	1	0
Liverpool.			
Abraham, Alfred Clay	3	3	0
Abraham, Thomas Fell	1	1	0
Adams, Thomas E.	0	10	6
Adams, T. E., jun.	0	10	6
Allan, James H. (Aintree)	0	5	0
Ayrton and Saunders	2	2	0
Bain, John	0	10	6
Begg, A.	0	5	0
Billington, F.	0	5	0
Blabey, J. J. (Woolton)	1	1	0
Blabey, J. R. (Woolton)	0	5	0

Liverpool—continued	£	s.	d.
Brown, Edwin	0	5	0
Buck, A. S.	0	10	6
Clay, Dod and Co.	1	1	0
Clubb, W. H.	0	15	0
Cowley, R. C.	0	10	6
Day, J. R.	0	5	0
Dickins, B.	0	10	6
Drawbridge, T. F.	0	2	6
Drew, S. K.	0	5	0
Elliott, Robert John	0	10	6
Evans, R. J.	0	10	6
Evans, Sons and Co.	5	5	0
,, (Donation)	52	10	0
Fergusson, W. and J.	1	1	0
Furniss, Thomas	0	5	0
Grace, W. A.	0	5	0
Haywood, Charles	0	5	0
Hocken, Joshua	0	10	6
Hudson, T. H.	0	5	0
Jackson, H.	0	10	6
Jones, W.	0	5	0
Johnson, J. H. and S.	2	2	0
,, Donation)	5	5	0
Knowles, F. W.	0	5	0
Last, G. V. C.	0	5	0
Leatham, W. H.	0	10	6
Lee, Samuel W.	1	1	0
Lett, Arthur J.	0	5	0
Liverpool Pharmaceutical Students' Society	2	5	4
Lloyd, J. A., jun.	0	2	6
McGuffie and Co.	2	2	0
Marsden, P. H.	0	5	0
Mitchell, R. H.	0	2	6
Partridge, T. S.	0	2	6
Peirson, H. S.	0	10	6
Pottage, E.	0	5	0
Redford, G. A.	0	5	0
Richardson, J. W.	0	10	6
Richardson, Richard T.	0	10	6
Ridgway, T. E.	0	5	0
Sawden, Alfred	0	10	6
Shaw, A.	0	5	0
Smith, J. (Aigburth)	0	10	6
Smith, J. J. (Walton)	0	15	6
Smith, R. G.	0	5	0
Spinks, L. L.	0	2	6
Stephen, A.	0	5	0
Sumner, R. and Co.	2	2	0
Swinton, T. H.	0	5	0
Symes, C. and Co. (Donation)	5	5	0
Symes, Charles	2	2	0
Tharratt, G. R.	0	10	6
Thomas, Robert	0	10	6
Thompson, John, Ld.	1	1	0
Thompson and Capper	1	1	0
Thorp, E.	0	5	0
Warhurst, E.	2	2	0
White, T.	0	5	0
Williams, William	0	5	0
Wokes, T. S.	0	10	6
Woodhead, H. C.	0	10	6
Wright, William	0	5	0
Wyatt, H.	0	5	0
Wyatt, H., jun.	0	5	0
Yeats, T. F.	0	10	6
Liversedge.			
Midwood, E.	0	5	0
Llandilo.			
Hughes, T.	1	1	0
Williams, W. J.	0	2	6
Llandudno.			
Burton, Joseph	1	1	0
Llanelly.			
Evans, Gwilym	1	1	0
Wade, J.	0	2	6
Llangollen.			
Jones, Humphrey	0	5	0
Llanidloes.			
Jones, Thomas Pryce	0	2	6
Llanrwst.			
Jones, O.	0	2	6
Loanhead.			
Stephen, J.	0	5	0
Lochgelly.			
Graham, A.	0	4	0
Lockerbie.			
Walker, D.	0	10	0
Loddon.			
Ellis, T. W.	0	10	6

London.	£	s.	d.
Adams, J.	0	5	0
Akerman, W. J.	0	2	6
Allchin, Mrs. J.	1	1	0
Allen, C. T.	0	2	6
Allen, Charles B.	2	2	0
,, (Donation)	5	5	0
Allen, J. H. S.	0	5	0
Allgood, E. J.	0	5	0
Amies, S. M.	0	2	6
Amoore, A. S.	2	12	6
Amoore, Lewis P.	0	15	6
Anderson, D.	0	5	0
Andrew, C. W.	0	2	6
Andrews, Frederick	1	1	0
Andrews, J. H.	0	2	6
Apollinaris Co., Ltd.	2	2	0
,, (Donation)	10	10	0
Appleyard, P.	0	2	6
Argles, W. H.	0	2	6
Arkinstall, William	3	3	0
,, (Donation)	5	5	0
Atkinson, A. P.	0	5	0
Atkinson, James	0	5	0
Atkinson, L.	2	2	0
Aukland, W. H.	0	2	6
Austin, Henry Felix	2	2	0
Baines, Wm. H.	0	10	6
Baiss, A. (Donation)	5	5	0
Baiss Bros. and Co. (Donation)	10	10	0
Baker, A. D.	0	2	6
Baker, A. J. E.	0	5	0
Baker, Alfred P.	0	10	6
Baker, P. C.	0	5	0
Baker, S. G.	0	2	6
Baldock, E. C.	0	2	6
Ball, J. A.	0	2	6
Ball, The Chemists', per Mr. J. C. Umney	31	10	0
,, (Donation)	105	0	0
Barker, A. W.	0	5	0
Barker, G.	0	5	0
Barley, A. H.	0	10	0
Barnard, A. P.	0	5	0
Barnard, G. B.	0	2	6
Barnes, James Benjamin	1	1	0
Barnes, James Burden	0	5	0
Barnes, W. R.	0	5	0
Baron, R. E.	0	10	6
Barrett, J.	0	5	0
Barron Harveys and Co. (Don.)	10	10	0
Bartlett, G. F. H.	0	5	0
Bartley, George A.	0	10	6
Bascombe, Frederick	3	3	0
Bate, Henry	2	2	0
Bateman, T. H.	3	3	0
Bates, J. H.	0	5	0
Bawcutt, F. F.	0	2	6
Beach, T. E.	0	5	0
Beasley, F.	0	2	6
Beaton, E.	0	2	6
Beddard, John	1	1	0
Bedells, A.	0	10	6
Bedford, C.	0	10	6
Bell, Matthew W.	1	1	0
Bell, William H.	2	2	0
Belton, E. R. and Co.	0	2	6
Bennett, Thomas	0	5	0
Berkefeld Filter Co.	1	1	0
Bessell, J. W.	1	1	0
,, (Donation)	5	5	0
Bigg, Thomas	1	1	0
Bingley, Richard	0	10	6
Bird, Augustus	4	4	0
,, (Donation)	21	0	0
Bird, F. C. J.	2	2	0
Bird, Robert	0	10	6
Bishop, E.	0	2	6
Bishop, W. M.	0	5	0
Blackie, R.	0	2	6
Blake, Charles A.	1	1	0
Blake, Sandford and Blake (Don.)	5	5	0
Blayney, W. C.	0	2	6
Bloodworth, T.	0	5	0
Blount, G.	0	2	6
Bonnett, F.	0	2	6
Booth, C. H.	0	10	0
Bourdas, Isaiah	1	1	0
,, (Donation)	21	0	0
Bourdas, I., jun.	0	10	6
Bourne, Johnson and Latimer	1	1	0
Boutall, G. S.	1	1	0
Bowdler, E. H.	0	5	0
Bowen, J. T.	0	10	6
Bowen, John W.	2	2	0
Boyes, W. J.	0	5	0
Branch, G. T.	0	5	0
Brand and Co.	1	1	0
Branford, A. J.	0	5	0
Bray, F. D.	0	2	6
Brett, T. P.	0	2	6

London—continued.	£	s.	d.
Brickell, E. R.	0	2	6
Bridges, C. W.	0	10	6
Briggs, W.	0	2	6
Bristow, T. F., and Co. (Don.)	5	5	0
"British and Colonial Druggist," Proprietors of (Donation)	105	0	0
Broad, H. J.	0	2	6
Brodribb, J. B.	1	1	0
Brookes, Samuel	0	10	6
Brooks, J.	0	2	6
Broumpton, F. R.	0	2	6
Brown, Alfred James	0	10	6
,, (Donation)	10	10	0
Brown, E. A.	0	5	0
Brown, Edgar M.	0	2	6
Brown, G.	0	5	0
Brown, John	0	5	0
Brown, W. B.	0	5	0
Browne, W.	0	5	0
Brunton, W. W.	0	10	0
Bryant, J. T.	1	1	0
Buckley, J. D.	0	2	6
Bullock, J. L. (Donation)	5	5	0
Bullock, J. Lloyd and Co.	2	2	0
Bunker, C. J. G.	0	5	0
Bunker, James	0	2	6
Burden, C. H. B.	0	10	6
Burge, W. G.	0	2	6
Burgoyne, Burbidges, Cyriax and Farries	2	2	0
,, (Donation)	10	10	0
Burleigh, W. M.	0	10	6
Burnett, J.	0	5	0
Burroughs, Wellcome and Co. (Donation)	105	0	0
Burton, Percy H.	0	5	0
Butcher and Son	1	1	0
Butt, Edward Northway	15	15	0
,, (Donation)	42	0	0
Butterworth, John	0	10	6
Cadman, Daniel C.	2	2	0
Cain, J. H.	0	5	0
Camwal Directors (Donation)	50	0	0
Canton, W. C.	0	2	6
Carteighe, Michael	1	1	0
,, (Donation)	10	10	0
Carter, J.	0	5	0
Casely, T.	0	5	0
Casewell, J. P.	0	10	0
Castle, J. W.	0	5	0
Chaplin, W. H., and Co	2	2	0
Charter, T.	0	2	6
Chaston, W. R.	0	5	0
Chattaway, W.	0	10	6
Cheetham, W. H.	0	5	0
"Chemist and Druggist" (Proprietors of)	5	5	0
,, (Donation)	105	0	0
Chemists' Club Smoking Concert	4	4	0
Church, A.	0	2	6
Churchyard, R. L.	0	5	0
Clark, J. A.	0	10	6
,, (Donation)	5	5	0
Clark, W. G.	0	5	0
Clarke, W. J.	0	5	0
Clarke, W. L.	0	5	0
Clayton, T.	0	10	6
Clempson, J.	0	10	6
Clifford, T. A.	0	2	6
Colchester, William M.	0	15	0
Cole and Elkington	0	10	6
Coles, J. W.	0	10	6
Collier, Henry	2	12	6
Collins, H. G.	0	5	0
Constance, Edward	0	10	6
Constance, Herbert E.	0	10	6
Constance, Sidney W.	1	1	0
Coke, C. E.	0	2	6
Collie, Professor	2	2	0
Colwill, R.	0	5	0
Cook, E., and Co.	1	1	0
Cook, H.	0	5	0
Cookson, W.	0	2	6
Cooper and Co. (Donation)	10	10	0
Cooper, B. F. J.	0	2	6
Cooper, F.	0	5	0
Cooper, Henry	0	10	6
Cooper, H. H.	1	1	0
Cooper, W.	0	5	0
Cooper, Wm. Henry	0	10	6
Cooper, Walter Temple	1	10	0
Corbyn, Stacey and Co.	2	2	0
Cottrill, John W.	0	10	6
Coulson, T.	0	2	6
Coverdale, A. E.	0	2	6
Cracknell, Herbert	2	2	0
Crane, J. H	0	5	0
Crawshaw, E.	0	10	6
Cresswell, Frederick	2	2	0
Crispin, —	0	2	6

London—continued.	£	s.	d.
Crosby, John	0	5	0
Crow, E. L.	0	10	6
Crowden, S. G.	0	10	6
Cryer, Henry	0	5	0
Cugnoni. A. H. D.	0	5	0
Cullen, Harry H.	0	10	0
Curnow, —	0	5	0
Curtis and Co.	2	2	0
Curtis, G.	0	5	0
Dakin, J. H.	2	2	0
Dales, E.	0	5	0
Dampney, Richard S.	1	1	0
Daniel, G.	0	5	0
Darby, S.	1	1	0
Dart, W.	0	2	6
Davenport, Horace	2	2	0
,, (Donation)	5	5	0
Davenport, J. T.	2	2	0
,, (Donation)	10	10	0
Davidge, H. N.	1	1	0
Davidson, P.	3	3	0
Davidson. J. B.	0	5	0
Davies, C.	0	10	6
Davies, C. G.	0	5	0
Davies, J.	0	5	0
Davies, T.	0	10	6
Davis, H. S. E.	1	1	0
Davis, J. M.	1	1	0
Davy, Hill and Son, Yates and Hicks	2	2	0
,, (Donation)	10	10	0
Day, J. A.	0	5	0
Daymond, S.	0	2	6
Dean, S.	0	5	0
Dee, A. H.	0	5	0
Defriez, R.	0	2	6
De Peare, John Thomas	0	10	6
Desmond, D. W. A.	0	2	6
Devereux, —	0	2	6
Dewar, Mrs. Mary Ann	0	10	6
Dewey, T. H.	1	1	0
Dinneford and Co.	2	2	0
Dixon, Herbert	0	10	6
Doble, —	0	2	6
Dodd, R. J. (Donation)	10	10	0
Dolling, A.	0	10	0
Donnan, G. B.	0	2	6
Doughty, T.	0	10	6
Douglas, J. W.	0	5	0
Doulton and Co.	1	1	0
Douthwaite, H. L.	0	5	0
Drury, G. J.	0	2	6
Dunn, E. B.	0	7	6
Dunn, G. M.	0	5	0
Durant, F.	0	5	0
Durbin, H. E.	0	5	0
Durrant, S.	0	5	0
Dyer, A. J.	0	10	6
Dyson, A.	0	5	0
Dyson, William B.	3	3	0
Eade, F. J.	0	2	6
Eade, George	1	1	0
,, (Donation)	5	5	0
Eade, James	1	1	0
Eastes, E. J.	1	1	0
Edgson, H., Senior	0	10	6
Edwards, Charles	1	1	0
Edwards, James	0	10	6
Egg, G. F.	0	10	6
Ellerington, J. P.	0	10	6
Ellis, W. B.	0	2	6
Embleton, B.	0	10	0
Emson, William N.	0	5	0
Enness, W. F.	0	5	0
Epps, James	2	2	0
Evans, A. P.	0	5	0
Evans, D. L.	0	5	0
Evans, J. T.	0	2	6
Evans, Lescher and Webb	1	1	0
,, (Donation)	10	10	0
Evershed, G. S.	0	5	0
Faulkner, J. R.	0	10	6
Fawssett, T.	0	5	0
Feltwell, J. W.	0	5	0
Filer, C.	0	5	0
Fitch, F. W.	0	2	6
Fitt, F. E.	0	5	0
Flux, Thompson, and Flux (Donation)	10	10	0
Foot, F. J.	0	5	0
Ford, W. C.	0	5	0
Forster, G. F.	0	5	0
Fosse, A. F.	0	2	6
Foster, J. S.	0	5	0
Fowle, S.	1	1	0
Fox, C. E.	1	1	0
Fox, W. R.	1	1	0
Francis, F. C.	0	2	6
Francis, G. Bult	1	1	0
,, (Donation)	5	5	0

London—continued.	£	s.	d.
Francis, W. H.	1	1	0
,, (Donation)	5	5	0
Freke, C. H.	1	1	0
Frith, E. J.	0	5	0
Froom, William Henry	1	1	0
Frost, John H.	0	5	0
,, (Donation)	5	5	0
Frost, W. T.	2	12	6
Galloway, P. H.	0	5	0
Garman, C. E.	0	5	0
Garner, J.	0	5	0
Garnett, H.	0	2	6
Garnham, A. W.	0	5	0
Gater, J.	0	5	0
Gee, W.	0	2	6
George, Dr. A. W.	0	10	6
Gigner, —	0	5	0
Gilbart, S. F.	0	2	6
Gillett, F. J.	0	2	6
Glaisyer, E.	0	10	6
Glew, F. H.	0	5	0
Glyn-Jones, W. S.	0	10	6
Goatcher, W. J.	0	2	6
Goddard, G. E.	0	5	0
Godfrey and Cooke	1	1	0
Godolphin, G. F. A.	0	5	0
Godolphin, G., jun.	0	2	6
Goff, Richard	0	5	0
Goldsworthy, W. L.	0	10	6
Goldthorpe, A.	0	5	0
Goodall, W. A.	0	10	6
Goodchild, Alfred C.	0	5	0
Gorton and Sons	1	1	0
Gosden, H.	1	1	0
Gossop, G. K.	0	2	6
Gradidge, James H.	1	1	0
Graham, Henry	0	5	0
Greaves, J. E.	0	10	6
Green, H.	0	2	6
Green, Samuel	0	5	0
Green, W. J.	0	10	6
Greenish, Professor	1	1	0
Greenish, Thomas	2	2	0
Greenish, T. Edward	0	10	6
Greig, W.	0	2	6
Grice, J. E. B	0	5	0
Gristock, W.	1	1	0
Gudgen, Frederick G.	0	10	6
Gulliver, W. F.	1	11	6
Gunstone, H. C.	0	5	0
Gunthorpe, G.	0	5	0
Hairsine, H. S.	1	1	0
Hale, G.	0	10	6
Hall, A. W.	0	10	6
Hall, Ralph	1	1	0
Hanbury, C.	1	1	0
,, (Donation)	25	5	0
Hanson, A. W.	0	5	0
Hardy, Samuel C.	1	1	0
Hardwick, —	0	2	6
Harker, C. R, Stagg and Morgan (Donation)	5	5	0
Harley, E. T.	1	1	0
,, (Donation)	5	5	0
Harrington, J. F.	2	2	0
Harris, Frank William	0	5	0
Harris, G.	0	10	6
Harrison, R. C. C.	1	1	0
Harry, E. H.	1	1	0
Hart, J. C.	0	5	0
Hart, Thomas	0	5	0
Harvey, John William	0	2	6
Harvey, R. K.	1	1	0
Harvey, William	0	11	6
Harwood, G. R.	0	5	0
Hatfield, George B.	0	10	6
Hatfield, George W.	0	10	6
Hawes, J. G. H.	0	2	6
Hawkins, Thomas	0	10	6
Hayles, A.	1	1	6
Heading, H. H.	0	5	0
Heale, T. A. O.	0	2	6
Hearn, John	0	5	0
Hearon, Squire, and Francis (Donation)	26	5	0
Hebbeler, K.	0	10	6
Heeley, J.	0	5	0
Heighington, T. G.	0	10	6
Hemingway, E.	1	1	0
Hemingway, W.	0	10	0
Henry, E. L.	0	2	6
Herbert, H.	0	2	6
Herbert, William	0	5	0
Hersant, M.	0	5	0
Hessell, J.	0	5	0
Hewitt, J. R.	0	5	0
Hewitt, S. S.	0	2	6
Hewlett, J. C.	1	1	0
Hewlett and Son (Donation)	5	5	0
Hick, John	0	10	0

London—continued.	£	s.	d.
Hickman, William	0	10	6
Higgins, James	1	1	0
Hill, A. B.	1	1	0
Hill, A. E.	1	1	0
Hill, Arthur S.	2	2	0
Hill, E. W.	0	5	0
Hill, William	0	5	0
Hillen, John	0	10	6
Hills, Walter	3	3	0
,, (Donation)	10	10	0
Hines, W. T.	0	5	0
Hoare, W. R.	0	10	6
Hockin, Wilson, and Co. (Donation)	5	5	0
Hocking, F. A.	0	10	6
Hodgkinson, George A.	0	10	6
Hodgkinson (Thomas), Prestons and King	2	2	0
Hodgkinsons, Clarke and Ward	2	2	0
,, (Donation)	10	10	0
Hodgson, J. D.	0	5	0
Hodsoll, Thomas W. H.	1	6	0
Hogg, E. G.	0	10	6
Hogg, Robert	0	10	6
Hogwood, E.	2	2	0
Hogwood, H. P.	0	10	0
Holding, J.	0	10	6
Holifield, E. J.	0	5	0
Holl, E.	0	5	0
Holloway, C. T.	0	2	6
Holmes, C. M.	0	5	0
Holmes, E. M.	1	1	0
Holmes, Walter M.	1	11	6
Holroyd, A.	0	2	6
Holroyd, W. H.	2	2	0
Hooper, I.	0	2	6
Hooper, R. J.	0	2	6
Hooper, W. H.	0	2	6
Hopkin and Williams	5	5	0
Hopkin, William King	1	1	0
,, (Donation)	15	15	0
Hopkins, J.	0	2	6
Horncastle, J.	1	1	0
Horner and Sons	1	1	0
,, (Donation)	10	10	0
Horsley, P. J.	0	2	6
Horsley, T. W.	0	10	6
Howell, Maurice	1	11	6
Howlett, Samuel	0	10	6
Howorth, C. W.	0	5	0
Howorth, W. S.	0	2	6
Howse, C. T.	0	5	0
Hubbard, H. J.	0	5	0
Hudson-Cox, F.	0	5	0
Hudson, T. F.	0	5	0
Hughes, R.	0	2	6
Hugill, E. A.	1	1	0
Hugill, John	1	1	0
Hugill, John H.	1	1	0
Humble, J. B.	0	5	0
Humphrey, John T.	0	10	6
Humphreys, R.	0	10	0
Hunt, Charles	1	1	0
Hunt, Richard (Donation)	5	5	0
Huskisson, Henry Owen	2	2	0
Hutchins, E. C.	0	5	0
Hyslop, John Cahill	1	11	6
Icke, Henry S.	0	10	6
Idris and Co. (Donation)	10	10	0
Idris, T. H. W.	0	10	6
Ince, Joseph	1	1	0
Ingham, J.	0	10	0
Ingram and Royle	1	1	0
,, (Donation)	10	10	0
Irving, T. S.	0	2	6
Islip, F.	0	2	6
Jacks, D. R.	1	11	6
James, H.	0	1	0
James, J.	0	2	6
Jenkins, H.	0	5	0
Jenkins, Thomas	0	10	6
Johnson and Sons	1	1	0
Johnston, W.	0	5	0
Jones, A. W.	0	10	6
Jones, E.	0	5	0
Jones, Jonah	0	10	6
Jones, T. Y.	0	5	0
Jones, William	0	10	6
Jones, William	0	5	0
Jones, W. A.	0	2	6
Jones, W. H.	0	5	0
Jones, W. H.	0	2	6
Josling, A.	0	2	6
Jozeau, G.	1	1	0
Keer, Isabella S. Clarke	0	10	6
Keer, Thomas H.	0	10	6
Kemp, D. S.	2	2	0
Kent, Thomas Ramsey	0	10	6
Kerr, T.	0	5	0
King, F. H.	0	2	6

London—continued.	£	s.	d.
King, Henry	0	10	0
King, J. H.	0	5	0
King, T. W.	0	2	6
Kingan, D.	0	10	6
Kingsford, Frederick	1	1	0
Kirk, Snowden	1	1	0
Kitchin, J.	0	10	6
Kneen, G. F.	0	5	0
Knight and Milne	0	5	0
Langham, E.	0	5	0
Lansdown, G. A.	1	1	0
Lapthorn, G.	1	1	0
La Treille, A.	0	5	0
Laverack, C. C.	0	2	6
Lawson, A. E.	0	2	6
Leadbeater, S. H.	0	5	0
Leak, F. J.	0	5	0
Lee, A.	0	2	6
Legg, H. A.	0	10	6
Leins, H.	1	1	0
Leitch, W. A.	0	10	6
Lester, J. F.	0	2	6
Lewinton, Alexander B.	1	1	0
Lewis, S. J.	0	2	6
Lidwell, J. E.	1	11	6
Litten, H.	0	2	6
Littlejohn, A.	0	5	0
Llewhelin, Ivor V.	0	5	0
Lloyd, Isaac T.	0	10	6
Lobbett, J. G.	0	5	0
Lockwood, J. R.	0	5	0
Lockyer, J. E.	0	5	0
Loesby, J. N.	0	5	0
Long, H. H.	0	18	0
Longstaff, W. L.	0	5	0
Lorimer and Co. (Donation)	21	0	0
Lovibond, J. J.	0	5	0
Lovegrove, W. S.	0	5	0
Lucas, E. W.	3	3	0
Lucas, H.	0	5	0
Lyon, W. H.	0	5	0
Macdonald, Alexander	0	10	6
MacEwan, Peter	2	2	0
MacEwan, W.	0	10	6
MacGeorge, William	0	10	6
Maish, Mrs. A.	0	10	6
Maizey, E.	0	10	6
Makepeace, A. B.	0	5	0
Malcolm, J.	0	5	0
Marsh, A. E.	0	5	0
Marsh, E. R.	1	11	6
Marston, John Thomas	0	10	6
Martin, T. C. W.	0	10	6
Martin, W. L.	0	5	0
Martindale, William	1	1	0
,, (Donation)	5	5	0
Mathews, J. and H. (Donation)	5	5	0
Mathews, J. H.	1	1	0
Matthews, C. W.	2	2	0
Matthews, H. R.	1	1	0
Matz, Max	0	10	6
Maw, Charles	1	1	0
,, (Donation)	105	0	0
Maw, C. Trentham	1	1	0
Maw, Son and Thompson	2	2	0
Meggeson and Co.	1	1	0
,, (Donation)	21	0	0
Melhuish, A. R.	1	1	0
Metherell, J.	0	10	6
Metropolitan College of Pharmacy, Students of, per W. W. Will	4	4	0
Michie, Charles C.	0	10	6
Miles, C. J.	1	1	0
Millard, E. J.	0	10	6
Miller, W. E.	0	2	6
Miller, W. P. F.	0	5	0
Minshull, Flora	0	5	0
Minshull, Rose C.	1	1	0
Mitchell, W. R.	0	5	0
Moody, L.	0	5	0
Moore, E.	0	5	0
Moore, J. E. L.	0	2	6
Morgan, H.	1	1	0
Morley, C.	0	10	0
Morrell, Thomas	0	5	0
Morson, A. (Donation)	5	5	0
Morson, T., and Son (Donation)	10	10	0
Moss, John and Co.	1	1	0
Mundy, Alfred O.	0	10	6
Mutch, John Pratt	0	5	0
Myers, William	0	10	6
Naylor, W. A. H.	0	10	6
,, (Donation)	5	5	0
Neale, J.	0	15	6
Nelson, G.	0	2	6
Nettle, W. R. P.	0	5	0
Newbery and Sons (Donation)	5	5	0
Newell, W. R.	0	5	0
Newhill, J. W.	1	1	0

London—continued.	£	s.	d.
Nicholls, T.	1	1	0
Nicholson, Thomas T.	0	5	0
Noble, J.	0	5	0
Norfolk, J. W	0	5	0
Nursaw, E.	0	2	6
Oakley, F. A.	0	2	6
Ord, Septimus W.	0	5	0
Ordish, F. P.	0	2	6
O ry, J. G.	0	2	6
Page, J. R.	0	5	0
Page, R. S.	0	10	6
Page, W. A.	0	2	6
Palk, W. H.	0	2	6
Palmer, F.	0	2	6
Palmer, J.	0	5	0
Palmer, J. T.	0	10	6
Parker, C.	0	2	6
Parker, F. P.	0	10	6
Parker, Robert Henry	2	2	0
Parke's Drug Stores, Managing Director of (Donation)	5	5	0
Parkes, J. P.	1	1	0
Parkinson and Son	1	1	0
,, (Donation)	5	5	0
Parkyn, H.	0	2	6
Parry, C. D.	0	5	0
Parry, J.	0	2	6
Parry, W. P.	2	0	0
Parsons, W.	0	2	6
Pasco, G. S.	0	2	6
Pasmore, W. F.	0	5	0
Passmore and Son	0	5	0
Patey, W. J.	0	7	6
Peacock, George	0	5	0
Peat, Joseph	0	5	0
Peck, H. R.	0	2	6
Pellew, A.	0	13	0
Peniston, A. H.	0	2	6
Penrose, A. W.	1	1	0
Perfect, E. G.	0	2	6
Perodeau, E. G.	0	10	6
Peters, D.	1	11	6
Pettinger, Elmer	0	5	0
Pharmacy Club (per Richard Bremridge, Hon. Sec.)	21	0	0
Philp, W. J. I.	0	5	0
Phillips, A. J.	3	3	0
Phillips, A. W.	0	5	0
Phillips, J. R.	0	2	6
Pickerdite, C.	0	2	0
Pickard, William	2	2	0
Pierce, Tully and Co.	1	1	0
Pinchen, W. J.	1	1	0
Piper, F.	0	2	6
Plews, H. W.	0	5	0
Plowright, A.	0	5	0
Plowright, J.	0	5	0
Pond, B. C.	0	5	0
Pond, G. P.	0	10	6
Ponting, F. H.	0	5	0
Portway, A. C.	1	11	6
Portway, J. B.	0	10	6
Potter and Clarke (Donation)	5	5	0
Potter, Dr. G. W.	2	2	0
Potts, Robert A.	1	1	0
Poulson, E.	1	1	0
Powell and Sons	1	1	0
Powell, S. R.	0	5	0
Powell, T. H.	1	1	0
Presbury, H. H.	0	5	0
Pretty, Charles	0	5	0
Price, J. T.	0	2	6
Price, Robert John	0	5	0
Probyn, Clifford (Donation)	105	0	0
Procter, H. R.	0	5	0
Procter, R.	0	5	0
Pursey, G. F.	0	2	6
Radermacher, C. J.	0	10	6
Ralph, W.	0	10	6
Ray, W. F.	0	2	6
Reed, Charles W.	0	10	6
Rees, —	0	2	6
Rees, G. L.	0	2	6
Rees, R. W.	1	1	0
Reeson, H.	0	2	6
Reid, C. S.	0	2	6
Remfry, S. A.	0	2	6
Richards, B.	0	5	0
Richards, J. M.	1	1	0
Richardson, W. I. (Donation)	5	5	0
Riches, F. F.	0	5	0
Riches, T.	0	5	0
Ridley, P. A.	0	1	0
Rigden, George	0	5	0
Roach, H. W.	1	1	0
Robbins, J. (Donation)	10	10	0
Robbins, P. J.	0	5	0
Roberts, H. W.	0	5	0
Roberts, R.	0	10	6
Roberts, W.	0	5	0

London—continued.	£	s.	d.
Robertson, George	1	11	6
Robeson, C. B.	0	5	0
Robinson, C. E.	1	5	0
Robinson, R. A.	0	10	6
,, (Donation)	5	5	0
Robinson, William P.	2	12	6
Roe, G.	1	0	6
Rogers, F. A.	1	11	6
Rogers, F. Ashley	0	5	0
Rose, A.	0	10	6
Rossiter, R. T.	0	5	0
Rowland, E. E.	1	1	0
Rowntree, Thomas	0	10	6
Rundle, C.	1	6	0
Sadler, William	3	3	0
Sadler, William, jun.	0	10	6
Sandy, Frederick William	0	10	6
Sanger and Sons	2	2	0
Sangster, Arthur	1	1	0
Saul, J. E.	1	1	0
Saunders, C.	0	10	6
Saunders, J. A.	0	5	0
Saunders, W. H.	0	10	6
Savage, J.	0	5	0
Savory and Moore	3	3	0
,, (Donation)	21	0	0
Sayers, W. C. (Donation)	5	5	0
Sayers, W. J.	1	1	0
Sell, W. H.	0	10	6
Selley, J.	1	1	0
Sewell, T. A. W.	0	2	6
Sharman, Wm.	0	10	6
Sharpe, R. H.	0	5	0
Shaw, E. H.	0	2	6
Shaw, J. W.	1	1	0
Shephard, Thomas F.	0	10	6
Shepley, Frederick Thos.	0	5	0
Shepherd, A. M.	0	5	0
Sherburn, Thomas	0	10	6
Sherwood, N.	0	10	6
Shields, R. H.	0	10	6
Shirley, S. S.	1	1	0
Shirtliffe, W. E. D.	0	5	0
Short, F. W.	0	10	6
Shove, Bertha	0	10	6
Sibthorp, S. J. K.	0	2	6
Silverlock, Henry	5	5	0
,, (Donation)	5	5	0
Sinclair, N. C.	0	2	6
Skewes, J.	0	2	6
Skinner, H.	0	5	0
Slack, Josiah W.	0	10	6
Slator, Henry	0	7	6
Smart, W.	1	11	0
Smith, Rev. A. O.	0	10	6
Smith, Albert	0	10	6
Smith, E. C. H.	0	2	6
Smith, Fuller	0	10	6
Smith, G. F.	0	10	6
Smith, J. B.	0	10	0
Smith, James W.	1	1	0
Smith, Percy John	1	1	0
Smith, R. W.	0	2	6
Smith, S., and Co. (Donation)	5	5	0
Smith, William	1	11	6
Snell, W. K.	0	2	6
Snow, G. F.	0	2	6
Snow, W. J.	0	5	0
Solomon, A. H.	1	1	0
Spearing, A. J.	0	5	0
Spearing, J.	0	10	6
Spurge, E. C.	0	5	0
Spurling, W.	0	10	6
Spyer, Newton	0	10	6
Squire, T.	0	5	0
Squire and Sons	3	3	0
Stalford, D.	0	5	0
Stamp, Edward B.	1	10	6
Stark, A. C.	0	5	0
Starkie, Richard S.	2	2	0
Stead, J. C.	1	1	0
Stephens, Henry I.	0	10	6
Stevens, P. A.	2	2	0
Stickland, G. G.	1	1	0
Stewart, J. T.	0	10	6
Stickland, W. H.	1	1	0
Still, E. U.	0	5	0
Stone, J. J.	0	10	6
Storey, E. H.	2	2	0
Stratford, H. O.	1	1	0
Stratton, A. R.	0	2	6
Stratton, William	0	2	6
Street, Bros.	3	3	0
Street, H.	0	5	0
Strickett, J.	0	1	0
Strother, Florence E.	0	2	6
Sturton and Sturton	0	5	0
Summers, James R.	0	10	6
Surfleet, A. F.	0	5	0
Surman, T. W.	0	5	0

London—continued.	£	s.	d.
Sutcliffe, L. B.	0	2	6
Tabor, T. S.	0	5	0
Talintyre, W. J.	0	5	0
Taplin, J. W.	1	11	6
Taplin, William Gilbert	1	1	0
Tapp, C.	0	2	6
Taubman, Robert	0	10	6
Taylor, E.	0	5	0
Taylor, George S.	2	2	0
Taylor, John	1	1	0
Taylor, Peter	0	5	0
Taylor, T. M.	0	5	0
Tebbutt, Edwin	1	1	0
Templeman, G.	0	2	6
Tennent, A.	0	5	0
Thatcher, R.	0	5	0
Thomas, H.	1	1	0
Thomas, John	0	2	6
Thomas, J. O.	0	2	6
Thomas, R.	1	1	0
Thompson, A.	0	10	6
Thompson, Arthur S.	0	5	0
Thompson, G.	0	10	6
Thompson, Henry	0	10	6
Thompson, Henry Ayscough	1	1	0
Thompson, John	1	1	0
Thompson, R. W.	0	5	0
Thorn, John James	4	4	0
Thornton and Pursey	0	5	0
Thornton, L. B.	0	5	0
Tickle, T.	0	5	0
Tingle, Miss Ellen	0	2	6
Tipping, T. J. W.	0	10	0
Tomlinson, Thomas	1	1	0
Tompsett, Leighton S.	0	5	0
Toye, E. J.	1	1	0
Tree, J.	0	2	6
Tregellas, C. P.	0	5	0
Trick, William B.	1	1	0
Trotman, Alfred C.	0	10	6
Truman, F. W.	1	11	6
Truman, H. V.	1	1	0
Tugwell, Ernest H.	0	10	6
Tupholme, F.	1	1	0
Turner, —	0	2	6
Turner, Charles E.	0	10	6
Turner, Edward A.	4	4	0
Turner, Thomas	0	10	0
Tustin, Chas. D.	5	5	0
Umney, C. (Donation)	5	5	0
Vaughan, J.	0	5	0
Vincent, P.	0	10	6
Vooght, W. J.	0	5	0
Wade, J.	1	1	0
Wade, T.	0	10	0
Walker, Miss A. J.	0	2	6
Walker, A.	0	15	6
Walker, Charles	0	15	6
Walker, C. J.	0	10	6
Walker, Mrs. J. M.	0	2	6
Wallas, T. J.	0	5	0
Wallbridge, H. A.	0	5	0
Wallis, John T. W.	0	10	6
Wallis, Owen	0	10	6
Wallis, T. E.	0	5	0
Want, W. P.	0	10	6
Wardle, W. S.	0	10	6
Waring, A. W.	1	1	0
Warr, J. H.	0	2	6
Warrell, E.	0	5	0
Warren, F. W.	0	10	6
Warren, William	4	4	0
Warrick Bros.	1	1	0
Warwick, F. W. (Donation)	5	5	0
Wastie, Francis	1	1	0
Watkins, H. E.	0	5	0
Watkins, P. H.	0	5	0
Watson, E.	0	5	0
Watson, R. J.	0	5	0
Watson, William	1	11	6
Watts, Edward	0	5	0
Watts, J. M.	0	10	6
Wavell, Edward	1	1	0
Webber, J. W.	0	5	0
Wegg, W. N.	0	5	0
Wellburn, J. S.	0	2	6
Wells, W.	0	5	0
Wells, W. L.	0	2	6
West, Charles	0	10	6
West, W. C.	0	5	0
Weston, Samuel John	2	2	0
Whiffen, Thomas	5	5	0
,, (Donation	21	0	0
Whigham, Robert L.	0	5	0
Whineray, E.	0	2	6
White, A., and Sons (Donation)	10	10	0
White, Charles	1	1	0
White, E.	0	10	6
Widgery, John	0	5	0
Wilkes, H. S.	0	10	6

London—continued.	£	s.	d.
Wiggins, Henry	1	1	0
Wigginton, Alfred	3	3	0
Wilkinson, Benjamin John	0	10	6
Wilkinson, W.	0	5	0
Wilkinson, W.	0	5	0
Will, William W.	3	3	0
Williams, Alfred	0	10	6
Williams, F.	0	2	6
Williams, G.	0	5	0
Williams, Henry	2	2	0
Williams, J.	0	5	0
Williams, J.	0	10	6
Williams, J. W.	1	1	0
Williams, R. W.	0	1	0
Williams, S.	0	5	0
Williams, T. R.	0	5	0
Willows, Francis and Butler	3	3	0
,, (Donation)	5	5	0
Wilson, G. W.	0	2	6
Wilson, J. F.	0	5	0
Wilson, W.	0	10	6
Wing, A. J.	0	5	0
Wink, J. A.	1	1	0
Wodderspoon and Co.	2	2	0
Wood, Jacob	1	1	0
Wood, W.	0	2	6
Woodward, J. H.	0	5	0
Woolley, S. W.	0	5	0
Woollons, C. H. F.	0	5	0
Wootton, Alfred C.	2	2	0
,, (Donation)	10	10	0
Worsley, A. G.	0	10	0
Wretts, J. R.	4	4	0
Wright, E. P.	0	5	0
Wright, Layman and Umney	3	3	0
,, (Donation)	10	10	0
Wyatt, Francis J.	0	5	0
Wyborn, E.	0	10	6
Wylde, George	0	5	0
Yates, Robert	1	1	0
Young, E.	0	2	6
Young, George	0	5	0
Younger, T. B.	0	2	6
Zusman, H.	0	10	0

Longton.

Hemming, G. T.	0	5	0
Prince, R.	0	5	0

Looe (Cornwall).

Poad, John	0	2	6

Loughborough.

Baldwin, G J.	0	5	0
Hepworth, J. S.	0	5	0

Loughton.

Hutchin, L. A. J.	0	5	0

Louth.

Dennis, E. E. G.	0	5	0
Dennis, J. W. and Son	0	10	6
Street, W. C.	0	2	6
Simpson, H. D.	1	1	0

Lowestoft.

Brown, J.	0	2	6
Coleman, T.	0	10	6
Fryer, C. H.	0	10	6
Hinde, A. H.	0	2	6
Moverley, Robert	0	10	6
Rayson, G. K.	0	5	0
Wright, A.	0	5	0

Ludlow.

Gange, G.	0	5	0
Nickson, James	0	5	0
Suttle, J. H.	0	2	6
Woodhouse, George	0	5	0

Luton.

Cocker, H. E.	0	2	6
Cox, G. F.	0	5	0
Duberly, G. S.	0	10	0
Hall, E.	0	5	0
Sunman, J. T.	1	1	0
Webb, John H.	0	10	0

Lutterworth.

Brown, Thomas	0	5	0

Lydney.

Turner, H. P.	0	4	0

Lyme Regis.

Henley, George	0	5	0

Lymm.

Henshall, James	0	5	0

Lynn.

Palmer, W. I.	0	5	0

Lytham.

Gourlay, H. H.	0	5	0

Macclesfield.	£	s.	d.
Cooper, Thomas	0	5	0
Hill, F.	0	5	0
Hodkinson, J.	0	10	0
Leach, I.	0	2	6
Pass, W. H.	0	10	6
Quarmby, T. W.	0	5	0
Scanlon, F. W.	0	2	6
Wild, J.	0	2	6
Wright, J.	0	5	0
Macduff.			
McMurtrie, J.	0	5	0
Maidenhead.			
Barry, Thomas S.	0	10	6
Cottingham, Joseph J.	0	5	0
Upson, A.	0	10	6
Walton, Ralph	0	10	6
Wardle, J.	0	5	0
Maidstone.			
Anning, A.	0	5	0
Chesterfield, T. M.	0	5	0
Corfe, Alfred	0	10	0
Corfe, A. F.	0	10	0
Goff, T. S.	0	5	0
Jennings, F. R.	0	5	0
Rogers, William	0	5	0
Vinson, E.	0	2	6
Stonham, Thomas G.	0	10	6
Maldon (Essex).			
Crick, George E.	0	10	6
Heaver, A. W.	0	5	0
Pechey, T. P.	0	5	0
Malton (Yorks).			
Buckle, James	0	5	0
Harrison, William	0	10	6
Laverack, W. H.	0	5	0
Malvern.			
Austin, A.	0	10	0
Clarke, H. B.	0	2	6
Clark, Mrs. J.	0	2	6
Fowler, G.	0	5	0
Fox, T.	0	10	0
Mander, A.	0	10	6
Need, J.	0	10	6
Volans, J. R.	0	2	6
Manchester.			
Attenborough, H. R.	0	10	0
Balmforth, A.	1	1	0
Banks, E. (Pendlebury)	0	12	6
Barlow, A. H.	0	5	0
Bates, Frederic W.	1	6	0
Beal, J.	0	2	6
Beard, J.	0	10	6
Beard, J. H.	1	1	0
Bell, Joseph	0	15	6
Benger, F. Baden	1	1	0
,, (Donation)	100	0	0
Berry, W. (Newton Heath)	0	5	0
Bew, John	3	3	0
Billington, John	0	5	0
Blain, Alfred L.	0	15	6
Blore, G. J.	0	5	0
Blyton and Astley (Donation)	5	5	0
Blyton, J.	1	1	0
Beard, J. H.	0	5	0
Boor, Frederick	0	15	6
Booth, W. G.	0	10	6
Botham, J.	0	10	6
Bransby, C. K.	0	2	6
Breadner, C. G.	1	1	0
Brook, E.	0	5	0
Broughton, T.	0	13	0
Bullock, A. H.	0	2	6
Bullock, H.	0	2	6
Bushby, Thomas	0	5	0
Cargill, D. A.	0	2	6
Carter, William	1	1	0
Chapman, J. T.	0	10	6
Clayton, G.	0	15	6
Clegg, A.	0	2	0
Cowpe, M.	0	2	6
Cowpe, Mrs.	0	10	0
Crossley, F. D.	0	5	0
Cusson and Sons	0	10	6
Darling, W. H.	1	1	0
Dawson, Robert D.	0	2	6
Denton, J.	0	10	6
Eastwood, T. E.	0	2	6
Eden, W. J.	0	2	6
Edwards, G.	0	5	0
Fawcitt, T. C.	0	5	0
Foden, E.	0	5	0
Flint, F. B.	0	2	6
Franklin, J. H.	0	10	6
Gardner, E.	0	2	6
Gavin, J.	0	5	0
Gavin, T.	1	11	6

Manchester—continued.	£	s.	d.
Gibbons, Walter	1	1	0
Gibson, R., and Sons (Donation)	5	5	0
Gibson, Robert	1	1	0
Gilbert, J. A.	0	2	6
Gill, J. W.	1	1	0
Gilmour, A.	0	2	6
Graham, C. H.	0	10	6
Green, H. S.	0	10	6
Guest, T.	1	1	0
Hadfield, J. H.	0	10	6
Handford, T. E.	0	15	6
Hankinson, W.	0	2	6
Harrison, A. W.	0	5	0
Hedley, J.	0	2	6
Herald, W. O.	0	2	6
Hewitt, S.	0	2	6
Hilditch, Thomas	0	5	0
Holt, G. A.	0	10	6
Hughes, Evan G.	0	10	0
Hughes, J.	0	2	6
Hughes, W.	0	10	6
Humphreys, E. B.	0	2	6
Jackson, George	1	1	0
Jackson, Thomas	0	10	6
Jeans, Alfred	0	15	0
Jeans, E.	0	10	0
Jeans, T. R.	0	10	0
Jewsbury and Brown (Donation)	10	10	0
Johnstone, C. A. (Donation)	5	5	0
Johnstone, E. S.	0	15	0
Johnson, W. H.	0	10	6
Jones, J. A.	0	2	6
Kemp, Harry	1	11	6
,, Balance from Concert	2	4	5
Ker, A.	0	5	0
Kirkby, W.	1	6	0
Lane, W.	1	11	6
Leech, Robert	0	5	0
Lumb, H.	0	5	0
Manchester and District Assistants and Apprentices, per J. Riding	20	0	0
Marsden, W.	0	15	0
Massey, J.	0	2	6
Mather, W., Ld. (Donation)	5	5	0
Milligan, G.	0	5	0
Mundey, H.	0	5	0
Nidd, J. H.	0	5	0
Ogden, A.	0	2	6
Oldfield, Pattinson and Co. (Donation)	5	5	0
Osborne, T. C. E.	0	2	6
Pickup, Robert L.	0	10	6
Pidd, Arthur J.	1	11	6
Pigott, Samuel	0	2	6
Pratt, G. W.	0	15	6
Price, J.	0	5	0
Pritchards, Limited	1	1	0
Reynolds, R. J.	1	1	0
Riding, J.	0	5	0
Ritchie, T.	0	7	6
Roberts, W. R. (Rusholme)	1	11	0
Robinson, B.	2	7	0
Sandford, E. M.	0	5	0
Scaife, Samuel	1	1	0
Sewelson, D.	1	11	6
Shattock, J. P.	0	2	6
Sherwood, J. H. (Withington)	0	5	0
Stones, W.	1	1	0
Stratford, A. J.	0	2	6
Sturdy, T. M.	0	5	0
Suddaby, J. E. S.	0	2	6
Sutcliffe, C. H.	0	10	0
Sykes, R. E.	0	2	6
Thorp, E. F. W.	0	10	0
Towle, A. P. and Son	1	1	0
Travis, H. A.	0	5	0
Turner, C.	0	10	6
Tyson, J.	0	10	6
Walton, D.	0	2	6
Walton, J. W.	0	10	6
West, H. T.	0	2	6
West, T., and Son	1	0	0
West, Thomas	0	5	0
Westmacott, G. H.	1	11	0
Westmacott, G. L.	0	5	0
Wild, John	0	15	6
Wilkinson, George	0	10	6
Wilkinson, J. F. (Donation)	5	5	0
Wilkinson, William	0	2	0
Williams and Co., Ltd.	0	10	6
Williams, H. G.	0	5	0
Williams, J. B.	0	5	0
Wilson, J. J.	0	10	0
Woolley, G. S. (Donation)	10	10	0
Woolley, H. (Donation)	10	10	0
Woolley, Sons and Co.	5	5	0
Wright and Barnaby	1	1	0
Yates, Ebenezer	0	15	6
Young, J. C.	0	5	0

Mansfield.	£	s.	d.
Adams, Benjamin	0	10	6
Bell, A. H.	0	5	0
Vallance, A. C.	1	11	6
Margate.			
Bush, —	0	5	0
Evans, D. T.	1	1	0
Harvey, William S.	0	10	6
Hewlett, J. (Donation)	5	5	0
Holmes, P.	0	5	0
Morton, H. R.	0	2	6
Pettman, R.	0	10	6
Stimpson, Mrs.	1	1	0
Market Drayton.			
Cooke, William	0	5	0
Market Harborough.			
Adams, H. G.	0	10	6
Bragg, W. B.	0	5	0
Dean, H.	0	2	6
Maynard, H. R.	0	5	0
Market Weighton.			
Marshall, J. J.	0	5	0
Markinch.			
Robertson, A.	0	2	6
Maryport.			
Cockton, John	0	5	0
Maxwelltown.			
Nicholson, J. W.	0	5	0
Maybole.			
Tocher, R.	1	1	0
Melksham.			
Bush, J. E.	0	5	0
Melton Mowbray.			
Attenburrow, Jas.	0	5	0
Brownlow, R. W.	0	5	0
Gill, Josiah	0	5	0
Wing, G. N.	0	5	0
Merthyr Tydvil.			
Harris, E. W.	0	5	0
Llewellyn, R.	0	2	6
Thomas, H.	0	5	0
Middlesborough.			
Hume, William A.	0	10	6
Robson, J. C.	0	10	6
Taylor, H. H.	0	5	0
Taylor, William R.	0	5	0
Middlewich.			
Holland, H.	0	10	6
Midmar (N.B.)			
Milne, J. (Comers)	0	2	6
Milford Haven.			
Harries, J. D.	0	2	6
Millom.			
Roberts, John L.	0	2	6
Milverton (Warwickshire).			
Waldron, A.	0	2	6
Minchinhampton.			
Simpkins, J.	0	5	0
Mintlaw Station.			
Rennie, A.	0	5	0
Mirfield (Yorks).			
Crook, Charles	0	5	0
Mitcham.			
Hutton, T. W.	0	5	0
Monmouth.			
Marsh, G. W. F.	0	10	6
Williams, W. R.	0	2	6
Montrose.			
Burrell, T.	0	6	0
Davidson, A.	3	13	6
Ross, A. L. (Donation)	5	5	0
Morecambe.			
Fell, J. J.	0	5	0
Knowles, R.	0	5	0
Moretonhampstead.			
Evans, C. E.	0	2	6
Morpeth.			
Davidson, T. R., Executors of	0	5	0
Schofield, F. E.	0	5	0
Warner, W.	0	5	0
Whittle, J.	0	5	0
Morriston.			
Thomas, L.	0	5	0

Motherwell.	£	s.	d.
Baillie, D.	0	2	6
Scott, R. A.	0	2	6
Scott, T.	0	5	0
Taylor, D.	0	2	6
Nairn.			
McIntosh, J.	0	2	6
Nantwich.			
Manley, Henry (Aston)	0	2	6
Narberth.			
Havard, B.	0	5	0
Neath.			
Gower, J.	0	5	0
Isaac, J. G.	0	10	6
Rees, T. J.	0	2	6
Nelson.			
Collins, M. A.	0	10	6
Newark.			
Bennett, William	0	5	0
Cherrington, G. W.	0	5	0
Cooling, W. J.	0	10	6
Priestley, L.	0	2	6
Smith, J. H.	0	5	0
New Barnet.			
Cuff, S. W.	0	10	0
Hayles, B. H.	1	1	0
Williams, W.	0	10	6
Young, R. F.	2	12	6
Newbury.			
Hickman and Metcalf	0	10	0
Newcastle-on-Tyne.			
Arrowsmith, L.	0	2	6
Atkins, W.	0	10	0
Beachell, J.	0	2	6
Bell, F. E.	0	10	6
Bell, P.	0	2	0
Blount, G. W.	0	5	0
Bolam, John	0	10	6
Brack, D. G.	0	5	0
Cantrill, W. W.	0	5	0
Coxon, Mrs. E.	0	2	6
Dean, E.	0	2	6
Dudderidge, F. R.	0	5	0
Duncan, C. T.	0	2	6
Forster, J. R.	0	5	0
Hallaway, R. R.	0	5	0
Harrison, E. F.	0	10	6
Herd, T. S.	0	5	0
Ismay and Sons	0	10	6
Jones, R. H.	0	10	6
Long, F. C.	0	5	0
Marley, William	0	10	6
Martin, N. H.	1	1	0
Merson, G.	0	5	0
North of England School of Chemistry Smoking Concert	1	1	0
Owen, A. E.	0	10	6
Park, F.	0	10	6
Parry, F. G.	0	5	0
Pescod, W.	0	5	0
Potts, R.	0	7	6
Proctor, Son and Clague	1	1	0
Rheeder, T.	0	10	6
Russell, C. J.	0	2	6
Sloan, R. C.	0	5	0
Smith, G. F.	0	5	0
Spargo, H.	0	10	6
Stuart, Charles E.	0	10	6
Swan, J. W.	1	1	0
Weddell, G.	0	10	6
Wilkinson and Simpson	1	1	0
Wright, R.	0	2	6
Newcastle (Staffs.).			
Heathcote, Thomas S.	0	5	0
Poole and Son	0	10	6
Williams, T. L.	0	2	6
Newhaven (N.B.).			
Anderson, J. G.	1	1	0
Mitchell, W. K.	0	3	0
Newhaven (Sussex).			
Granger, Harold	0	10	6
Newmarket.			
Barrow, Frank A.	1	1	0
Carr, J. W.	0	10	6
Freeman, J. H.	0	2	6
New Mills.			
Livesley, T. H.	0	5	0
Newport (Isle of Wight).			
Millidge, Alfred	0	5	0

Newport (Mon.).	£	s.	d.
Aspinall, H.	0	5	0
Evans, David	0	5	0
Garrett, T. P.	0	10	6
Harries, B.	0	5	0
Paine, Charles	0	10	6
Phillips, James W.	0	5	0
Smith, Albert	0	5	0
Williams, A. G.	0	5	0
Young, John	0	10	6
Newport (Salop).			
Douthwaite, G. L.	0	5	0
Picken, T. W.	0	5	0
Newport Pagnell.			
Taylor, F. W.	1	1	0
Newton Abbot.			
Barnes, G. A.	0	5	0
Cornelius, J.	0	5	0
Stiling, John E.	0	10	6
Newton Stewart.			
Irving, J.	0	2	6
Newtown (Mont.).			
Morgan, Richard	0	10	6
Normanton.			
Rogers, A.	0	2	6
Northampton.			
Adams, J.	0	5	0
Barry, James	1	1	0
Bingley, John	0	10	6
Clower, John	0	5	0
Cowdery, F.	0	5	0
Ingle, G.	0	5	0
Kirby, Frederick	0	10	6
McKinnell, W.	0	5	0
Mayger, William D.	1	11	6
Sindall, J. W. (Executors of)	0	5	0
Ward, O. T.	0	5	0
Wright, R. F.	0	2	6
Northwich.			
Birtwistle, A.	0	2	6
Clough, John C.	1	1	0
Deakin, J. W.	1	1	0
Hough, T.	1	1	0
Hughes, W. P.	0	2	6
Humphreys, Griffith	1	1	0
Lee, William	0	5	0
Lewty, A. E. R.	0	10	0
Norwich.			
Andrews Bros.	0	5	0
Betts, George	0	10	6
Brittan, T. B.	0	5	0
Corder, Edward	0	10	6
Corder, Octavius	1	1	0
Cossey, John	0	5	0
Cossey, J. D.	0	5	0
Cullen, F. S.	0	5	0
Dawson, W. T.	0	5	0
De Carle, H. E.	0	10	0
Forster, A. W.	0	5	0
Gardiner, W.	0	10	0
Hayhoe, W.	0	5	0
King, H. A.	0	10	0
Mallett, H. P.	0	5	0
Mason, Philip H.	0	10	6
Nuttall, Edwin	0	10	6
Robinson, James	0	10	0
Smith, Joseph de Carl, jun.	0	10	6
Sutton, Francis	0	10	6
,, (Donation)	5	5	0
Taylor, H. E.	0	5	0
Watson, J. E. H.	0	10	6
Wells, A. J.	0	10	6
Norwood.			
Atkinson, J. G. (Upper)	1	1	0
Birch, H. C. (Upper)	2	2	0
Dunlop, T. W.	0	2	6
Golds, L. G. (Upper)	0	10	6
Hartnup, J. (Upper)	0	5	0
Izod and Son (Upper)	1	1	0
Palmer, F. (Upper)	0	10	6
Prime, T. R. (Upper)	0	5	0
Ramsey, W. (Upper)	0	10	6
Rees, H. (South)	1	1	0
Smith, J. (West)	0	5	0
Trounson, H. J.	0	10	6
West, A. H.	0	5	0
White, C. E. (South)	0	10	6
Nottingham.			
Ashby, W.	0	10	6
Bailey, S.	0	5	0
Beilby, A. E.	0	5	0
Beverley, R. H.	0	10	6
Bolton, C. A.	1	1	0

Nottingham—contd.	£	s.	d.
Chambers, J. W. P. (West Bridgford)	0	5	0
Cobb, F.	0	10	6
Cook, S.	0	5	0
Cowley, H. W.	0	5	0
Dadley, I. I.	0	10	6
Davis, I.	0	2	6
Dennis and Roberts	1	1	0
Dennis, J. E.	0	5	0
Eberlin, A.	0	5	0
Flowerdew, W. C.	0	2	6
Freeman, T.	0	5	0
Gascoyne, E.	0	10	6
Gill, W.	1	1	0
Hare, G. E.	1	1	0
Johnson, F.	0	5	0
Lane, E. W.	0	7	6
Lees, J.	0	10	6
Lumby, Fred	0	5	0
Middleton, A.	0	10	6
Muir, T. H.	0	2	6
Newball and Mason	1	1	0
Nottingham and Notts. Chemists' Association (Donation)	10	10	0
Palmer, W. F.	0	2	6
Radford, J. S.	1	1	0
Rayson, J. T.	0	5	0
Roberts, J. F.	0	2	6
Roberts, T.	0	5	0
Robinson, Joseph	0	2	6
Sergeant, F. R.	1	1	0
Smith, J.	0	5	0
Smithurst, John	0	15	6
Spencer, J. C.	0	10	6
Stanley, J.	1	1	0
Turton, E. E. H.	0	10	6
Waterall, G., and Son	1	1	0
Widdowson, R.	1	1	0
Wildgoose, J. G.	0	10	6
Wilford, J.	1	1	0
Wilson, T.	0	10	6
Wood, A. H.	0	2	6
Woods, F. E.	0	2	6
Nuneaton.			
Iliffe, George	1	0	0
Iliffe, T. P.	0	5	0
Lester, Henry	0	5	0
Slinn, A. E.	0	5	0
Oakham.			
Wellington, J.	0	10	6
Odiham.			
Woodman, George	0	10	0
Old Brompton.			
Green, J. H. B.	0	5	0
Old Charlton.			
Wigg, L. N.	0	7	6
Oldham.			
Bagshaw, Henry B.	0	10	6
Bagshaw, William	1	11	6
Bates, Henry	1	1	0
Bates, Hiram	0	5	0
Berry, Miss	0	5	0
Braddock, George	1	1	0
Braddock, J.	0	10	6
Brelsford, James	0	10	6
Buckley, W.	0	5	0
Burnett, W.	0	5	0
Glover, J.	0	5	0
Goodall, F.	1	1	0
Hargraves, H. L.	0	10	6
Haslop, W.	0	5	0
Jones, C. (Royton)	0	5	0
Lees, James	0	5	0
Lord, Robert B.	0	5	0
Platt, Mrs. M.	0	2	6
Tomlinson, A. G. (Hollinwood)	0	5	0
Wilson, Alexander G.	0	5	0
Old Meldrum.			
Bremner, J.	0	5	0
Orpington.			
Farrants, F. S.	0	5	0
Oswestry.			
Evans, John	0	5	0
Roberts, William Carey	0	2	6
Smale, Richard B.	0	10	6
Otley (Yorks).			
Hamond, J.	0	5	0
Pratt, Richard M.	0	10	6
Oxford.			
Bloxham, W. E.	0	10	6
Burbank, T. J. A. R.	0	5	0
Clayton and Co.	0	5	0
Court, G. F.	0	5	0

Oxford—continued.	£	s.	d.
Dolbear, J.	0	10	6
Druce, George C.	0	10	6
,, (Donation)	21	0	0
Eden, T.	0	5	0
Gilkes, W. H.	0	5	0
Harden, A. G.	0	2	6
Hill, James H.	0	5	0
Jenkins, Alexander	0	5	0
Jessop, J. H.	0	5	0
Jewson, J. R.	0	2	6
Mason, J.	0	2	6
Mathews, H.	1	1	0
Moore, W.	0	2	6
Morrison, C. P. A.	0	5	0
Palmer, J.	0	5	0
Philpott, F. W.	0	10	0
Prior, George T.	1	11	6
Squire, James	1	1	0
Thurland, Henry	0	10	6
Thurland, T.	0	5	0
Walklett, G. J.	0	5	0
Wylde, J.	0	2	6
Paignton.			
Sherriff, George	0	5	0
Paisley.			
Fraser, A.	0	7	6
Hannah, H.	0	2	6
MacCowan, R. T.	0	5	0
Turnbull, C. S. (Kilmalcolm)	0	2	6
Parkstone.			
Haynes, J. A.	0	5	0
Partick (N.B.).			
Adams, S.	0	5	0
Blair, T.	0	2	6
Lochhead, A. R.	0	2	6
McNicol, John	0	10	0
Rait, Robert C.	0	10	6
Robertson, G.	0	10	0
Paulton (Somerset).			
Bush, Thomas	0	5	0
Peebles.			
Lindsay, R.	0	5	0
Sanderson, W. J.	0	2	6
Pembroke Dock.			
Bowling, J. H.	0	5	0
Laen, Mrs. S.	1	0	0
Thomas, J. M.	0	2	6
Williams, A. L.	0	10	6
Penarth.			
John, W. D.	0	5	0
Penzance.			
Buckett, A. H.	0	5	0
Harvey, J. S.	0	5	0
Symons, N. H.	0	5	0
Vivian, R.	0	5	0
Pershore.			
Osborne, E.	0	2	6
Perth.			
Ayre, G. M.	0	5	0
Donald, J. J.	0	5	0
Strang, P.	0	5	0
Peterborough.			
Althorp, H.	0	2	6
Bodger, J. W.	0	2	6
Booth, Samuel	0	2	6
Bright, R. H. D.	0	2	6
Calcutt, T. J.	0	2	6
Carlton, Arthur	1	1	0
Fuge, W. T.	0	2	6
Heanley, A. V.	0	5	0
Heanley and Saunders	0	10	6
Knight, W. T.	0	2	6
Noble, H. E.	0	2	6
Pearson, John H.	0	2	6
Sturton and Sons	0	10	6
Thompson, J. E.	0	2	6
Turner, R. P.	0	2	6
Wright, I.	0	2	6
Petersfield.			
Nichols, F. B.	0	5	0
Petworth.			
Whitcombe, C.	0	5	0
Plymouth.			
Allen, Joseph	0	10	6
Andrews, T. N.	0	5	0
Bailey, John H.	0	5	0
Bailey, Richard	1	1	0
Balkwill, A. P.	2	2	0
Balkwill, G.	0	2	6
Barge, John	0	5	0

Plymouth—contd.	£	s.	d.
Blackmore, F. J.	0	2	6
Cantle, H.	0	2	6
Carveth, W. U.	0	2	6
Cox, F. F.	0	2	6
Dance, C. K.	0	5	0
Dangerfield, E.	0	2	6
Down, F. W.	0	2	6
Downing, A.	0	2	6
Downing, T. J. W.	0	2	6
Findlay, J.	0	5	0
Fisher, G.	0	2	6
Foster, E. L.	0	2	6
Foster, F. H.	0	5	0
Goodwin, Medmer	0	10	6
Goodwin, W. F.	0	5	0
Hearder, H. P.	0	10	6
Hender, W. C.	0	7	6
Hifley, R. J.	0	5	0
Hoblyn, E. R.	0	5	0
Hunt, F. W.	0	10	6
Jones, E. O.	0	10	6
Luke, R. S.	0	5	0
Maitland, S.	0	2	6
Martin, J.	0	5	0
Martin, W M.	0	2	6
Maurice, James	2	2	0
Netting, J. G.	0	5	0
Park, Charles J.	2	12	6
Roper, R. F.	0	10	6
Shakerley, W. A.	0	2	6
Sloggett, Thomas C.	0	5	0
Tavener, W. S.	0	2	6
Turney, F. E.	0	2	6
Turney, J. D.	0	5	0
Turney, Samuel B.	0	5	0
U'Ren, W. C.	0	5	0
Weary, C. T.	0	5	0
Williams, S. R.	0	5	0
Williams, T. J.	0	7	6
Woods, William	1	1	0
Woods, W. H.	0	5	0
Pocklington.			
Boyden, John A. C.	0	2	6
Pontefract.			
Bratley, William	0	5	0
Burgin, M. F.	0	2	6
Pontlottyn.			
Roberts, W.	0	5	0
Pontypool.			
Ford, Edward B.	0	10	6
Pontypridd.			
Arnott, D.	0	5	0
Burgess, J.	0	5	0
Cule, Taliesin	2	2	0
Davies, O.	0	2	6
Key, W. H.	0	2	6
Poole.			
Groves, T. B.	1	11	6
Porth.			
Davies, D.	0	5	0
Davies, T.	0	5	0
Portland.			
Childs, Joseph L.	0	5	0
Windmill, W. H.	0	5	0
Portmadoc.			
Morris, D.	0	5	0
Morris, W. E.	0	5	0
Portobello.			
Nesbit, James	0	10	0
Nesbit, John	1	1	0
Portsmouth.			
Arnold, J.	0	5	0
Attree, W.	0	5	0
Bailey, H. H.	0	2	6
Barrett, W. L.	0	2	6
Bennet, A. R.	0	2	6
Brewis, T.	1	1	0
Cooper, J.	0	5	0
Cruse and Co.	1	1	0
Deacon, F. G.	0	5	0
Eggleton, W. L.	0	2	6
Ford, H. S.	0	5	0
Gall, F.	0	2	6
Gossling, W. R.	1	1	0
Gourd, W.	0	5	0
Gresswell, A.	0	5	0
Harwood, H. W.	0	2	6
Hoit, A. H.	0	5	0
Lowther, W.	0	5	0
Mumby, C. and Co.	1	1	0
Perfect, Geo.	0	5	0
Postlethwaite, T.	0	5	0

Portsmouth—contd.	£	s.	d.
Rogers, S.	0	5	0
Sangster, J. G.	0	5	0
Trist, R.	0	5	0
White, W. R. D.	1	1	0
Portsoy.			
Clark, James	0	5	0
Potters Bar.			
Sharman, H. B.	0	2	6
Potton (Beds.).			
Smith, C. B.	0	5	0
Poulton-le-Fylde (Lancs.).			
Blade, E.	0	5	0
Preston.			
Arkle, C. A.	0	5	0
Burnett, J. F.	0	2	6
Freeman, H. S.	0	2	6
Hackforth, F.	0	5	0
Livesey, W. F.	0	2	6
Patterson, T.	0	2	6
Sharples, George	0	5	0
Walker, J E.	0	2	6
Waterworth, A.	0	5	0
Watkinson, W. J.	0	10	0
Williamson, F. A.	0	2	6
Queensbury.			
Hanson, A.	0	2	6
Radcliffe.			
Smith, J. T., and Son	0	10	6
Smith, T. A.	0	2	6
Ramsgate.			
Argue, James	0	5	0
Baily, E.	0	5	0
Champion, Louise A	0	10	0
Fox, C. J.	0	10	0
Morton, Henry	0	5	0
Pavey, and Co.	0	5	0
Rose, F.	0	5	0
Rawcliffe (Yorks.).			
Kirk, J. R.	0	2	6
Reading.			
Ashfield, A.	0	5	0
Bradley, Charles	1	1	0
Brunsden, E.	0	2	6
Butler, B. H.	0	5	0
Cardwell, E.	0	10	6
Coles, S. J.	0	5	0
Craft, James	0	5	0
Dodge, E.	0	5	0
Dowling, R., jun.	0	10	0
Hampton, G.	0	5	0
Harrison, G. W.	0	5	0
Hayward, S.	0	5	0
Knowles, J. H.	0	10	6
Luxmore, Dr. C. M.	1	1	0
Mays, F. W.	0	10	0
Powell, J. A.	0	5	0
Rowell, John C.	0	5	0
Smith, A. B.	1	1	0
Tunbridge, Frederick	0	10	6
Young, J. M. (Theale)	0	5	0
Redditch.			
Moule, William	0	5	0
Ramsay, A. R.	0	2	6
Simpson, D.	0	2	6
Redhill.			
Cross, J.	0	5	0
Ellis, C. J.	0	2	6
Fowler, W. H.	0	5	0
Monk, F. A.	0	5	0
Padwick, T.	0	10	6
Redruth.			
Bray, W.	0	2	6
Reepham.			
Cripps, Johnson	0	10	6
Reigate.			
Neve, Annie	0	10	6
Sargant, J.	0	10	6
Stammwitz, Louisa	1	1	0
Woodward, M. M.	0	10	6
Retford.			
Pater, E. R.	0	5	0
Rhyl.			
Lawrence, George R.	1	1	0
Richmond (Surrey).			
Blanchford, R. A.	0	10	6
Bletsoe, John	1	1	0
Parrott, J.	1	11	6

Rickmansworth.	£	s.	d.
Sumner, G. T.	0	5	0
Ringwood.			
Garnett, J.	0	5	0
Ripley (Derbyshire).			
Heaton, G.	0	5	0
Ripon.			
Cockerill, T.	0	2	6
Judson, C. W.	0	5	0
Parkin, F. B.	0	5	0
Rudd, H. B	0	2	6
Senior, W. F.	0	5	0
Ripponden.			
Bowness, S W.	0	2	6
Cocker, L. A.	0	2	6
Rochdale.			
Bamford, W.	0	10	6
Highley, William	0	5	0
Jones, J. M.	0	5	0
Rochdale Chemists' Association (Donation)	8	8	0
Taylor, E. B.	0	2	6
Taylor, John	0	10	6
Thomas, E.	0	5	0
Whittaker, J. W.	0	2	6
Rochester.			
Hewitt, J. S.	0	5	0
Muskett, F. J.	0	2	6
Romford.			
Lasham, John W.	0	10	6
Romsey.			
Oram, F.	0	2	6
Ross.			
Matthews, T. A.	0	5	0
Rothbury.			
Athey, G. H.	0	5	0
Rotherfield.			
Hornsby, G. G.	0	10	6
Rotherham.			
Bradshaw, C. H.	1	1	0
Rothesay.			
Duncan, William	0	5	0
Rothwell.			
Gray, A. U.	0	2	6
Royston.			
Jefferson, T. (Little Chishill)	0	10	6
Pickering, G. A.	0	2	6
Rugby.			
Gibson, F.	0	5	0
Lenton, W. H.	0	2	6
Wadsley, G.	0	5	0
Rutherglen.			
Robertson, D. S.	0	5	0
Ruthin.			
Rouw, T. J.	0	5	0
Ryde (Isle of Wight).			
Barford, H. W.	0	10	6
Dixon, Henry	0	10	6
Flower, T. C.	0	2	6
Gibbs, William	1	11	6
Pollard, E. W.	0	2	6
Pollard, Henry H.	0	10	6
Smith, Tenison	0	10	6
Smith, T N.	0	2	6
Smith, W.	0	2	6
Wilson, R. E.	0	5	0
Woods, J. F.	0	5	0
Rye (Sussex).			
Horrell, W. H. D.	0	5	0
Waters, William A.	0	10	6
Saffron Walden.			
Faraday G	0	5	0
Gilling, J.	0	10	6
Tween, R. C.	0	5	0
St. Albans.			
Allenby, Henry	0	2	6
Ekins, Arthur E.	0	10	6
Richardson, Mrs. H. H.	0	2	6
St. Andrews.			
Bruce, A. K.	0	10	6
Govan, Alexander	0	10	6
Kermath, W. R.	0	5	0
St. Anne's-on-the-Sea.			
Taylor, J. H.	0	5	0

St. Austell.	£	s.	d.
Bice, James	0	5	0
St. Bees (Cumb.).			
Broomfield, R. W.	0	5	0
St. Boswells.			
Robertson, J.	0	5	0
St. Davids.			
David, Albert	1	3	6
St. Day.			
Corfield, Charles	0	10	6
St. Helens.			
Haden, T. H.	0	2	6
Harrison, James	0	5	0
Sherlock, Thomas	0	5	0
Swift, C. W.	0	2	6
Wallbridge, J. G.	0	2	6
Wallbridge, Mrs.	0	2	6
St. Just.			
Wearing, John	0	2	6
St. Leonards (See Hastings).			
St. Neots.			
Dukes, H. J.	0	2	6
Wise, James	1	1	0
Sale.			
Siebold, L.	1	1	0
Smith, A.	0	5	0
Salford (see Manchester).			
Salisbury.			
Atkins, Samuel Ralph	1	1	0
,, (Donation)	5	5	0
Atkins, William R.	0	10	6
Hardy and Son	0	10	6
Harrison. F. J.	0	2	6
Kerly, W.	0	2	6
Liddle, C.	0	5	0
Newton, J. W.	0	10	6
Orchard, E. J.	0	10	6
Rowe, J.	0	5	0
Saltburn-by-the-Sea.			
Taylor, William	0	10	0
Saltley.			
Strutt, E. B.	0	5	0
Sandbach.			
Fox, M. H.	0	5	0
Lees, J. N.	0	2	6
Sandgate.			
Jenner, William M.	0	5	0
Kennett, E.	0	2	6
Sandown (Isle of Wight).			
Adamson, W.	0	2	6
Woolings, F.	0	2	6
Sandwich.			
Woodruff, A. E. (Eastry)	0	5	0
Saxmundham.			
Palmer, C. J.	0	2	6
Scarborough.			
Batty, T. E.	0	5	0
Brooke, B.	0	5	0
Brown, J. E.	0	2	6
Chapman, Henry	0	10	6
Chapman, J. W.	0	5	0
Clare and Hunt	1	1	0
Cross, E. R.	0	5	0
Eccles, H.	0	5	0
Gilchrist, R.	0	2	6
Hill, R. M.	0	2	6
Longdin, T. W.	0	2	6
Parker, E.	0	5	0
Procter, B. B.	0	5	0
Shaw, W. B.	0	2	6
Simms, R. J.	0	2	6
Smith, J. F.	0	2	6
Turner, W. H.	0	2	6
Walker, J.	0	5	0
Whitfield, G.	0	5	0
Whitfield, John	1	1	0
Seacombe.			
Hinkley, E.	0	5	0
Holt, Richard W.	0	5	0
Robinson, R. F. W.	0	2	6
Seaford.			
Cameron, L.	0	5	0
Seaham Harbour.			
Storey, W.	0	5	0

Seaton.	£	s.	d.
Skinner, G. J.	0	5	0
Selby.			
Brown, G.	0	5	0
Selkirk.			
Dunn, Thomas	0	5	0
Stavert, W.	0	2	6
Settle.			
Shepherd, J. W.	0	10	6
Sevenoaks.			
Barrat, R.	0	5	0
Hampson, R.	1	1	0
,, (Donation)	5	5	0
Pain, E.	0	10	6
Shanklin (Isle of Wight).			
Deeks, W. T.	0	2	6
Sheerness.			
Hills, William J.	0	2	6
Sheffield.			
Alcock, A.	1	1	0
Antcliffe, H.	0	10	0
Appleton, A. J.	0	13	0
Austen, J.	0	15	6
Barratt, H.	0	5	0
Baxter, G.	0	5	0
Bennett, R.	0	5	0
Booth, W. J.	0	5	0
Bradwall, J. H.	0	10	0
Bryars, J. H.	0	5	0
Burnell, J. S.	1	1	0
Carr, George	1	6	0
Carr, P.	1	6	0
Clayton, W.	0	10	6
Colton, W. H.	1	0	0
Dale, J.	0	15	0
Dobb, J. T.	0	10	6
Dyson, W. H.	0	10	6
Eardley, J. F.	2	12	6
Ellinor, G.	0	10	6
Exell, A.	0	2	6
Exell, E. C.	0	5	0
Eyre, J.	0	2	6
Eyre, S.	0	10	0
Eyre, S., jun.	0	5	0
Forrest, G. J.	0	10	6
Fox, A. R.	2	12	6
Furness, Joseph M.	1	11	6
Gambling, J. P.	0	10	0
Gardner, J.	1	3	6
George, J. A.	1	1	0
Gibson, J. C.	0	10	0
Golland, J. H.	0	10	6
Graham, A. W.	1	1	0
Hampshire, F. R.	0	5	0
Harrison, J. H.	0	2	6
Hewitt, C. H.	0	10	0
Hewitt, J. P.	0	15	6
Highfield, H.	0	2	6
Highfield, J. H.	0	5	0
Holmes, G.	1	1	0
Ibbitt, H. E.	1	3	6
Jackson, J. G.	0	5	0
Jepson, X.	0	2	6
Kirkby, W.	0	10	6
Little, C. W.	0	5	0
Lowe, S. P.	1	6	0
Marples, T.	0	5	0
Mayor, T.	0	10	6
Medley, F.	0	13	0
Miller, John T.	0	15	0
Milne, A.	0	10	0
Milne, H.	0	5	0
Miner, M. T.	1	6	0
Moorhouse, J. W.	0	10	0
Morrison, C. O.	2	2	0
Newsholme, G. T. Wilkinson	1	1	0
,, (Donation)	5	5	0
Owen, G. B.	1	6	0
Pater, J. B.	1	6	0
Preston, Job	0	10	6
Rhoden, S. T.	0	2	6
Sheffield College of Pharmacy Students	0	7	0
Smith, E. W.	1	6	0
Smith, H.	0	5	0
Squire, G.	0	10	6
Stevenson, C. H.	0	2	6
Turner, J.	0	5	0
Turner, J. W. J.	0	10	0
Twelves, C. H.	0	5	0
Ward, William	1	11	6
Watson, H. G.	0	10	0
Watson, Robert W.	1	11	6
Watts, H.	0	5	0
Watts, J.	0	15	0
Wiles, Edwin	0	5	0

Shepton Mallet.	£	s.	d.
Fudgé, Charles William	0	5	0
Sherborne.			
Burnett, A. F.	0	2	6
Tayler, E. W.	0	5	0
Sheringham (Norfolk).			
Burrell, W. H.	0	10	6
Shields, North.			
Buckley, W.	0	5	0
Gibson, James	0	10	6
Shields, South.			
Bottomley, L. W.	0	5	0
Ellis, A.	0	5	0
Forrest, Robert	0	10	6
Hughson, A. S.	0	2	6
Mays, A.	0	5	0
Noble, John	0	5	0
Noble, J. G. B.	0	5	0
Riddle, J.	0	5	0
Riddle, J P.	0	2	6
Walker, James	0	5	0
Wanless, F. A.	0	2	6
Williamson, B., jun.	0	10	0
Shildon.			
Veitch, T. D.	0	10	6
Shipley.			
Smith, T. H.	0	2	6
Shrewsbury.			
Adams, William	1	1	0
Blunt, T. P.	1	1	0
Cross, A. R.	0	5	0
Cross, William G.	3	3	0
Gouldbourn, William	0	10	6
King, L. W.	0	5	0
Patterson, H.	0	5	0
Perkins, Christopher	0	5	0
Pyefinch, J.	0	5	0
Salter, Benjamin	1	1	0
Salter, Joseph B.	1	1	0
Silverdale.			
Wrench, F. W.	0	5	0
Sittingbourne.			
Gordelier, William G.	1	1	0
Sketty.			
James, A. W.	0	4	0
Sleaford.			
Harrison, T. E.	0	10	6
Spyvee, W.	0	5	0
Wood, J. R.	0	5	0
Slough.			
Elliman, Sons and Co.	1	1	0
Griffith and Walden	0	10	6
Snaith.			
Bean, John	0	10	6
Solihull.			
Pegg, H.	1	1	0
Southall (Middlesex).			
Diggens, E. D.	0	5	0
Southampton.			
Alderslade, W.	0	5	0
Bates, William	0	10	6
Baxter, W.	0	2	6
Bishop, Samuel and Son	0	5	0
Borchert, Heinrich T. G.	1	0	0
Chipperfield, R.	1	1	0
Dawson, Oliver R.	0	10	6
Hodges, A. L.	0	2	6
Horsey, H. V.	0	5	0
Hughes, J. H.	0	10	0
Johns, H. B.	0	2	6
Johnson, W. E.	0	5	0
Madge, James C.	0	10	6
Randall, William B.	1	1	0
Rubie, J. T.	0	5	0
Vertue, E. S.	0	2	6
Wilkins, C. H.	0	5	0
Wride, F. B., jun.	0	5	0
Southborough.			
Brothers, J.	1	1	0
Southend.			
Dawson, George R.	0	5	0
Heywood, J. H.	0	2	6
South Molton.			
Brown, S. S.	0	5	0
Nuttall, R. H.	1	1	0
Ratcliffe, S.	0	5	0
Righton, James	1	1	0
Round, Frederick	0	10	6
South Molton—contd.			
Smith, F. J.	0	5	0
Surr, Edward	0	10	6
Whitworth, James	0	5	0
Wilding, G. J. (Birkdale)	0	5	0
Winter, William	0	10	6
Southport.			
Adams, C. M.	0	10	6
Ball, Henry	0	10	6
Battie, E. W. C.	0	5	0
Cave, J. R.	0	5	0
Crook, G.	0	10	6
Elliott, Stephen J.	0	2	6
Hamer, J. A.	0	5	0
Jesper, C. F.	0	2	6
Jones, P.	0	5	0
Southwell.			
Bennett, G.	0	10	0
Downing, J. H.	0	10	6
Stanley, R. S.	0	5	0
Southwold.			
Critten, Robert P.	0	2	6
Sowerby Bridge.			
Briggs, T.	0	2	6
Spalding.			
Bell, E. W.	0	5	0
Donington, R. S.	0	5	0
Epton, J.	0	5	0
Hearnshaw, J. W.	0	5	0
Spennymoor.			
Burdon, Thomas A.	0	10	0
Farthing, G. T.	0	5	0
Spilsby.			
Rainey, J. J.	0	5	0
Stafford.			
Averill, Henry Alcock	0	10	6
Averill, John	0	10	6
Garter, G. H.	0	2	6
Carter, J. C.	0	2	6
Fowke, W. F.	0	5	0
Marson, W.	0	5	0
Westhead, W.	0	5	0
Stamford.			
Dickinson, Frederick	0	10	6
Prior, J. S.	0	5	0
Stanford-le Hope.			
Cushion, S.	0	5	0
Stanningley (Yorks).			
Powell, A. J.	0	5	0
Stanstead.			
Minett, E. P.	0	5	0
Stockport.			
Arnfield, J. C.	1	6	0
Ball, G.	0	5	0
Forbes, R.	0	5	0
Hick, A. W.	0	2	6
Johnson, Thomas J.	0	5	0
Kay Brothers	4	4	0
Lang, J. W.	0	5	0
Orton, W. B.	0	2	6
Plant, F. G. L. (Romiley)	0	5	0
Roberts, W.	0	2	6
Shaw, G. A.	0	2	6
Wilson, A. E.	0	5	0
Stockton-on-Tees.			
Bainbridge, Robert R.	0	2	6
Clarke, W.	0	5	0
Gregory, J.	0	2	6
Stoke-on-Trent.			
Adams, Frank	0	10	6
Emery, R. G.	0	5	0
Hartle, W. H.	0	2	6
Heap, I. H.	0	5	0
Holt, R. D.	0	5	0
Stone (Staffs).			
Slater, Thomas	0	5	0
Stonehaven (N.B.).			
Wood, A. L.	0	5	0
Stonehouse (Devon).			
Cocks, J.	0	5	0
Maitland, F.	0	5	0
Netten, Henry J. T.	0	5	0
Pratt, C. A.	0	2	6
Reade, O. A.	0	5	0
Wood, E. T.	0	2	6
Stony Stratford.			
Cox, Julia Jane	0	10	6
Robinson, William H.	0	10	6
Stourbridge.	£	s.	d.
Burgess, William	0	5	0
Loverock, Henry	0	5	0
Selleck, W. R.	0	5	0
Simpkins, G. S.	0	5	0
Yeates, A.	0	5	0
Stowmarket.			
Gostling, George J.	1	1	0
Simpson, Robert G.	0	5	0
Wilson, Thomas	0	10	6
Stradbroke.			
Foulsham, Harry B.	0	5	0
Stranraer.			
Kerr, R.	0	5	0
Stratford.			
Eastman, J. E.	0	10	6
Holford, T. C. (Donation)	5	5	0
Jones, M. R.	0	5	0
Thomas, W. J.	0	2	6
Stratford-on-Avon.			
Ashfield, P. J.	0	5	0
Strathpeffer Spa.			
Maxwell, T. W.	0	10	6
Stratton.			
Pickard, Henry	0	5	0
Stratton-on-Fosse.			
Thring, E. J. H.	0	10	6
Streatham.			
Breese, C.	0	5	0
Dwelly, H. E.	0	5	0
Escritt, H. T.	0	10	6
Shacklock, J. H.	1	1	0
Strood.			
Brown, H. S. F.	0	2	6
Clarke, W. E.	1	1	0
Stroud.			
Coley, Samuel J.	0	10	6
Smith, H. C.	0	5	0
Sudbury (Suffolk).			
Brown, J. H	0	2	6
Sunbury-on-Thames.			
Price, J.	0	5	0
Sunderland.			
Bell, R. H.	0	5	0
Bowman, S.	0	5	0
Carter, W. H.	0	2	6
Cherret, E. R.	0	5	0
Dalton, T. D.	0	2	6
Fairman, George P.	0	10	6
Harrison, E. E.	0	2	6
Harrison, John	1	1	0
„ (Donation)	5	5	0
Hodgson, C.	0	5	0
Hodgson, R.	0	5	0
Leadbitter, W. W.	0	2	6
Mitchinson, J.	0	5	0
Powell, E. F.	0	5	0
Purse, A. D.	0	2	6
Ranken, Charles	0	10	0
Scott, W.	0	5	0
Thompson, L.	0	10	6
Sunninghill (Berks.).			
Ball, W. B.	0	10	6
Surbiton.			
Acfield, William	0	5	0
Jackson, J. P.	0	5	0
Lowe, Charles	0	10	6
Sutton (Surrey).			
Blyth, U.	0	10	6
Fisher, J.	0	2	6
Sanders, F. T.	0	5	0
Sutton Coldfield.			
Johnson, G.	0	10	0
Swaffham.			
Bell, Frederick R.	0	10	6
Christopherson, Fred.	0	5	0
Finch, Jacob	0	10	6
Swansea.			
Bevan, E.	0	10	6
Bonnett, F.	0	5	0
Davies, J. M.	0	5	0
Davies, John (31, High Street)	0	5	0
Davies, John (75, Oxford Street)	0	5	0
Davies, John (Walter Road)	0	10	6
Dryden, T.	1	1	0
Evans, J. W. M.	0	5	0
Grose, Nicholas M.	3	3	0
Swansea—continued.	£	s.	d.
Havard, H. L.	0	10	6
Hughes, James	0	10	6
James, J. D.	0	5	0
Jones, M.	0	5	0
Jones, T.	0	5	0
Keall, A. A.	0	5	0
Lloyd, John W.	0	5	0
Lowther, H. R. (Mumbles)	0	10	6
Roberts, J. K.	0	5	0
Swansea and District Chemists' Association, per J. Davies	1	1	0
Thomas, Evan	0	10	6
Thomas, J. E.	0	5	0
Thomas, T.	0	5	0
Trick, M.	0	5	0
Yorath, C.	0	5	0
Swindon.			
Green, John	0	5	0
Pugh, W. H. W.	0	2	6
Smith, W. J.	0	5	0
Tarporley.			
Aston, A. V.	0	5	0
Taunton.			
Horner, R.	0	7	6
Kirkpatrick, J.	0	5	0
Tavistock.			
Doble, H. T.	0	5	0
Doble, R. D.	0	5	0
Gill, William	0	5	0
Teddington.			
Gould, W. E.	0	10	6
Last, A. J.	0	5	0
Stacey, P.	0	10	6
Teignmouth.			
Cornelius, R. B.	1	1	0
Evans, Joseph J. O.	0	5	0
Silk, E.	0	5	0
Tenbury.			
Slade, John	0	10	6
Tenby.			
Davies, M. P.	0	4	0
James, George	0	5	0
Tewkesbury.			
Stroud, L. L.	0	2	6
Wilkes, D. T. (Bredon)	0	2	6
Teynham.			
Coldwell, D. B.	0	10	6
Thetford.			
Hildyard, W.	0	2	6
Marshallsay, R. J.	0	5	0
Thornaby-on-Tees.			
Ronchetti, T. A.	0	5	0
Thornbury (Glos.).			
Palmer, J. S.	0	10	6
Thornhill (N.B.).			
Fingland, James	0	5	0
Thornton Heath.			
Smorthwaite, E. A.	0	2	6
Ticehurst.			
Corke, Edward	0	5	0
Titchfield.			
Smith, W. O.	0	10	6
Tiverton.			
Havill, P. W.	0	2	6
Rossiter, Thomas E.	0	5	0
Todmorden.			
Lovatt, H. P.	0	5	0
Rhodes, T. G.	0	10	6
Tonbridge.			
Gower, A. J.	0	10	6
Wardley, S. F.	0	10	6
Topsham.			
Ellis, Frederick	0	2	6
Torquay.			
Abraham, H.	0	2	6
Bathe, William	0	2	6
Bourne, H. F.	0	2	6
Bridgman, William Louis	0	5	0
Capes, W.	0	2	6
Chadwick, G. W.	0	5	0
Cocks, John W.	0	5	0
Cocks, W. R.	0	2	6
Cooper, A.	0	2	6
Cutmore, F.	0	5	0
Dunsford, T. W.	0	2	6

Torquay—continued.	£	s.	d.
Edwards, W.	0	2	6
Faulkner, C.	0	2	6
Guyer, James B.	0	10	6
Hellens, G.	0	2	6
Hollow, D.	0	2	6
Holloway, E. A.	0	5	0
Jones, H.	0	2	6
Kent, J.	0	2	6
Knight, Benjamin	0	5	0
Moon, G. W.	0	5	0
Newlyn, J.	0	5	0
Owen, H.	0	2	6
Poynter, R.	0	2	6
Quant, E.	0	5	0
Rawling, W. J.	0	5	0
Reid, A. G.	0	5	0
Rendall, T.	0	5	0
Robinson, J. S.	0	5	0
Salter, T. L.	0	2	6
Seeley, C. E. L.	0	2	6
Shapley, Charles	0	10	6
Sloman, C.	0	2	6
Sloman, F.	0	2	6
Sloman, Richard	0	13	6
Spursley, T. B.	0	2	6
Taylor, John	0	10	6
Tomlin, J. P.	0	5	0
Waymouth, T. S.	0	5	0
Young, J.	0	5	0
Totnes.			
Cooke, E. H.	0	2	6
Foot, W. R. W.	0	5	0
Morse, C. H. Stafford	0	5	0
Tottenham.			
Bately, S. B.	0	2	6
Bently, W. J.	0	10	6
Churchyard, O. G.	0	5	0
MacCrindle, T.	1	1	0
Oakeley, T. J.	0	2	6
Tanner, A. E.	3	3	0
Tredegar.			
Phillips, Charles L.	0	5	0
Treherbert.			
Evans, M. D.	0	5	0
Treorchy (Pontypridd).			
Prothero, G. R.	0	2	6
Tring.			
Jeffery, G. G.	0	2	6
Truro.			
Bucher, W. H.	0	5	0
Carter, B	0	5	0
Feaver, Samuel	0	10	6
James, Hamilton	0	5	0
Percy, Thomas B.	0	10	0
Vincent, O.	0	5	0
Tunbridge Wells.			
Batting, Thomas G.	0	10	6
Chapman, F.	0	10	6
Cheverton and Ogle	1	1	0
Dunkley and Rogers	0	10	6
Hobbs, A. E.	1	11	6
Howard, G. W.	0	10	6
Howard, Richard	0	10	6
Llewellyn, P. H.	0	5	0
Nicholson, A.	0	10	6
Pearmund, H. S.	0	5	0
Sells, Robert J.	0	10	6
Thompson, G. A.	0	10	6
Tute, J. S.	0	10	0
Whitrow, Benjamin	1	1	0
Tunstall.			
Viggars, G. D.	0	5	0
Tutbury.			
Green, Isaac	0	5	0
Twickenham.			
Bishop, Thomas	1	1	0
Peake, Henry F.	0	5	0
Shelley, Henry	0	10	6
Taylor, J. J.	0	5	0
Uckfield.			
Farr, E. H.	2	2	0
Uddingston.			
Flett, A.	0	5	0
Ulverston.			
Porter, W.	0	2	6
Willan, Robert	0	10	6

Upton-on-Severn.	£	s.	d.
Cooper, W. E.	0	5	0
Gibbs, John	0	5	0
Urmston.			
Duncalfe, Richard	0	5	0
Uttoxeter.			
Woodward, H.	1	1	0
Uxbridge.			
Coles, A.	0	5	0
Poll, G. J.	0	5	0
Ventnor (Isle of Wight).			
Lees, J.	0	5	0
Withers, J. T.	0	2	6
Wainfleet.			
Huggins, R. B.	1	1	0
Wakefield.			
Chaplin, J. H.	1	11	6
Chaplin, John Lambert	0	10	6
Duffin, C. W.	0	5	0
Green, A.	0	7	6
Hick, M. B.	0	5	0
Job, C. F.	0	5	0
Pollard, William	0	10	6
Robson, R.	0	10	6
Saville, George	0	10	6
Wice, J. H.	0	10	6
Wallingford.			
Cowling, E.	0	2	6
Payne, Sidney	1	1	0
Reynolds, A. B.	0	5	0
Wallington.			
Wood, E.	0	10	6
Walsall.			
Bayley, C.	0	10	6
Elliott, E. M.	0	10	6
Fast, J. P.	0	5	0
Waltham Abbey.			
Griffiths, J. M.	0	5	0
Walthamstow.			
Farrow, A. E.	0	5	0
Havard, E.	0	2	6
Nichols, F. R.	0	5	0
Saunders, A.	0	5	0
Wilson, J.	0	5	0
Walton-on-Thames.			
Power, William	0		0
Wansford.			
Ellis, J. A.	0	2	6
Wantage.			
Robins, H.	0	2	6
Warminster.			
Toone, J. V.	0	5	0
Warrington.			
Ashton, H. M.	0	2	6
Chamberlain, Miss M. H.	0	2	6
Greenough, H. F.	0	2	6
Hill, J. S.	0	5	0
Warner, M. R.	0	5	0
Wells, C. H.	0	2	6
Young, John Rymer	2	2	0
,, (Donation)	5	5	0
Warwick.			
Holliday, J.	0	10	6
Mellor, J. G.	0	10	6
Waterloo (Lancs.)			
Alexander, J.	0	10	6
Findlay, J.	0	5	0
Hamnett, T.	0	5	0
Hicking, W. E.	0	2	6
Hodgson, T. S.	0	5	0
Hurst, R. P.	0	2	6
Kirk, W. P.	0	5	0
Maries, C. A.	0	2	6
Parry, W.	0	2	6
Pearson, W.	0	10	6
Pheysey, R.	0	10	6
Watford.			
Attfield, Dr. (Donation)	21	0	0
Bateman, J. M.	0	5	0
Chater, Edward M.	1	1	0
Chater, Matthew Taylor	1	1	0
Cottle, Alfred James	0	5	0
Hannaford, W.	0	5	0
Parrott, W. S.	0	10	6
Smith, F. A. U.	0	2	6

Wath-upon-Dearne.	£	s.	d.
Norwood, J. P.	0	10	6
Watlington.			
Spyer, A. J.	0	5	0
Watton.			
Vincent, Lacey A.	0	10	6
Weaverham.			
Manifold, John J.	0	5	0
Wednesbury.			
Gittoes, Samuel J.	0	10	6
Wellington (Salop).			
Bates, J.	0	10	6
,, (Donation)	5	5	0
Hensby, R. P.	0	5	0
Wellington (Somerset).			
Gregory, Walter	0	5	0
Windeatt, G. J.	0	5	0
Wells (Norfolk).			
Rump, Robert R.	0	10	6
Wells (Somerset).			
Slater, Jonathan	0	5	0
Welshpool.			
Griffiths, Thomas	0	5	0
Payne, H.	0	2	6
Welton.			
Myers, George Henry	0	5	0
Wem.			
Beckett, E. J.	0	2	6
West Bromwich.			
Airey, G. P.	0	2	6
Bourne, C. M. K.	0	5	0
Mould, J. S.	0	2	6
West Burton (Yorks.)			
Pratt, W.	0	5	0
Westbury.			
Paine, Charles	0	2	6
West Cornforth (Co. Durham).			
Hunter, H.	0	5	0
Westgate-on-Sea.			
Bessant, Frederick R.	0	10	6
West Kirby.			
Walker, J.	0	5	0
West Malling.			
Stedman, W.	0	5	0
Weston-super-Mare.			
Cooper, John	0	10	6
Hall, E.	0	5	0
Lupton, S.	0	5	0
Parkes, Harry C.	0	10	6
Scott, J. H.	0	5	0
Wigg, L.	0	10	6
Weybridge.			
Griffin, Thomas	0	10	6
Kennett, J. N.	0	10	6
Thompson, E. J.	0	2	6
Weymouth.			
Cole, W. B.	0	10	6
Eyles, J. R.	0	10	6
Gregory, W.	0	10	6
Roberts, A. H.	0	5	0
Smith, E. M.	0	10	6
Stedman, S. S.	0	10	6
Wiseman, E. H	0	5	0
Whitby.			
Booth, S. V.	0	5	0
Corner, Thomas B.	0	10	6
Falkingbridge, F.	0	5	0
Frank, John	1	1	0
Stevenson, John	0	10	6
Whitehaven.			
Wilson and Kitchin	1	1	0

Whitley (North'berland).	£	s.	d.
Thwaites, A.	0	5	0
Whitehead, G.	0	5	0
Whitstable.			
Arrowsmith, G. W. T.	0	10	6
Wickham Market.			
Gardner, A. W.	0	5	0
Wigan.			
Alexander, G.	0	2	6
Atherton, J. H.	0	5	0
Dawson, F. R.	0	5	0
Johnson, T.	0	5	0
Kellett, Richard E.	0	5	0
Phillips, Jonathan	1	0	0
Winstanley and Fairhurst	0	5	0
Worsley, W.	0	2	6
Wigton.			
Hayton, T. I.	0	9	0
Wilmslow.			
Dalton, R.	0	2	6
Wimbledon.			
Babb, J.	0	10	6
Bowen, F. T.	0	10	0
Butler, E. D. Barry	0	10	6
Dancy, R.	0	5	0
Spencer, W. G.	0	5	0
Wimborne.			
Seymour, F. S.	0	5	0
Winchcombe.			
Hall, A. L.	0	10	6
Winchester.			
Ashton, —	0	2	6
Barratt, F. J.	0	5	0
Chaston, A. E.	0	5	0
Gibb, W. D.	0	2	6
Hamilton —	0	2	6
Henty, H. M.	0	5	0
Hyde, J. E.	0	2	6
Knight, George E. Moses	0	5	0
Windermere.			
Barker, R. H.	0	5	0
Windsor.			
Everett, J. G.	0	10	6
Grisbrook, Edward	0	5	0
Wood, Robert	0	10	6
Wingate.			
Cross, John T.	0	10	0
Winslow.			
Parrett, Edward	0	5	0
Wisbech.			
Hill, Major	0	5	0
Wishaw.			
Macfarlane, T. B.	0	2	6
Witham.			
Green, R. P.	0	10	0
Wokingham.			
Pickles, L.	0	2	6
Rednall, W. R.	0	5	0
Tildesley, W. J.	0	2	6
Wolverhampton.			
Beardmore, A. E.	0	10	6
Burnett, C. C.	0	5	0
Caswell, J. A.	0	2	6
Coleman, J. H.	0	2	6
Fleeming, W.	0	5	0
Gibson, F. J.	1	1	0
Goodsell, P. G.	0	5	0
Hall, E. E.	0	5	0
Hamp, John	0	5	0
Phillips, S.	0	5	0
Reade, Bros. and Co.	1	1	0
Riley, J. A.	0	2	6
Robinson, J.	0	10	0
Stanway, Edward Thomas	0	10	6
Tibbitts, L.	0	2	6
Weaver, A. C.	0	10	6
Willcock, F. A.	0	3	6
Williamson, —	0	5	0

Wolverton.	£	s.	d.
Barton, W.	0	5	0
Woodbridge.			
Betts, A. S.	0	5	0
Clapham. F. G.	0	5	0
Wooler.			
Padley, F. R.	0	2	6
Woolston (Hants).			
Pell, John	0	5	0
Worcester.			
Acton, F. G., jun.	0	5	0
Chambers, J.	0	2	6
George, Henry	0	10	6
Hall, Frederick J.	0	5	0
Hinks, John	0	10	6
Horniblow, F. H.	0	2	6
Horniblow, W. T.	0	5	0
Judson, T. B.	0	2	6
Lunn, T.	0	5	0

Worcester—continued.	£	s.	d.
Maxey, W. H.	0	10	6
Price, W. W.	0	5	0
Silk, Thomas	0	5	0
Steward, John A.	0	10	6
Storm, E. B.	0	5	0
Turner, C. W.	0	5	0
Twinberrow, J.	0	12	6
Virgo, C.	0	10	6
Wilson, H. O.	0	2	6
Wordesley (Staffs.)			
Smith, S.	0	5	0
Workington.			
Birkett, F. J.	0	2	6
Mason, Joseph R.	0	5	0
Worksop.			
Jones, George W.	0	5	0
Marris, T.	1	1	0

Worthing.	£	s.	d.
Aston, W.	0	5	0
Cortis, A. B.	0	5	0
Frost, William	0	5	0
Tollitt, W.	0	2	6
Wrexham.			
Caldecott, C. G.	0	5	0
Francis, J. B.	0	5	0
Rowland, L. B.	0	5	0
Thomas, W. J.	0	2	6
Yarmouth, Great.			
Clowes, John E.	0	10	6
Drabble, T. L.	0	5	0
Ebbage, H. E.	0	10	0
Male, T. B.	0	5	0
Palmer, H.	0	5	0
Poll, W. S.	0	2	6
Pratt, Edward J.	0	10	6
Shearman, J. S.	0	10	6
Williams, C. E.	0	2	6
Woodcock, T. J.	0	2	6
Wyles, W.	1	1	0

Yaxley.	£	s.	d.
Farr, Joseph	0	10	6
Yeadon (Yorks.)			
Coatsworth, T.	0	2	6
Yeovil.			
Aplin, J. D.	0	5	0
Francis, J.	0	5	0
Gatward, O.	0	10	6
Helliar, E.	0	5	0
Johnson, A. K. C.	0	2	6
Pooley, J. D. S.	0	10	6
Wright, A.	2	2	0
York.			
Batty, Thomas	0	10	6
Coverdale, G.	0	10	6
Lupton, J. A.	0	2	6
Parker, Thomas	0	10	6
Saville, John	1	1	0
Sowray, J.	0	5	0
Wisker, R. H.	0	2	6

SUBSCRIBERS RESIDING ABROAD.

		£	s.	d.
Barret, E. L.	Paris	1	1	0
Barrett, A. A.	Messina	0	5	0
Browne, F.	Hong Kong	0	5	0
Cashmore, M.	Ladysmith, Natal	1	1	0
Crouch, W. S.	Colombo	0	10	0
Davenport, Rev. J. M.	New Brunswick	5	0	0
Davies, R.	Bombay	0	5	0
Dieterich, E.	Helfenberg	3	3	0
Eakin, J.	Bombay,	0	4	6
Franklin, J. W.	Hyogo	0	5	0
Gane, E. H.	New York	0	10	6
Grammer, F.	Chicago	0	5	11
Hallawell, J.	Porto Alegre	1	1	0
Haycroft, J.	Florence	0	5	0
Hoyles, H. R.	Bombay	0	3	6
Ibbotson, O.	St. Moritz	0	5	0
Ingram, F.	Blomfontein	0	5	0
Jarvis, J.	Pau	1	1	0
Jones, J.	Cape Town	1	1	0
Kidd, W. C.	Lucknow	1	2	6
Lloyd, W. G.	Demerara	0	5	0
Mair, W.	Calcutta	0	2	6
Martlew, C.	Johannesburg	1	1	0
McNeil, J.	St. John's, Newfoundland	1	1	0
Miller, C. B.	Graaff Reinet	0	5	0
Moffat, C. D.	Kingston, Jamaica	0	5	0
Nicholls, A.	Nice	1	1	0
Parsons, J. V.	Boulogne	0	5	0
Pinniger, W.	Reno, Nev.	0	19	1
Prebble, J. G.	Bombay	0	10	6
Puckey, W.	Orange, N.S.W.	0	10	6
Puntan, H. H. C.	Durban	0	5	0
Ralling, E. L.	Cape Town	0	10	6
Ridd, A. H.	Pahiatua, N.Z.	0	2	6
Ross, C.	Nice	0	10	6
Saunders, F. G.	Mentone	0	5	0
Saxlehner, A.	Budapesth (Donation)	5	5	0
Sayers, F. W.	Johannesburg	0	5	0
Smith, H. J.	Kimberley	1	1	0
Squire, F. R.	San Remo	1	1	0
Tebb, H.	Cape Town	1	1	0
Tweedy, J. H.	Belize, B.H.	0	10	6
Wall, A. W.	Rome	0	5	0
Whitehouse, J. W.	Melbourne	0	5	0

ANONYMOUS DONATION, AND SUBSCRIPTIONS.

	£	s.	d.
F. E. P. (Donation)	5	5	0
S. J. B.	2	2	0
S. F.	1	1	0
A Friend	0	2	6
T. M. J.	0	2	6
Six Apprentices	0	6	0
Anonymous	0	5	0
W. Y. Z.	0	5	0
C. E. C. M.	0	10	6
Anonymous	0	5	0
,,	0	5	0
,,	2	2	0
Eight Assistants and Apprentices	0	8	0
A Friend	0	10	0
Three Masons	0	3	0
An Apology	2	2	0
Sympathiser	0	10	0

LEGACIES.

			£	s.	d.
Thomas, Harry Alma	...	London	100	0	0
Nind, George	...	Wandsworth	2000	0	0

LIST OF SUBSCRIBERS TO THE BENEVOLENT FUND, 1897

(SINCE DECEASED).

		£	s.	d.
Adams, W. H.	Stoke-on-Trent	0	10	6
Ault, J.	Usk, Mon.	1	6	0
Barber, G.	Birkenhead	0	10	6
Bennett, J.	Bristol	0	5	0
Blackburn, B.	Shipley	1	1	0
Bordass, J.	Driffield	0	5	0
Briscoe, C.	West Firle	0	5	0
Cardwell, J.	Wakefield	0	5	0
Dewar, D.	Dunblane	0	9	0
Donald, D.	Perth	1	1	0
Farrage, R.	Rothbury	0	10	0
Hindle, J.	Blackburn	0	2	6
Hoare, W. P.	Cromer	0	5	0
Hodder, H.	Bristol	0	5	0
Hunt, T.	Grantham	0	5	0
Nurthen, F. R.	London	1	1	0
Ordish, T.	Derby	0	2	6
Parker. W. H.	Nottingham	0	5	0
Parris, T. W.	Hove	0	5	0
Prosser, D.	Sheerness	0	10	6
Reckless, A. H.	Ashbourne	0	5	0
Roach, Pope	London	1	1	0
Sarsfield, W.	Durham	0	10	6
Scanlan, C.	Birkenhead	0	10	6
Silver, S. W.	Long Melford	0	2	6
Staning, W.	Hull	0	5	0
Sutherland, A.	Baltasound	0	5	0
Upton, E. J.	Wallingford	0	10	6
Williams, E.	Liverpool	0	5	0
Williams, R. E.	Cardiff	0	5	0
Willson, S. J	Peterborough	0	5	0
Wisken, R.	Herne Hill	0	5	0

ORPHAN FUND OF THE PHARMACEUTICAL SOCIETY.

The list of donations and subscriptions to this Fund will be found on a separate page, amongst the advertisements.

The World of PHARMACY Week by Week

THE GREAT EVENT of the week is, of course, the publication of the present issue of the *Pharmaceutical Journal*, the total guaranteed circulation of which exceeds 17,000 copies, whilst the Editor is placed in direct communication with every registered chemist in Great Britain, in addition to many other persons directly interested in the various branches of the drug and chemical trades. No such circulation is ever attained by any other organ of the drug trade in the United Kingdom.

NEXT IN IMPORTANCE comes the fact that on the day the Journal went to press last week, *i.e.*, on Thursday, February 17, G. S. Sutton, of Gosport, was mulcted in a penalty and costs, under the provisions of the Pharmacy Act, 1868, for the illegal sale of a scheduled poison, viz., laudanum. The defence was set up that defendant was an executor, but that view was not accepted by the County Court Judge (p. 203).

THE PHARMACY ACTS AMENDMENT BILL will probably be introduced into the Commons House of Parliament this week, the Hon. W. F. Smith, Member for the Strand Division, being in charge of the measure (p. 201).

IN SUPPORT OF THE BILL, the Midland Pharmaceutical Association, the chemists of Northampton, and the Derby and District Chemists' Association have taken steps to approach their local representatives in Parliament, and many individual pharmacists are understood to be doing likewise. But many more should do so (pp. 208-222).

THE TEXT OF THE BILL, with full explanations, is republished this week, in order that every chemist on the Register may have an opportunity of considering its provisions (p. 200).

JACOB BELL'S LABOURS in connection with the first Pharmacy Act are succinctly described in an article treating of that pioneer scientific pharmacist's life and work (p. 195).

ANOTHER BILL of interest to our readers is that dealing with Medicine Stamp Duty, and this week we treat at length of the conditions of exemption from that Duty (p. 192).

A NINETEENTH-CENTURY GOLD FACTORY is described by a sceptical American contributor, and the account is readable and interesting, if not convincing to persons who incline to modern alchemistic views (p. 189).

THE SELECTION OF PHOTOGRAPHIC APPARATUS is the topic selected by another contributor, an expert in his particular line, and the suggestions made should be specially seasonable at the present period of the year (p. 191).

THE STUDENTS' PAGE continues to instruct, and the explanatory notes on the Pharmacopœia monographs will appeal as strongly as ever to students (p. 204).

PERFUMERY FOR PHARMACISTS is exhaustively dealt with in an article which brings the whole subject up to date, the principal oils used in perfumery, synthetic perfumes, and recently introduced natural perfumes all receiving attention (p. 197).

"THE MEDICINAL PLANTS OF THE WORLD" is the heading given to an appreciative review of a new and important work by Dr. Georg Dragendorff, which many of our readers who can comprehend "that awful German language" will doubtless be glad to possess (p. 199).

IN "THE MONTH" we cater for a more advanced class of workers, and the gist of several important scientific and practical papers is there given in a condensed form (p. 183).

DAVIESIA LATIFOLIA is referred to by Mr. J. Bosisto, of Victoria, and the results of a chemical examination of the crystalline substance extracted therefrom are published by Messrs. Paul and Cownley (p. 187).

FLUID EXTRACT OF LIQUORICE has engaged the attention of Mr. Peter Boa, who speaks well on the whole of the official process for preparing the extract, and considers that water is the best menstruum for extracting the sweetness of the root (p. 188).

THE METRIC SYSTEM receives very full consideration this week, useful time-saving tables of equivalents being published for the benefit of the little-leisured pharmacist (p. 209).

MANY SOCIETIES AND ASSOCIATIONS are reported, and, to quote from a contemporary, Secretaries of societies are reminded that we are always pleased to insert abstracts of the proceedings of such bodies, so long as they are of general interest. Some correspondents would save themselves and the Editor much trouble if they would bear that fact in mind. Votes of thanks, election of members, and the usual routine business are of local consequence only, and the fact should not be overlooked that reports ought to be kept up to date.

THE BENEVOLENT FUND ALBUM kept at 17, Bloomsbury Square, London, contains the portraits of annuitants who have been elected on the Fund, but there are several gaps in the list, and the Secretary, Mr. Richard Bremridge, will be glad to receive any portraits that are not yet in the Album (p. 202).

EXEMPTION FROM JURY SERVICE for all chemists and druggists is claimed by a correspondent, whose argument is logically unanswerable, but he overlooks the fact that such exemption does not fall within the range of pharmaceutical legislation (p. 223).

OUR CANADIAN LETTER, written by a correspondent who is fully cognisant of all matters affecting the craft in North America, is in great measure devoted to a consideration of the anti-cutting movement (p. 213).

New Ideas and Trade Notes

ENEMAS AND AIR CUSHIONS.

Messrs. S. Maw, Son, and Thompson, Aldersgate Street, E.C., have lately brought out a new enema of excellent quality, which is entirely of English manufacture throughout, and is supplied at a very low price—viz, 21s. per dozen—in order that it may, if possible, drive away the cheap and unreliable German syringes from the market. The quality of the rubber of which the enema is made is first-class, and cutting the syringe in two proves that it is homogeneous. In fact, there is little doubt it is

far superior to any other syringe yet produced at the price. The same firm has shown us some air cushions which only cost 2*s*. each. They are made in Japan, very strong; in fact, they have been thoroughly tested in this respect. Messrs. Maw's well-known town representative could make no impression when standing on one, and he is no light weight. They can be destroyed after use in infectious cases, as the cost is so small. When not inflated they fold up easily, and go in the pocket, and for those who attend cricket matches or camp out they afford protection against damp.

WHAT NOT TO DO—"50 DONT'S."

Messrs. Rouse Bros., 61, Charlotte Street, Tottenham Court Road, W., have compiled a card of "50 Dont's" to hang in the pharmacy for the use of chemists, their assistants and apprentices. A copy of the card is being sent to every chemist in business, and if the good advice contained thereon is followed out much trouble and annoyance will be spared both chemist and customer. The firm will be pleased to forward a card to anyone connected with the trade who may write for one to the above address and mention this Journal.

PETROLEUM EMULSION WITH HYPOPHOSPHITES.

Messrs. C. R. Harker, Stagg, and Morgan, Laurence Pountney Lane, London, E.C., send a sample of their Petroleum Emulsion with Hypophosphites. This emulsion is prepared from a very pure soft petroleum jelly, emulsified by a special process, and contains 33⅓ per cent. of petroleum with 8 grains of the hypophosphites of lime and soda per fluid ounce. The emulsion is a cream-like liquid of uniform consistence, readily pourable from the bottle, permanent and perfectly inseparable. By reason of the purity of the materials used in its manufacture it never becomes malodorous nor decomposes in any way. When taken in milk it recalls fresh cream; in wine, water, or even alone, its taste is unobjectionable to the most fastidious. It has a slight pleasant flavour, but may be had unflavoured if desired. The firm also manufacture a "pure white" emulsion from sulphur-free white petroleum oil. This possesses the characters of the ordinary emulsion, with the exception of being snow-white in colour. It may be mentioned that this make of petroleum emulsion, on account of its general excellence and moderate price, has acquired a wide reputation. It is put up in 8 oz. and 16 oz. bottles. The firm of Harker, Stagg, and Morgan is well-known in connection with the supply of sulphur-free petroleum oil, and the Emulsion is an excellent specimen of a preparation made therewith.

"LIGHTNING" PLATES AND X-RAYS.

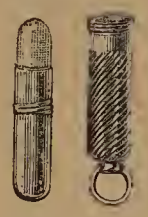
Messrs. Cadett and Neall, Limited, photographic plate manufacturers, Ashtead, Surrey, announce that they are building a new factory specially for the manufacture of printing-out papers of various kinds, films, and other photographic specialties. Their present factory is very complete with up-to-date machinery, and their sale of plates per annum amounts to millions, both the slowest and fastest plates being made. In connection with the "Lightning" plate—which is a specialty of the firm, very thickly coated, and for sensitiveness is claimed to be the quickest in the world—a warning is issued to dealers and users of "X" ray apparatus, it having been found that the plates have been spoiled through the walls of two rooms, the plates being at a distance of 25 feet from the tube. Dark rooms for "X" ray work, therefore, should be metal-lined, or the plates stored in metal-lined cupboards. A monthly publication, 'Dry Plates,' is supplied gratis to dealers known to the firm, who are asked to apply for further copies if the usual monthly supply is not sufficient to meet the demand.

NEW CACHETS.

Mr. Max Schliephak, 90, Victoria Street, S.W., sends specimens of the Urbánek Cachets, for which he is the sole British agent. They are well made and of elegant appearance, readily soluble, and may be had in any colour, printed or embossed with the buyer's name. Although the Urbánek Cachets can be used with any existing machine, the makers have constructed a special apparatus for ensuring the most elegant appearance in the finished cachet. The apparatus, which is of nickel-plated metal, may be had on approval by application to the above address. Mr. Schliephax, who has had large experience in pharmacies in England and on the Continent, has recently opened an International Pharmaceutical Agency at 90, Victoria Street, S.W., as exporter, importer, and commission agent for everything connected with the drug trade, and undertakes the introduction of English goods on the Continental market. He holds sole agencies for Messrs. Georg Winderoth, Cassel; Joseph Urbánek, Prague; H. Lynke, Cäpenick Noris; Zahn and Co., Berlin, &c., for the United Kingdom and colonies.

ST. PAUL'S PERFUMES.

Messrs. F. Newbery & Sons, of King Edward Street, E.C., are constantly adding novelties to their toilet and fancy departments. The St. Paul's Perfumes in dome stoppered bottles at 16*s*. per dozen find a ready sale, and are appreciated by the few customers to whom they have been shown. Quarter dozens are supplied in neat cases. The "New Art" series of 1*s*. smelling-salt bottles in different colours, such as crystal and green, crystal and coral, and iridescent, are supplied in cut-glass bottles of various shape. A 6*d*. pencil-case menthol cone, and reversible, is easily carried in the pocket and supplied at 3*s*. per dozen. Another handy article is a 6*d*. bevelled-glass pocket mirror, with a perpetual calendar at the back, and in white, gilt embossed, flexible celluloid case.



A NEW TOILET ARTICLE.

Messrs. A. Pinfold & Co., Metronome Works, Bradford, are placing on the market a new toilet article "Carboniferous Pumice," to be sold at 6*d*., and is intended to take the place of the ordinary and usually unshapeable lumps of pumice at present sold. The article is moulded in tablets with oval face back and front, and is meant to be both a disinfectant and an excoriator for the hands. The firm is sparing no pains or expense to put the article before the public in the most attractive manner possible. It is put up in quarter gross boxes with fully descriptive label, and sent carriage paid throughout the United Kingdom, either direct from Bradford or through any wholesale house.

D.C.L. CHEMICAL LABORATORY.

The Distillers' Co., Ltd., Edinburgh, to commemorate the opening of their enlarged and reconstructed head office at 8, 10, and 12, Torphichen Street, recently entertained a representative gathering of their officials and agents at a dinner in the Hall, 74, Queen Street, Edinburgh. The enlarged offices occupy a prominent site on the main thoroughfare forming the continuation westwards of Princes Street. The building is a large square structure measuring about 70 feet by 50 feet, is four storeys in height, and has a good external architectural appearance. The chemical department consists of a general laboratory fully equipped with the most advanced apparatus for the analysis of the raw and manufactured materials used and produced by the Company, with special reference to the manufacture of malt extract and yeast, and provision has also been made for the conduct of experimental work. Opening off the general laboratory is a smaller room for photographic and polariscopic purposes, and provided with means for using daylight or monochromatic light at will. There is also a third and separate room provided with the apparatus necessary for the prosecution of bacteriological work. Amongst other apparatus this room contains a large microscope, by Watson & Son, London, fitted with a battery of the highest class apochromatic objectives, by Powell and Lealand. Provision has also been made for photomicrographic work with high powers, including a specially arranged camera for vertical work and a powerful arc light fitted with condensers giving the illumination necessary for instantaneous exposures. The whole building is lighted by electricity.

A FOCUS TUBE REVIVER.

Mr. F. H. Glew, 156, Clapham Road, London, S.W., has invented a simple method of reviving vacuum tubes, which he claims saves all re-pumping and sparking. Moreover the vacuum tube can be continuously maintained at any desired pressure for any number of hours. The method employed is to place inside the narrow stem of the focus tube a few pieces of very fine soft iron wire, each piece of wire being coated with resinous matter, and the tube is then exhausted and sealed off in the usual way. When the vacuum gets too high, by continued use, one of these small pieces of iron wire is selected, by means of a magnet, and brought into a convenient part of the stem of the tube; a spirit lamp is then gently waved under the tube at this spot, until sufficient of the resinous coating of the wire is decomposed. Of course the focus tube is connected to a coil during this disengagement of gas, so that the result can be readily watched, and the process stopped at any stage by removing the lamp. The attachment can be readily fitted to any existing make of tube.

A NEW PRICE-LIST.

Messrs. Parke, Davis, & Co., 21, North Audley Street, W., send their 1898 price-list, by which all previous quotations are cancelled. It is not only a complete catalogue of the products of the firm's laboratories, but a variety of useful information is also given, including abbreviations of authors' names, botanical synonyms, convenient formulæ for the preparation of B.P. tinctures, notes of reference, etc. An important feature of the list is a "Table of Equivalents," this being a table of all the denominations of weight and measure that represent the packages offered in the price-lists, opposite which are placed their approximate and exact metric equivalents. There is also a table covering frequently used quantities, showing the approximate and exact equivalents in metric and imperial weights and measures. These tables are given so that chemists and others may "make themselves familiar with the points of superiority which the metric system has over those at present in use, since every indication points to its early general adoption." A copy of this list may be obtained from the publishers on application.

SOUTHALL'S EXPORT JOURNAL.

Messrs. Southall Bros. & Barclay, Lower Priory, Birmingham, send a copy of the half-yearly issue of their 'Export Journal,' and prices current of drugs, chemical, attractive specialities, druggist's sundries, etc. Part I. of the publication gives the current prices of drugs and chemicals, Part II. a list of the leading lines of the firm, Part III. an illustrated price list of chemists' attractive specialities for counter sale, while Part IV. deals with druggists' and surgeons' sundries and implements. There is also a fine list of advertisers' goods and the firm's "Terms of Sale." Every chemist in business may possess this useful publication by applying to the above address.

NEW PREPARATIONS.

Mr. B. Kühn, 36, St. Mary-at-Hill, Eastcheap, E.C., submits samples in original packages of two preparations lately introduced by him. These preparations are Colchi Sal Capsules and Betul-Ol Liniment, and both names will readily convey to the practitioner the nature of their composition and their value as therapeutics. Colchi Sal Capsules contain a compound of pure colchicine and natural methyl salicylate, obtained from *Betula lenta*, and the accurate dosing of these drugs in capsules makes the preparation very valuable as a remedy in gouty and rheumatic affections. It has, moreover, been found that pure colchicine does not exhibit the depressing effect of colchicum usually prescribed. Betul-Ol Liniment is chiefly composed of the oil of *Betula lenta*, and is applied externally when colchi sal is not borne by the stomach. The ready permeation of this preparation accounts for the surprisingly quick beneficial results after appreciation. Both preparations are only dispensed by the chemist and doctor's prescription, and are neither sold nor advertised to the public. Chinosol Sanitary Tablets.—Mr. Kühn also submits the latest form in which this well-known antiseptic and disinfectant is brought under the notice of the sanitary authorities. These tablets find their principal use for the prompt production of disinfecting and deodorising fluids. For instance, one tablet (cost twopence) produces three quarts of an aqueous solution sufficient for disinfecting a room of 1000 cubic feet by the aid of a spray. More diluted solutions are used for washing linen, floors, etc. The convenience, owing to easy portability, combined with the valuable properties of chinosol, have quickly been appreciated by sanitary authorities.

COMPRESSED RHUBARB.

Messrs. Stallman & Fulton, Dunster House, Mincing Lane, E.C., send samples of pure rhubarb compressed into attractive and convenient shapes. It is much neater and more compact than the ordinary rhubarb root or the old-fashioned cut and trimmed pieces. Another good point is that, being compressed, the rhubarb presents a hard surface impervious to worms, and however long it is kept, is claimed always to keep its colour and never to look dingy. It can easily be reduced to powder in a mortar and answers all the tests and requirements of the P.B. Four shapes are made, the pieces weighing from about 1½ to 3 drachms each according to size.

Medical Jottings.

Some correspondence is taking place in the columns of the *British Medical Journal* on the subject of "Consultation with Homœopaths." The mere fact that letters in favour of homœopathy appear in our contemporary without protest may be an indication that the prejudice against this particular school of practitioners is scarcely so vehement as in times gones by. One correspondent, who signs "M. D.," contends that the so-called "irregular" therapeutic method of one generation is placidly accepted as sound practice by the next, and that in the domain of therapeutics (the proverbial "backward boy") there is no room for dogmatism. The same writer states that it is too late in the day to characterise homœopathic practitioners as knaves or fools, as they have graduated (some with distinction) in the regular schools, and there is no ground for assuming that they are actuated by other than honourable considerations.

Since his election, a few months since, as a direct representative of the profession on the General Medical Council, Mr. Victor Horsley has demonstrated that he is very much in earnest in regard to the responsibilities of his position. He recently issued an address to his constituents complaining in very strong terms of the apathy of the Council in regard to the prosecution of offenders against the Medical Acts. Mr. Brudenell Carter, another member of the Council, and representative thereon of the Apothecaries' Society, has taken up the gauntlet in defence of the Council, which, he claims, does not rule the profession any more than it rules the courses of the stars.

If, however, it be technically correct that the Council does not rule the profession, yet no one can question that it has very great influence over it—witness the recent

resolution as to the employment of unqualified assistants, and the warning to all registered practitioners that in future such employment will be regarded as "covering" and deemed to be infamous conduct in a professional respect, which entails the penalty of erasure of the offender's name from the Register.

APART from the anxiety which the serious state of Sir Richard Quain's health causes his many friends, it is unfortunate that he is unable to attend to his duties as President of the Council, in view of this controversy and of other pressing matters of importance, such as the publication of the new Pharmacopœia. Sir Richard has presided over the deliberations of this governing body since 1891, and his absence at this juncture is all the more regretted on account of his intimate acquaintance with every detail of the business routine connected with the Council, and, in addition, he is a *persona grata* to everyone with whom he comes in contact, except, perhaps, those unfortunate practitioners who become acquainted with the disciplinary powers of the Council.

MRS. COULSON KERNAHAN has a new novel in the press, 'Trewinnot of Guy's,' which will deal with medical life, and will be dedicated to Sir Samuel Wilks, President of the Royal College of Physicians and Consulting Physician to Guy's Hospital. Mrs. Kernahan's first husband was the late Professor Bethany, of Caius College, Cambridge, and Guy's Hospital.

MARRIAGES

SMITH—GERRARD.—At St. Mary's Church, Wimbledon, on Thursday, February 17, by the Rev. T. R. Price, Montague Smith, L.R.C.P., M.R.C.S., third son of Mr. W. Smith, M.A., Head Master of the Orphan Working Schools, Haverstock Hill, to Kate Louise Gerrard, second daughter of A. W. Gerrard, pharmaceutical chemist, late of Chertsey.

RICHARDSON—ARNALL.—On February 16, at the Parish Church of St. Peter's, Belgrave, Reginald E. S. Richardson, second son of Colonel John G. F. Richardson, J.P., Elmfield, Knighton, Leicester, and a member of the firm of John Richardson & Co., manufacturing chemists and druggists, to Ethel Mary Arnall, second daughter of Mr. Joseph Arnall, The Grange, Loughborough Road, Belgrave.

REMINGTON—THOMAS.—On Monday, February 7, in the Protestant Episcopal Memorial Chapel of the Holy Communion, Philadelphia, U.S.A., Dr. Arthur Hart Remington, son of Professor Joseph P. Remington, President of the Philadelphia College of Pharmacy, to Miss Sophie Thomas, daughter of George C. Thomas, of Drexel & Co.

NEWS IN BRIEF

AN INTERESTING POINT.—At the Thornbury Petty Sessions last week Mr. James Spencer Palmer, chemist and druggist, of High Street, Thornbury, was summoned for obstructing the footway outside his shop by placing thereon two barrels, and allowing them to remain there for two hours without just cause. Considerable interest was taken in the case, as it involved the right of shopkeepers in the town to deposit goods on the footway in front of their business premises. Mr. H. P. Thurston (Messrs. Thurston & Jolly, of Thornbury) appeared for the defendant, who explained that he was called away whilst unpacking the barrels to attend to some customers in his shop. The Bench dismissed the case.

A CURIOUS REMEDY for pain in the stomach was recently tried by a lithographer named David Maxwell, of Greenock, who, after going to bed, complained of a pain in his stomach and drank a quantity of oxalic acid, with the result that he shortly afterwards expired.

THE CHARGE OF POISONING his cousin, Annie Holmes, by means of strychnine against Walter Horsford, farmer, of Spaldwick, Hunts, was again brought before the St. Neot's magistrates on February 18, and after further evidence had been submitted, the Bench committed the accused for trial to the Assizes on the charge of "Wilful Murder."

LIEUT. COL. PROBYN, L.C.C., is to be nominated by the Lord Mayor as one of the Sheriffs of the City of London during the coming year.

THE CLOTHWORKERS COMPANY has given £100 to the North-Eastern Hospital for Children, Hackney Road, Shoreditch.

A DENTAL ACT CASE.—At Newport (Mon.) on February 7 a young man was charged under the Dental Act (1878) with using the word "dentist" without being duly registered or qualified; he was further charged with applying the word "dentorium" for his business. For the defence it was contended that the word "dentorium" did not imply that the user was a registered dentist. A fine of £3 5*s*. was imposed with respect to the first charge, but in regard to the application of the word "dentorium" the magistrates thought the evidence insufficient to convict.

A CASE OF MEAT POISONING alleged to have occurred recently at Oakenholt, Flint, resulted in a coroner's inquest. It appears from the evidence that a woman named Lamb, aged 41, bought a quantity of brawn at a local butcher's shop on January 23, she, her husband, and family afterwards partaking of it for supper. The next day all who partook of the brawn became ill with violent stomach pains, all recovering after a few days except Mrs. Lamb, who, in spite of medical attention, expired on February 6, the cause of death being stated by the doctor to be "gastro-enteritis, due to diseased meat." The verdict of the jury was "Death from Typhoid Fever."

INTERNATIONAL PHOTOGRAPHIC EXHIBITION AT THE CRYSTAL PALACE, 1898.—The Prince of Wales has consented to open this Exhibition, and intending exhibitors are asked to note that the date of opening of the Exhibition by His Royal Highness has been fixed by him for Monday, April 25, and not Wednesday, April 27, as originally announced. The latest date for the reception of exhibits in each section will therefore be two days earlier than that first stated on the prospectus.

MESSRS. LINDSEY & SONS, Truss Makers and Surgical Machinists, 32, Ludgate Hill, E.C., have acquired the business at 6, Castle Square, Brighton, lately carried on by Mr. J. Peell.

INDUSTRIAL EXHIBITION.—Several firms connected either directly or indirectly with the trade are exhibiting at an industrial exhibition which is being held at the Victoria Hall, Exeter, for the purpose of practically demonstrating the advantages of using up-to-date food preparations, domestic and sanitary appliances, labour-saving and scientific inventions, etc. The only pharmacy stand is that of Messrs. Holman, Ham & Co., manufacturing chemists, of Exeter. The stand is most attractively fitted up with a choice selection of novelties and specialties, the display of perfumes and toilet necessaries being artistically arranged. The exhibit includes several preparations, for the production of which the firm deservedly takes credit. Other exhibits include those of Messrs. Champion & Co., of vinegar fame; the Anglo-Swiss Condensed Milk Co.; Messrs. Keen, Robinson & Co., whose name has been associated for more than a century with the mustard trade; Hovis Bread, Sunlight Soap, Maypole Dyeing Soap, Van Houten's Cocoa, Bovril, Brown & Polson's Patent Corn Flour and Paisley Flour.

THE CHEMICALS AND DRUGS CO., LTD., of Manchester, have been successful in resisting the attempt of the Saccharin Corporation to secure an interim injunction restraining them from selling saccharin. Unless previously settled by arrangement, the whole question as to the validity and scope of the patent will be decided later on at the trial of the action; in the meantime the Chemicals and Drugs Co. inform their customers that they are prepared to supply saccharin unfettered by any injunction.

A SIXTEEN OUNCE BOTTLE OF CARBOLIC ACID was purchased by a young married woman at Oxford on Tuesday this week, and when the husband returned from work in the evening he found her sitting in a chair, dead, having swallowed about six ounces of the poison. A distressing feature of the suicide is that the parties were married as recently as Saturday last.

THE BRITISH ASSOCIATION.—The arrangements for the Bristol meeting of the British Association are well in hand, and the local

secretaries have been informed that a particularly interesting feature of the meeting will be an international conference on Terrestrial Magnetism and Atmospheric Electricity. This conference, at a meeting held in Paris two years ago, appointed a permanent committee to consider various questions in relation to these subjects. This was a very representative one, comprising representatives of England, United States, Germany, Portugal, Sweden, Austria, France, Italy, Denmark, Holland and Russia. This committee will now present a report to the conference to be held in Bristol.

Mr. A. W. Gerrard, who recently severed his connection with the pharmacy carried on by him for some years at Chertsey, has joined the firm of Gibbs, Cuxson, & Co., manufacturers of surgical dressings, etc., Birmingham.

An Interesting Wedding was solemnised on Monday, February 7, in the Protestant Episcopal Memorial Chapel of the Holy Communion, Philadelphia, when Miss Sophie Thomas, daughter of Mr. George C. Thomas (of Drexel and Co.), was united in the holy bonds of matrimony to Dr. Arthur Hart Remington, a graduate of the Medical Department of the University of Pennsylvania, and a son of Professor Joseph P. Remington, President of the Philadelphia College of Pharmacy. The Memorial Chapel was built in 1888 by the bride's father, and, in honour of its founder's daughter, the chapel, which was crowded with a fashionable assemblage, was simply but very beautifully decorated. The ceremony was performed by the Rev. Richard N. Thomas, uncle of the bride, assisted by the Right Rev. William Neilson McVickar, D.D., Bishop Coadjutor of Rhode Island. Dr. and Mrs. Remington after the ceremony proceeded to Vienna, where the former will spend two years in hospitals to gain experience in special work before beginning the active duties of his profession in Philadelphia.

Edinburgh District Chemists' Trade Association.—A meeting of this Association was held on Tuesday, Feb. 22, when the Secretary read some correspondence with the wholesale Chemists' Union as to prices of proprietary articles, intimating that the subject would be considered at the first meeting of the Union in March or April next. Mr. Peter Boa, in introducing a discussion on "Methylated Spirit without Rock Oil," referred to the reasons which led to the addition of rock oil to the methylated spirit and the regulations regulating the sale on Sundays, and after 10 p.m. or before 8 a.m. on Saturday and Monday. He objected to rock oil being added, on the ground that while it did not render the spirit undrinkable, it made it unsuitable for many technical purposes. He also spoke on the question of licences. Mr. Hill agreed with Mr. Boa's objection, and thought if the case was fairly represented to the Excise authorities they might agree to withdraw the regulations. Mr. Coats was not altogether in accord with the objections raised, while Mr. M'Dougall thought they should write to the Excise authorities asking them to allow the oil to be omitted. Mr. MacKenzie thought Mr. Boa had confounded the action of the police with the Excise in the matter of granting licences. Mr. Forret sympathised with the position taken by Mr. Boa. Other members having expressed their opinions on the question, it was remitted to the Committee with powers to communicate with the Federation of local Associations on the subject and take any steps considered necessary.

Obituary.—Mr. William Duff, of Messrs. Raimes, Clark & Co., who has been seriously ill for many months, died at his residence, Richmond Cottage, Restalrig Terrace, Leith, on Saturday, February 19, 1898, aged 62. Mr. Duff served his apprenticeship in Cupar, from which he came forty-two years ago to the firm with whom he has been ever since, and of which he became a partner in 1888. Mr. Duff was widely known for his assiduous devotion to duty, his strict and methodical business habits, and his unfailing courtesy. He will be missed by a wide circle of friends in the drug trade throughout Scotland. He was an Associate in Business of the Pharmaceutical Society.

Football.

The Westminster College Football Club met the South London School of Pharmacy Club on Saturday, February 19, with the result of a win for the former by 4 goals to 3.

PARTNERSHIPS DISSOLVED.

(From the London Gazette.)

Charles L. Smithard and R. W. Morrow, Surgeons and Apothecaries, 381 and 383, Oldham Road, Manchester. Debts will be received and paid by R. W. Morrow.

George Woods and John Goodier, Wholesale Druggists and Drysalters, Kay Street, Preston.

Walter Geo. Eagle and Frederick Eagle, Drysalters, etc., 63, Wavertree Road, Liverpool. Debts will be received and paid by Walter George Eagle.

W. T. Peacock and Aug. Hadley, Medical Agents and Accountants, 19, Craven Street, Strand, W.C. Debts will be received and paid by Aug. Hadley, who will carry on the business.

Hinton E. Bateman and Thomas Kirsopp, Surgeons, York. Debts will be received and paid by Hinton E. Bateman, who will practise on his own account at 48, Micklegate, York. Thomas Kirsopp will practise on his own account at 58, Bootham, York.

Richard B. Thompson & Arthur Ryden (trading as J. A. Archibald & Co.), Aërated Water Manufacturers, Pitt Street, Blackburn.

RECEIVING ORDERS IN BANKRUPTCY.

(From the London Gazette.)

William Shearer, High Street, Camberley, Surrey, Mineral Water Manufacturer.

Reuben L. Gibson, 27, Swan Street, Loughborough, Leicester, Chemist, Druggist, and Dentist.

The quotations here given are in all cases the lowest cash prices for bulk quantities, and often the articles quoted have to be sorted in order to suit the requirements of the retail pharmacist. The cost of freightage from the chemical and drug works to the various distributing centres must also be considered. It is important that these conditions should be borne in mind in making any comparison between the prices quoted and those of the wholesale drug trade.

LONDON REPORT.

February 24, 1898.

Business has again been very restricted during the past week, and disappointment has been freely expressed at the lack of orders. It is to be hoped, however, that with an improved political outlook we may see a better state of affairs in the Drug and Chemical Trade. The changes in value which have taken place during past few days have been quite unimportant Opium and Morphia very quiet. Codeia steady. Cinchona Bark and Quinine dull. Quicksilver and Mercurials, Iodine, and Iodides, Bromine, and Bromides, without change. Sulphonal steady. Acetanilide rather firmer. Phenacetin very weak. Essential Oils quiet, with the exception of Messina Essences, which are dearer. Glycerine fairly steady. Cod Liver Oil rather dearer for new oil, while the old oil is said to be in heavy supply, and is neglected. Orris Root higher. Cream of Tartar and Acid Tartaric quiet. Citric firmer, and expected to be dearer as soon as the season of more active consumption commences. Linseed Oil and Cottonseed Oil dearer. Borax and Acid Boracic quiet and unchanged. Shellac dull. Ipecacuanha very firm. The following are the prices actually ruling for articles of chief interest.

Acetanilide—Is rather firmer at 1s. 1d. to 1s. 2d. per lb. for quantity and large bulk packing.

Acid Acetic—Is fairly active, prices remaining unchanged at 14s. 3d. per cwt. for 30 per cent., 15s. 3d. per cwt. for the B.P. strength, 25s. per cwt. for the 60 per cent., 28s. 6d. for the 70 per cent., 32s. per cwt. for the 80 per cent., and 39s. 3d. for the glaciale.

Acid Boracic—Quiet at 23s. per cwt. for crystals, and 25s. per cwt. for powder.

Acid Carbolic—Is rather dull at 6¾d. to 7d. according to make and packing for 35° to 36° C. *ice crystals* in 2½ cwt. drums and overcasks. Other qualities and packing being quoted at proportionate prices. *Crude*: 60° F., 2s. 1d. per gallon; 75° F., 2s. 9d. *Liquid*: 95 per cent. of pale straw colour, 1s. 1d. to 1s. 2d. per gallon in 40-gallon casks.

Acid Citric.— Price is normally unchanged at 12½d. per lb. for foreign, but it is doubtful if any quantity could be obtained at that figure. Demand is slow, but should the position change in this respect decidedly higher values would probable rule.

Acid Oxalic—Firm at 3⅝d. per lb. for *crystals*, and 4⅛d. per lb. for *powder*.

Acid Tartaric. — English on the spot steady at 1s. 1d. per lb., foreign 12½d. per lb.

Aconite.—*Root*: German is quoted 39s. per cwt. on the spot. *Leaves*: 28s. 6d. to 42s. 6d. per cwt., according to quality.

Ammonia Compounds.—*Sulphate* is very dull at last week's price of £10 per ton for grey prompt, 24 per cent., London. *Bromide* unchanged at 2s. 2d. per lb. on the spot. *Iodide* quiet at 14s. 6d. per lb. *Sal Ammoniac* steady at 35s. per cwt. for sublimed firsts, and 33s. per cwt. for seconds. *Chloride* firm at 32s. per cwt. for the chemically pure crystals, and 25s. 6d. per cwt. for the 98 per cent. ,free from metals. *Sulpho-cyanide* firm at 1s. 1d. to 1s. 2d. per lb. *Oxalate*, 6¼d. per lb. for crystals.

Antipyrine.—Price of Dr. Knorr's article remains at the lately reduced figure of 2s. 1½d. per oz. Under the name of Phenagone, however, an article which in every respect fully answers all the requirements of the *P.B.* can be bought at a much lower price. Quotations vary considerably, but buyers are taking special care to handle only a really reliable quality, there being several inferior makes in the market.

Bismuth.—The *metal* remains at 5s. per lb., and the *subnitrate* at 4s. 10d. per lb., in in 5-cwt. lots.

Bleaching Powder—Steady at £7 per ton in bulk and for quantity.

Borax—Quiet and unchanged at 14s. per cwt. for lump, and 14s. 6d. per cwt. for powder.

Bromine and Bromides—Are steady at unchanged prices, *Pot. Bromide* being quoted at 1s. 10d. per lb.

Buchu Leaves.—A fair business has been done this week at 5d. per lb. for good green rounds.

Cantharides.—*Russian* continue firm at 1s. 9d. per lb., although demand is inactive. *China* are scarce and prices nominal.

Camphor.—*Crude* continues very quiet, and quotations are easier at 90s. *c.i.f.* for *Japan*, and 82s. 6d. *c.i.f.* for *China*, whilst the spot quotation of the latter quality is 90s. per cwt.

Camomiles—Are in fairly good inquiry, fine *Belgian* being quoted 37s. 6d. to 40s. per cwt., fair quality 32s. 6d. to 35s. per cwt.

Cinchona Bark.—By a slip it was stated last week that the bark sales were taking place in Amsterdam on that day, whereas same only take place to-day, result not being known at time of going to press. Meanwhile the position of the article has remained quiet and unchanged.

Cinchonidine Sulphate—Continues in good demand at 8½d. per oz.

Cloves.—Privately *Zanzibar* quiet but steady; sales include April-June delivery at 4 7-32d. and June-August at 4 9-32d.; spot quoted 4⅛d. At auction of 237 bales *Zanzibar*, 70 bales sold at 3¾d. to 4d.; of 28 cases *Penang*, 14 cases picked sold at 8½d. to 9½d.

Cocaine—Is quiet but steady at 10s. to 10s. 9d. per oz., according to quantity and brand. Some outside makes are said to be offering below this figure. In the case, however, of an article like this, buyers will be well advised if they confine their purchases to the best known and most reliable brands.

Coal Tar Distillation Products.—*Toluol*: 1s. 11d. per gallon; *Benzole*: 60 per cent., 1s. 8d.; 90 per cent., 1s. 5d. per gallon. *Crude Naphtha*: 30 per cent. at 120° C., 10d. *Solvent Naphtha*: 95 per cent. at 160° C., 1s. 11½d. per gallon.

Cod-liver Oil—Is rather firm at 65s. to 75s., according to brand, for best new non-congealing *Newfoundland* in tin-lined barrels owing to bad weather, which, it is stated, is seriously interfering with the fishing; but, in face of the large stocks of old oil, any really important advance in valuc of the new oil would appear to be somewhat problematical.

Codeia—Is steady at 11s. 3d. to 11s. 6d. per oz.

Cream of Tartar—Is unchanged, but demand is very slow, and a very small business has been done this week. First white *crystals* on the spot, 75s. 6d. per cwt.; *powder*, 77s. 6d. to 79s. per cwt.

Damiana Leaves—Continue to decline in value, 6½d. per lb. *c.i.f.* being the last price received from the other side.

Dandelion Root—Is exceedingly scarce, especially for really good bold root, demand from America having practically exhausted the *Continental* supply, while *English* root is hardly procurable at all. 45s. to 47s. 6d. per cwt. is asked for rather inferior *German whole* root. and 50s. to 52s. 6d. for *cut*.

Epsom Salts—Are in good demand for medicinal quality, prices ranging from 77s. to 92s. 6d. per ton, according to quantity and packing.

Ergot of Rye—Is firm, good *Russian* being quoted 10½d. to 11d., and really good sound *Spanish* 1s. 4d. per lb.

Gentian Root—Is quiet at 22s. 6d. to 23s. 6d. per cwt.

Ginger.—At the auctions on Tuesday 750 bags rough *Cochin* met a slow demand, and only 350 bags sold—low shrivelled at 12s. 6d.; ordinary small washed rough, 22s.; good, 30s.; fine bold, 32s. to 32s. 6d. per cwt. 419 bags limed *Japan* bought in at 19s. to 20s. per cwt. 101 bags *African* bought in at 27s. per cwt. The *Jamaica* crop is arriving rather earlier than usual, and it is reported that it will be a large one. However, 196 barrels of the new crop met with a good demand, and all sold at an advance of fully 1s. to 2s. per cwt.; low, lean, and dark Rhatoon, 60s. 6d. per cwt.; ordinary, 62s. to 62s. 6d. per cwt.; common dark small, chiefly scraped, 66s. to 69s. per cwt.; good small, 71s. to 73s. 6d. per cwt., and one barrel 79s. per cwt. One lot bold resinous held for 90s. per cwt., a bid of 88s. per cwt. being refused.

Golden Seal Root.—Stocks in New York are very light, and prices are advancing. This week's mail advices quote 1s. 10½d. per lb. *c.i.f.*, but state that very little is to be had at that figure.

Glycerin.—Market is quiet but steady, *German* makers quoting from 52s. 6d. to 58s. per cwt., according to brand, for the best white chemically pure double distilled 1·260 quality, in 2-cwt. cases each 4×56-lb. tins; other qualities and packing in proportion, *English* being quoted slightly below the lower figure mentioned above.

Gum Tragacanth.—There has been a much improved demand now that the late arrivals have been put on the market, and a considerable business has been done, mostly in the medium and lower qualities. Quotations: Firsts, £13 10s. per cwt.; seconds, £12; thirds, £10 15s.; fourths, £9 10s.; yellow and pinky, £7 10s.; other qualities down to 40s. per cwt.

Iodine and Iodides—Remain unchanged at 7½d. per oz. for the former, and 9s. 9d. for *Pot. Iodide* in 2-cwt. parcels.

Ipecacuanha.—*Rio* is exceedingly firm, nothing being obtainable under 8s. per lb., which price is asked for thin wiry root, good bold being held for 8s. 6d. per lb. *Good Carthagena* root is scarce, and prices quite nominal.

Japan Wax—Is rather firmer on the spot. Good squares 36s. per cwt. on the spot; for arrival 33s. per cwt., *c.i.f.* terms, is quoted.

Lycopodium.—Good sifted *Russian* is quoted 1s. 4d. to 1s. 6d. per lb., according to quantity.

Menthol—Is quiet at 7s. to 7s. 3d. per lb. on the spot, according to quantity.

Mercurials.—Makers still quote 2s. 2d. for *Corrosive Sublimate*, and 2s. 6d. for *Calomel* in 5-cwt. lots.

Morphia—Quiet at 4s. 3d. to 4s. 6d. per oz., according to quantity, for the *Hydrochlorate* powder in quantity and bulk packing.

Oils (Essential).—*Peppermint H.G.H.* is fairly steady on the spot at 5s. 6d per lb., whilst for arrival 5s. 3d. per lb. is asked. *Japanese* dementholised unchanged at 3s. 1½d. per lb. *c.i.f.*, 40 per cent. 4s. 1½d. per lb. *c.i.f.* *Star Aniseed* quiet but fairly steady at 7s. 3d. to 7s. 6d. per lb. on the spot and 6s. 6d. per lb. *c.i.f.* for arrival February-March steamer from second hands whilst China asks mone money at 6s. 8d. per lb. *c.i.f.* *Cassia* quiet with small sales of 65 to 70 per cent. at 4s. 9d. on the spot and, for arrival 80 to 85 per cent. at 4s. 9d. per lb., *c.i.f.*, terms. *Citronelle* steady at 1s. 2½d. per lb. in drums. *Lemongrass* quiet at 4¾d. to 5d. per oz. Messina essences are all very firm, but buyers are holding off in face of the advanced prices which are demanded.

Oils (Fixed) and Spirits.—*Linseed*: A very firm market at decidedly higher rates. On the spot, pipes London, £16 5s., barrels £16 10s. *Rape*: A steady market. Ordinary brown on the spot, £23; refined spot, £24 10s. *Cotton* very firm at much higher prices; crude on the spot, £13 15s.; refined £14 10s. to £15, according to make. *Olive*: Both Spanish and Levant are quoted at £33. *Cocoanut*: Ceylon on the spot unchanged at £22 10s., but Cochin is lower at £27 on the spot. *Palm* firm at £23 10s. for Lagos on the spot. *Turpentine*: The market is firmer, especially for forward positions; American on the spot, 24s. 4½d. per cwt. *Petroleum oil* flat; Russian spot, 4¼d. per gallon, American 4⅜d. per gallon. *Petroleum spirit*: American, 5½d. per gallon.

Opium—Remains exceedingly quiet at about late quotations—viz., *Druggists'*, 9s. 3d. to 10s. 6d.; *Manufacturing*, 8s. 9d. to 9s. 6d.; *Soft shipping*, 10s. 3d. to 12s. 6d.; and *Persian*, 10s. to 11s. per lb.

Orris Root.—Advices from Leghorn state that the market there for *Florentine* orris root has become much firmer, large purchases having been made for American account, and it becomes more and more evident that the stocks are much smaller than has hitherto been thought. Quotations for selected root are 45s. per cwt.; sorts, 42s.; and small white, 41s. per cwt., *c.i.f.* terms, and a further rise is thought probable.

Phenacetin—Remains very weak. The pressure to sell on part of the different makers continues, and prices range from 3s. 9d. to 4s. 3d. per lb., according to quantity and brand.

Pilocarpine.—Quotation remains 28s. per oz. for both the *Hydrochlorate* and the *Nitrate Salt* for not less than 1 oz., smaller quantities being charged at 1s. 3d. per gramme.

Plumbi Acetas.—Good dry white crystals are quoted 24s. 3d. to 24s. 9d. per cwt.

Potash Compounds.—*Chlorate* is very quiet, and last week's price of 3½d. per lb. on the spot still rules. *Iodide*: Unchanged at 9s. 9d. to 10s. 3d. per lb., according to quantity. *Carbonate*, 21s. to 22s. 6d. per cwt., according to quantity and package. *Bromide*: Steady at 1s. 10d. per lb., for ordinary quantities under 1 cwt. *Cyanide* firm at 1s. 2d. to 1s. 3d. per lb. for the 98 to 100 per cent. in white cakes, and 6¾d. to 7d. per lb. for the 30 per cent. *Prussiate*, English make of *yellow*, 6¾d. per lb., and 1s. 2d. per lb. for *red*. *Oxalate*, 5d. per lb. for neutral. *Permanganate* very dull of sale at 62s. 6d. per cwt. for *small*, and 67s. 6d. per cwt. for *large* crystals. *Bichromate* steady at 3⅞d. to 4d. per lb.

Quinine—Is quiet, manufacturers' price remaining 1s. 1d. per oz. for best *German* brands in 1000-oz. lots, in 100-oz. tins and cases, there being sellers of limited quantities from seconds at a rather lower figure.

Quicksilver—Firm at last week's advance to £7 2s. 6d. per bottle from first hands, and £7 2s. from second hands.

Saffron—Is decidedly firmer, and higher prices will in all probability rule very shortly. To-day's values range from 37s. 6d. to 46s. 6d. per lb. for *Valencia*, and 24s. 6d. to 26s. 6d. per lb. for *Alicante*.

Santonine.—Maker's price is 4s. 5¼d. to 4s. 11d. per lb., according to quantity, in large bulk packing.

Scammony.—*Virgin* is rather lower at 27s. to 30s. per lb. for fair to fine "firsts," and 20s. to 23s. per lb. for "seconds." *Resin* is quiet at 6s. 6d. to 7s. per lb., according to quantity. *Roots*: The supplies are increasing, but holders are firm at 27s. 6d. to 30s. per cwt.

Senega Root—Does not improve, demand being very dull, 11¼d. to 1s. per lb., *c.i.f.*, London, is the New York quotation.

Shellac.—The market is very quiet and a dull tone prevails. On the spot only retail sales have been made, including *Second Orange* at 65s. to 66s. per cwt., basis *TN*. *HC Garnet* quoted 75s. for fine flat free. Blocky *OCC* sold at 59s. per cwt. For arrival there is no disposition to operate, and the market closes with sellers of *TN Orange*, April to June steamer, at 64s. per cwt., *c.i.f.*

Soda Compounds.—*Crystals* are unaltered at 55s. to 60s. per ton ex ship termo. *Bicarbonate* quiet at £7 10s. per ton in bulk for the 98 per cent., and 18s. 6d. per cwt. for the fully bicarbonated quality. *Hyposulphite* in better demand at 5s. 6d. to 8s. per cwt., according to make and package. *Acetate* steady at 14s. per cwt. for the refined white crystals, and 35s. per cwt. for the chemically pure. *Caustic*: £7 15s. per ton for 70 per cent. white and £6 15s. per ton for 60 per cent. *Phosphate*: 98 to 99 per cent., 16s. per cwt. in bulk.

Spermaceti.—Advices from New York bring lower quotations for this, 1s. 2¾d. per lb. *c.i.f.* being the general price.

Spices (Various).—*Black Pepper*: 388 bags offered were chiefly bought in, Singapore at 4⅛d.; 20 bags Lampong sold at 3¾d; and 50 bags good Wynaad, of old import, at 4¼d. to 4½d. *White Pepper* also mostly bought in—viz., 100 bags Penang at 6⅝d., and 218 bags good to fine bold sold at 9½d., except 15 bags which were sold at 9¼d. *Chillies* firmly held; 183 balcs Zanzibar bought in at 42s. to 45s., except 9 bales sea-damaged sold, first-class, at 37s. 6d. *Capsicums*: 9 bales ordinary long brown East India sold at 23s. *Cassia Lignea*: 40 bales broken bought in. *Cinnamon Chips*: 22 bags damaged sold at 2¾d. *Mace*: Of 22 cases Penang only 2 cases good heavy palish sold at 2s. 8d. to 2s. 9d.; the remainder bought in, chiefly pickings at 1s. 6d. *Nutmegs*: 4 cases Penang sold, 65's at 2s. 7d.; 11 barrels West India sold, 80's at 1s. 8d., 91's at 1s. 6d., 102's at 1s. 2d. to 1s. 3d. *Pimento*: Only 30 bags offered, chiefly without reserve, and sold at 4d. to 4¾d.

Strophanthus Seeds.—Green *Kombé* are firmly held at 3s. 3d. per lb. for original packages, and brown at 11d. to 1s. per lb., according to quantity.

Sulphate of Copper—Is firm at from £16 2s. 6d. for ordinary to £17 per ton for 98 to 99 per cent.

Sulphonal.—The two principal makers are still booking small orders at 7s. 3d. per lb. in bulk for both *crystal* and *powder*. They decline, however, to sell large quantity or to book for forward delivery at this, or, in fact, at any figure, which would appear to point to the probability of an advance in price in the not too distant future.

Turmeric—Continues very quiet, with only retail sales at previous rates. *Bengal* quoted 14s. 3d. per cwt., and *Madras* bright finger at 19s. per cwt.

LIVERPOOL REPORT.

February 24, 1898.

During the week slight advances have taken place in Linseed Oil, Cottonsced Oil and Turpentine, whilst the recent rapid rise in Potashes has received a check and has made a retrograde movement to the extent of 1s. per cwt. Transactions of an extended nature have been accomplished in African Chillies at good prices, in Gambia and Peruvian Beeswax at full rates, and in Kola Nuts at last week's figures. Linseed and Canaryseed are but little altered since last report, and the business done in them is only of an unimportant character.

Ammonium Salts.—*Carbonate* is likely to be dearer 3d. per lb. *Sal ammoniac*, 33s. to 35s. per cwt. *Sulphate* is firmer at £10 2s. 6d. per ton.

Beeswax.—Sales of Peruvian have been made at £7 per cwt., and 48 packages of Gambia "sorts" have been sold at £6 10s. per cwt.

Bleaching Powder—Is quiet at £5 12s. 6d. to £6 5s. per ton.

Canaryseed—Is firm at 25s. to 27s. per 464 lbs. for Turkish, 100 bags sold at the former figure; 50 bags of Spanish made 37s. per 464 lbs.

Castor Seed.—1267 bags of River Plate went for 7s. per cwt.

Chillies.—*Sierra Leone*: Some 300 bags sold at prices from 29s. to 44s per cwt.

Copperas.—36s. per ton *Welsh*, 38s. *Lancashire*.

Copper Sulphate—Is firmer at £16 12s. 6d. to £16 15s. per ton.

Kola Nuts.—7 baskets of fresh found a buyer at 2¾d. per lb., and 47 packages of dried sold at 2d. per lb.

Linseed—Continues firm and scarce. Sales limited to 40 bags of *Larnaca* at 42s. per 416 lbs. and a little *Turkish* at 39s. 6d.

Oils (Fixed) and Spirits.—*Castor Oils* firmly maintain their quotation of 3⅝d. per lb. for Calcutta and French, with a moderate amount of business doing. *Olive Oils*: Spanish are quoted at £33 to £34 per ton. *Linseed oil* of Liverpool make has advanced to 17s. and 17s. 3d. per cwt. with a firm market. *Cottonseed oil* is also a shade dearer, viz., 15s. to 15s. 6d. per cwt. *Spirits of turpentine* has improved in price, and now varies between 24s. 9d. to 25s. per cwt.

Potash Salts.—*Chlorate*: 3¼d. to 3½d. per lb. *Bichromate*: 4d. per lb. *Potashes* are cheaper—21s. 6d. per cwt. *Pearlashes*: 37s. 6d. to 40s. per cwt. *Saltpetre*: 21s. 6d. per cwt.

Soda Salts.—*Bicarbonate*: £6 15s. per ton. *Borax*: £13 10s. to £13 15s. per ton. *Caustic Soda* is scarce at £8 12s. per ton for 76 to 77 per cent., £7 10s. for 70 per cent., and £6 10s. for 60 per cent. *Crystals* firm at £2 17s. 6d. per ton.

Sulphur.—Roll, £6 5s.; flowers, £7 12s. 6d. per ton; recovered, £5.

NEWCASTLE CHEMICAL REPORT.

February 22, 1898.

This market continues to keep on the steady side, with a fair run on Soda Crystals for home use. More buoyancy is observable in light goods, whereas heavy chemicals are practically unchanged in value. Prices are:—Bleaching Powders, £6 5s. to £6 10s. Soda Crystals, basis, 45s. to 57s. 6d. Caustic Soda, basis, £7 10s. for 70 per cent. strength. Soda Ash: 52 per cent., £4 5s. Alkali: 52 per cent., £5 5s. Sulphur: £4 15s. to £5 per ton.

MANCHESTER CHEMICAL REPORT.

February 22, 1898.

There is an air of uncertainty about the market here which it is hard to interpret. In heavy chemicals rumours of fluctuations are abroad, which keep some buyers from operating. Ammonia Alkali, 58 per cent., is in strong request, but there is no change in price—£4 2s. 6d. to £4 5s. bags, and £4 7s. 6d. casks. White Caustic Soda is still firm, and Industrial Bicarbonate is in

request. Miscellaneous chemicals are dull. Brown Acetate of Lime tends lower. It is quoted at £6 per ton ex-warehouse, but there are offers at £5 10s. per ton *c.i.f.* Manchester for best American. There is a prospect of German makes of Benzols being placed on the market, and although steady there is an absence of any great speculative demand. Sulphate of Copper is easy at £17 per ton, best brands, delivered Manchester. Epsom and Glauber Salts are unchanged.

Publications received.

A VISIT TO GIESSEN, OR THOUGHTS ON LIEBIG AND CHEMISTRY IN GERMANY. By Professor SENIER, of Queen's College, Galway. Pp. 19. Dublin: Edward Ponsonby, 116, Grafton Street. 1898. From the Author.

BERICHTE DER DEUTSCHEN PHARMACEUTISCHEN GESELLSCHAFT, IM AUFTRAGE DER GESELLSCHAFT HERAUSGEGEBEN VOM VORSTANDE, ACHTER JAHRGANG. Heft I. Berlin: Gebrüder Borntraeger. 1898. From the Publishers.

Diary for the Week.

SATURDAY, FEBRUARY 26.

PHARMACEUTICAL FOOTBALL CLUB v. BLOOMSBURY, at Wormholt Farm, Shepherd's Bush. Kick off at 3 p m.

MONDAY, FEBRUARY 28.

ROYAL GEOGRAPHICAL SOCIETY, at 8.30 p.m.
"The Annual Range of Temperature in the Surface Waters of the Ocean and Its Bearing on Oceanographical Problems," by Dr. John Murray.

TUESDAY, MARCH 1.

BRADFORD AND DISTRICT CHEMISTS' ASSOCIATION. Meeting of the Trade to Discuss the New Pharmacy Bill.

BRIGHTON JUNIOR ASSOCIATION OF PHARMACY. Social Evening.

ROYAL INSTITUTION, at 3 p.m.
"The Simplest Living Things" (Lecture VII.), by Professor E. Ray Lankester.

WEDNESDAY, MARCH 2.

PHARMACEUTICAL SOCIETY, at 11 a.m.
Meeting of Council.

THURSDAY, MARCH 3.

CHEMICAL SOCIETY, at 8 p.m.
"Note on the Preparation of Dry Hydrogen Cyanide and Carbon Monoxide," by John Wade and Laurence C. Panting.
"Production of Some Nitro- and Amido-Oxylutidines," by Dr. J. N. Collio and T. Tickle.
"Production of Some Nitro- and Amido-Oxylutidines" (Part II.), by Dr. J. N. Collie and Miss L. Hall.
"The Interaction of Magnesium and Solution of Copper Sulphate," by E. Divers.

CHEMISTS' ASSISTANTS' ASSOCIATION, at 8 p.m.
Twentieth Annual Dinner (Holborn Restaurant).

LINNEAN SOCIETY OF LONDON, at 8 p.m.
"On the Sense Organs of the Lateral Line in Certain Fishes," by F. J. Cole.
"On the Occurrence of *Carex helvola* in Britain,' by G. C. Druce.
"On Arctic Spiders from Franz Josef Land," by Rev. O. Pickard-Cambridge.

MIDLAND PHARMACEUTICAL ASSOCIATION, at 8.45 p.m.
Smoking Concert. (Colonade Hotel.)

ROYAL INSTITUTION, at 3 p.m.
"Recent Researches in Magnestism and Diamagnetism" (Lecture I.), by Prof. J. A. Fleming.

FRIDAY, MARCH 4.

ABERDEEN JUNIOR CHEMISTS' ASSOCIATION, at 9.30 p.m.
General Meeting.

EDINBUROH CHEMISTS', ASSISTANTS', AND APPRENTICES' ASSOCIATION, at 9.15 p.m.
Annual Supper. (Imperial Hotel.)

PLYMOUTH, DEVONPORT, STONEHOUSE AND DISTRICT CHEMISTS' ASSOCIATION (Junior Section), at 8 p.m.
"Some of Our Microscopic Foes,' by Dr. W. Cheyne Wilson.

ROYAL INSTITUTION, at 9 p.m.
"Recent Results of Physico-Chemical Inquiry," by Prof. T. E. Thorpe.

SCHOOL OF PHARMACY STUDENTS' ASSOCIATION, at 5-30.
"What is a Microscope?" by T. E. Wallis.

SHEFFIELD MICROSCOPICAL SOCIETY, at 8 p.m.
Practical Demonstration by Dr. A. J. Hall.

Exchange Offers & Wants

Prepaid Notices not exceeding thirty words, including name and address, are inserted at a fee of Sixpence each, if they do not partake of the nature of ordinary advertisements. For every twelve words (or less) extra, the charge is Sixpence. A price, or two initials will count as one word. The fee for use of the Serle Street address, including re-direction of replies, is Sixpence. The right is reserved to omit any notice if considered necessary. All communications should be addressed "Pharmaceutical Journal," 5, Serle Street, Lincoln's Inn London, W.C., where notices can be received until 10 a.m. on Thursdays.

OFFERED.

Books.

Minor Books.—Attfield; Squire (latest); Asa Gray (latest); and others. Particulars free.—Gower, Publisher, Waterloo, Liverpool.

'Chemistry Applied to Manufactures and Arts,' 8 volumes, 25s. (£4); 'The Analyst' for 1892, 4s. (8s.), and for 1893, 7s. (14s.); Remsen's 'Organic Chemistry,' 3s. (6s 6d.); 'The Analyst's Laboratory Companion,' 1st edition, 2 copies, 2s. each (5s.); a fine copy of Liebig's rare 'Handbook of Organic Analysis,' 7s. 6d.—Johnson, 155, Lea Road, Wolverhampton.

What cash offers for 'Pharmaceutical Journal, posted Tuesdays?—A. E., 213, High Street, Poole.

Miscellaneous.

What offers? About 28 lb. each P. Alocs Barb., P. Cinchon. Rub., Carbo Animalis, Ivory Dust; 7 lb. P. Corf. Aromat., etc.—Allison, 66, Kennington Park Road, S.E.

Magic Lanterns, second-hand; triples and biunials; oxyhydrogen microscope; marvellous pamphengos oil lantern, gives 14-ft. picture; 60,000 slides and effects; 4-in. 4-wick lanterns, 18s. 6d. each, bargains; illustrated list post free, 2d.—Hughes, Brewster House, 82, Mortimer Road, Kingsland, N.

Overstocked.—Superfine oil of lemon, 8½ lb., in copper, delivered free for 21s. Sample pound, delivered free for 3s. Cash with order.—Moss, 34 Avondale Road, Chorley.

Willcox's No. 2 Gun Metal Pump. Only used short time, for water. Good as new. 25s.—Moss, 34, Avondale Road, Chorley.

Two show-jars on stands, as Maw's fig. 21.—Worfolk, Ilkley.

Overstocked.—Daisy Powders, 1s. 1½d. new, 9s. 1d. doz.; Ashton and Parson's 1s. Pilules, new, 2s. 3d. doz. All saleable kinds. Any assortment.—Matthew, Pharmaceutical Chemist, 529, Battersea Park Road, S.W.

Shop Fittings.

To be Sold, cheap, several mahogany cases and shop bottles, suitable for small chemist's shop. Apply—T. M. Holmes, Chemist, Bowness-on-Windermere.

Fair Condition.—Two nests drawers (20 and 28), 6 ointment jars, 36 tincture bottles, 20 powder ditto. Send for particulars, stamped envelope.—"Chemicus," 278, New Cross Road, London, S.E.

A Bargain. Must be sold. Chemist's Shop-fittings and Fixtures. To be Sold, cheap, Entire Fixtures of a Handsome Large Pharmacy. Bottles, jars, carboys, mahogany-fronted counters, plate-glass, wall-cases, &c., &c., cost at least £450. Lease being disposed of, must be sold quickly. Quite sufficient to fit up a handsome 17 ft. by 24 ft. shop.—Apply, J. W. Feltwell, Chemist, 91, Hammersmith Road, West Kensington, W.

Entire Fittings.—Carboys, Bottles, Counter, Dispensing Screen, Drawers, Bent and Upright Glass Cases for Sale. Good Condition. Cheap.—Write, Corks, 4, Cale Street, Chelsea. Chance for beginner

WANTED.

Wanted.—Kelly's 'Directory of Chemists and Druggists.' State price.—Gowen, Fleet, Hants.

For Cash, old electric lamps and scrap platinum.—P. Rowsell, 14, Walcot Square, Lambeth, S.E.

Camwal Shares.—Single shares purchased. States lowest price to—W. Brown, 222, Well Street, South Hackney, N.E.

Directories of Ireland, Scotland, Northumberland, Durham; Brown's 'Advertisers' A.B.C.'—Write B., 320, Upland Road, Dulwich.

Wanted.—*Pharmaceutical Journal*, July 13, August 3, 1895; January 16, May 22, 1897. Full price will be paid for clean and complete copies by the publishers, 5, Serle Street, London, W.C.

Wanted.—Scott's 'Botany.' 'Flowering Plants.—H. S., 3, Town Street, Batley Carr, Yorkshire.

Marriages.

Davies—Jones.—At Bethel Chapel, Newcastle Emlyn, J. Davies, Pharmaceutical Chemist, Llanelly, late of Newcastle Emlyn, to Mary Ellen Jones, only daughter of Mr. Isaac Jones, Lanlasisaf, Rhydlewis, by the Rev. E. Phillips, pastor.

Perkins—Lamb.—On March 2 at Stoke Damerel Parish Church by the Rector, the Rev. S. Gordon Ponsonby, S. A. Perkins, Chemist, of Torpoint and Devonport, to Ada R. Lamb, sceond daughter of W. J. Lamb, of Devonport.

Business Changes.

Messrs. Herrings & Co., 40, Aldersgate Street, London, have transferred their business to Messrs. Willows, Francis, Butler, & Ayscough Thompson, and we understand that whilst the manufacture of pharmaceutical preparations by the latter firm will be under the personal charge of Mr. Francis and Mr. E. C. Butler, Mr. Ayscough Thompson will actively co-operate in the management of the business and also supervise the manufacture of the special preparations with which his father's name was identified for so many years. The services of Messrs. Herrings & Co.'s representatives have been secured by their successors.

Mr. J. Davies, M.P.S., pharmaceutical chemist, late of Newcastle Emlyn, has acquired the business formerly carried on by Mr. J. Wesley Jones, Stepney Street, Llanelly. The business at Newcastle Emlyn will be carried on by his brother, Mr. H. Davies.

Mr. William Ruff, chemist and druggist, Whitby, has purchased the business recently carried on by Messrs. Craven Bros., West Cliff Pharmacy, Skinner Street, Whitby.

Mr. B. W. Priest, of Parliament Street, Westminster, has retired and sold his business connection to Messrs. Hooper & Co., of Pall Mall, W.

Mr. Alfred Griffiths, late assistant to Mr. E. Presley, chemist, Bristol has purchased the business of Mr. F. Millward, chemist, 60, Woodville Road, Cardiff.

PARTNERSHIPS DISSOLVED.

(From the London Gazette.)

Ingham and Birtwistle, Herb Beer Manufacturers, Germany Street, Lancaster. Debts will be received and paid by R. Ingham.

Francis Dixon-Nuttall and F. R. Dixon-Nuttall (trading as Nuttall & Co.), Glass Bottle Manufacturers, St. Helen's. Debts will be received and paid by F. R. Dixon-Nuttall, who will continue the business under the old style.

Market Report and Prices Current

Specially compiled for the Pharmaceutical Journal

The quotations here given are in all cases the lowest cash prices for bulk quantities, and often the articles quoted have to be sorted in order to suit the requirements of the retail pharmacist. The cost of freightage from the chemical and drug works to the various distributing centres must also be considered. It is important that these conditions should be borne in mind in making any comparison between the prices quoted and those of the wholesale drug trade.

LONDON REPORT.

March 3, 1898.

Business has again been quiet during the past week, while, as regards the changes which have taken place, the chief feature has been the considerable reduction in makers' prices of Quinine. Opium and Morphia remain very dull. Codeia steady. Phenacetin weak. Sulphonal unchanged. Cod-liver Oil unsettled. Glycerin quiet. Acid Carbolic dull, and rather weaker. Quicksilver and Mercurials unchanged. Acid Citric firm. Acid Tartaric and Cream of Tartar steady. Cocoa Butter rather dearer. Shellac dull and lower. Quillaia Bark rather dearer. Borax and Acid Boracic quiet. Potash Permanganate in large supply. Ipecacuanha exceedingly firm. Iodine and Iodides, Bromine and Bromides, Bismuth and Salts, without change. Cocaine quiet. Prices rule as follow :—

Acetanilide—Is quiet at 1s. 1d. to 1s. 2d. per lb., according to quantity.

Acid Boracic.—Weak at 23s. to 24s. for *crystals* and 25s. to 26s. for *powder*.

Acid Carbolic - Quiet at 6¾d. to 6⅞d. per lb. for the 35 to 36° *ice crystal* in quantity and bulk packing. *Crude*: 60° F., 2s. per gallon; 75° F., 2s. 8d. *Liquid*: 95 per cent., 1s. 2d. per gallon.

Acid Citric—Is firm at 1s. 0½d. per lb. for spot, it being stated that makers are refusing to book orders for forward delivery.

Acid Oxalic—Is quoted 3⅝d. to 3¾d. per lb. for *crystals* and 4⅛d. to 4¼d. for *powder* according to quantity.

Acid Tartaric—Quiet at 1s. 0½d. per lb. *c.i.f.* for *foreign* and 1s. 1d. for *English*.

Ammonia Compounds.—*Sulphate*: 5s. lower at £9 15s. per ton for gray prompt 24 per cent. London. *Bromide*: 2s. 1d. to 2s. 2d. per lb. *Iodide*: 13s. 4d. *Sal ammoniac*, firsts, 35s. per cwt., seconds, 33s. *Chloride*: 32s. 6d. per cwt. for the chemically pure crystal, and 26s. for the 98 per cent., free from metals, quality. *Sulpho-cyanide*: 1s. 2d. *Oxalate cryst.*: 6¼d. per lb.

Antipyrine.—Dr. Knorr's article is still quoted 2s. 1½d. per oz. for *crystals* and *powder*. *Phenazone* P.B., which is chemically and otherwise absolutely the same thing, is, however, being offered at a much lower figure; in fact, some makers are quoting such extraordinarily low prices for the article that doubts have been expressed as to the quality. While there is no doubt that *Phenazone*, being cheaper, will eventually supersede Dr. Knorr's *Antipyrine*, buyers will do well to take due care that they are getting a really reliable article.

Bismuth—Is still quoted at 5s. per lb. for the *metal*, and 4s. 10d. for the *subnitrate* in 5-cwt. lots.

Borax.—Dull at 14s. per cwt. for *lump* and 14s. 6d. for *powder*.

Bromine and Bromides—Without change at 1s. 9d. for *Pot. Bromide* in 10-cwt. lots.

Cloves.—Privately *Zanzibar* have fluctuated, but close firm at about same prices as last week; spot, 4⅛d. to 4⅛d.; March to May delivery, 4⅛d.; April to June, 4⅛d.; June to August, 4¼d. At auction only 50 bales *Zanzibar* offered and bought in at 4d. 29 cases good picked *Penang* bought in at 11d.

Coal Tar Distillation Products.—*Toluol*: 1s. 10½d. *Benzole*: 60 per cent., 1s. 9d. per gallon; 90 per cent., 1s. 6d. *Crude Naphtha*: 10d. *Solvent Naphtha*: 2s. per gallon.

Cocaine—Is quiet, makers' prices for best brands being 10s. to 10s. 9d. per oz. for 100-oz. lots, makes less in favour being quoted somewhat below these prices, while from second-hand it is also possible to shade these figures.

Cocoa Butter.—The monthly sales on Tuesday established a rise of ¼d. per lb. 50 tons Cadbury's selling at an average price of 9¼d. per lb., as against 9⅛d. in February and $9\frac{9}{16}$d. per lb. in January.

Codeia—Unchanged at 11s. 3d. to 11s. 6d. per oz.

Cod-Liver Oil—Is quiet, price of new non-congealing *Norwegian* in tin-lined cases being nominally 65s. to 67s. 6d. per barrel, so far the yield of the *Lofoden* fishery has not reached one quarter of the average figures of past ten years, the livers are, however, stated to yield well, which with finer weather might mean a large output of oil, which fact, combined with the large existing stocks of old oil, continues to exercise a depressing influence on the market.

Cinnamon.—The first quarterly sales of the year took place on Monday, when a total of 1956 bales *Ceylon* was offered, as compared with 1248 bales at the same time last year. A generally good demand prevailed, and about 1550 bales were sold. The bulk consisted of unworked, a large proportion being common coarse qualities. Good and fine *Plantation* sold readily at an advance of 1d. to 2d. lb., medium first and second sorts sold at ½d. to 1d. advance, thirds about ½d. per lb. dearer, and fourths about ½d. per lb. lower. Firsts worked *Ceylon* sold, superior 1s. 5d. to 1s. 11d.; fair to fine 1s. to 1s. 4d.; seconds, superior 1s. 4d. to 1s. 8d. per lb.; medium to good 10½d. to 1s. per lb, thirds, superior 1s. 3d. to 1s. 6d.; fine 1s.; ordinary 9d. to 9½d. per lb.; fourths, fine to superior 11d. to 1s. 3d. per lb.; ordinary to medium 8d. to 9d.; unworked qualities sold 6d. to 1s. 2d. per lb. according to quality. *Chips*: Low dusty to ordinary 2⅜d. to 3¼d. per lb.; quillings 6½d. to 11½d. per lb.

Cream of Tartar—Steady at 75s. 6d. for *crystal* and 77s. 6d. to 79s. per cwt. for *powder*.

Damiana Leaves—Are quoted on the

spot at 10d. per lb., but from the United States the price is noted 7d. per lb., *c.i.f.*, although advices thence state crop is much lighter than for several years past.

ERGOT OF RYE.—Good sound *Spanish* is scarce, nominal price being 1s. 4d. to 1s. 6d. per lb., sound *Russian* being quoted 10d. to 11d.

FERRI ET QUININÆ CITRAS—In sympathy with the reduction in quinine, is lower, 25-oz. tins being now quoted 6d. per oz., 1-oz. vials 7d. per oz. for quantities less than 100 ozs.

GENTIAN ROOT—Is quoted 20s. to 22s. 6d. per cwt., *c.i.f.*

GINGER.—At auction 1131 bags *Cochin* offered were chiefly bought in, small to good washed at 27s. to 32s., and brown at 32s. 6d. to 35s., only 95 bags being sold, fair new washed at 30s.; 67 cases cut bought in, C at 48s., B at 75s. Of 263 bags limed *Japan* 93 bags sold, chiefly without reserve, slightly mouldy 18s. 6d.; 10 cases ditto sold at 20s. Only 17 barrels new *Jamaica* were offered and sold, ordinary small scraped at 70s.

GLYCERIN—Is quiet at 50s. to 52s. 6d. for *English* and 55s. to 57s. 6d. for best *German* brands of white chemically pure double distilled 1·260 quality in tins and cases

GUM ACACIA.—Of *picked* only small sales have been made at steady rates at from £6 15s. to £15 per cwt., according to quality. *Soudan sorts* are firm, and higher prices are asked; for hard 67s. 6d. per cwt. has been paid, and 85s. is asked for good soft.

GUM MASTIC.—2s. per lb. continues to be asked for fine clean pale tear, but whilst supply increases, demand has fallen off, and lower prices are anticipated.

IODINE AND IODIDES—Remain unaltered at 7½d. per oz. for the former, and 10s. 3d. for *Pot. Iodide* in 2-cwt. lots.

LITHIA—Unchanged at 10s. 8d. per lb. for the *carbonate* for 10 cwt.

MENTHOL—Is quoted 7s. 3d. to 7s. 6d. per lb. for good dry white *crystals* on the spot.

MERCURIALS.—Are unchanged at 2s. 2d. for *corrosive sublimate* and 2s. 6d. per lb. for *calomel*, for 10 cwt.

MORPHIA.—Makers still quote 4s. 3d. to 4s. 6d. for the *Hydrochlorate* powder; other salts in proportion.

OILS (FIXED) AND SPIRITS.—*Linseed* continues firm at £16 5s. for pipes on the spot and £16 10s. for barrels. *Rape* firm at £23 for ordinary brown on the spot, and £24 10s. for refined in same position. *Cotton*: Crude is unchanged at £13 15s. on the spot, but refined is dearer at £14 15s. to £15 10s., according to make. *Olive*: Unchanged at £33 for either Spanish or Levant. *Cocoanut*: Ceylon on the spot firm at £22 10s. Cochin has recovered at £27 10s. on the spot *Palm*: Lagos, on the spot, at £23 10s. *Turpentine*: This article is lower, but closes firm at 24s. 7½d. per cwt. for American on the spot. *Petroleum Oil*: This market has exhibited a strong reaction after a long period of inactivity, and prices close with a decided upward tendency; Russian, on the spot, 4⅜d.; American, same position, 4⅝d. per gallon; water white, 5¼d. per gallon. *Petroleum Spirit*: American, 5½d.; deodorised, 6d. per gallon.

OPIUM—Absolutely without change from last week, there being practically nothing doing in the article.

PHENACETIN.—Some makers are quoting as low as 3s. 6d. per lb. for both *crystals* and *powder* in 10-cwt. lots, the best makes are, however, held for more money, say 3s. 9d. to 4s. 3d. per lb., according to quantity.

POTASH COMPOUNDS.—*Chlorate* quiet at 3¾d. to 4d. per lb. *Iodide*: 10s. 3d. *Carbonate*: 22s. 6d. per cwt. *Bromide*: 1s. 10d. per lb. *Cyanide* in demand at 1s. 2d. per lb. for 98 per cent. cake and 7½d. to 8d. for the 30 per cent. *Prussiate*: Yellow 7d. and red 1s. 2d. to 1s. 3d. *Oxalate*: Neutral 5d. *Permanganate* dull at 62s. 6d. per cwt. for small crystals. *Bichromate*: 4d. per lb.

POTASH PERMANGANATE.—Stock continue to accumulate, while demand remains slack, small *Crystals* being quoted as low as 60s. per cwt. for half-ton lots, the price for large *Crystals* being 5s. per cwt. higher. It is thought, however, that in view of the approach of the summer a better demand will shortly set in which would soon result in a clearance of the accumulated stocks, and might very easily lead to higher prices ruling.

QUICKSILVER.—First hands are firm at £7 2s. 6d. per bottle, whilst second hand can be had at 6d. per bottle less.

QUILLAIA BARK—Is quoted higher from *Hamburg* at 18s. to 20s. per cwt. *f.o.b.* in 10 ton parcels.

QUININE.—The present month began for this article with a very decided fall in values, both the English and German makers reducing their prices to 1s 1d. and 11d. per oz respectively for bulk packing as against 1s. 4d. and 1s. 1d. per oz., which were the quotations ruling last month. Various reasons are given for this slump: shipments of the new Java make to this side, large bark shipments from India, a desire on the part of the European makers of the alkaloid to show bark holders that they are not to be dictated to, etc., but, whatever the reason, the fact remains, and for the moment the article is in bad repute as a desirable speculation; perhaps for this very reason we may shortly see a reaction. German brands quoted 11d. per oz. for 1000 oz lots in 100-oz. tins, and this for delivery over 60 days and with a falling clause for this period, whilst Howards quote 1s. 1d. per oz. for 100-oz. tins, 1s. 2d. per oz. in vials for not less than 100-oz. lots. Other salts in proportion.

SHELLAC.—Privately a very dull tone has prevailed, and the market shows no improvement. At the fortnightly sales on Tuesday the supplies were very moderate but with a very slow demand, prices showed a decline of 2s. to 3s. per cwt. on last sales' rates for *second orange*, whilst *button* declined fully 4s. per cwt. A total of 847 cases offered and 198 cases sold. *Second Orange*: Of 612 cases 135 sold, fair bright red flat at 64s. to 65s., dull palish flat at 65s., ordinary curly reddish at 63s., broken curly livery at 62s. *Garnet*: Of 94 cases 15 sold, without reserve, common ruby, part hard block, at 55s., good curly free *AC* bought in at 76s. *Button*: Of 141 cases 48 sold, chiefly without reserve, good seconds at 73s., ordinary circle 2's at 61s., ordinary thirds at 55s.

SODA COMPOUNDS.—*Crystals*, 60s. per ton, ex-ship. *Bicarbonate*, 18s. 6d. per cwt. for the fully bicarbonated, and £7 15s. to £8 per ton for the 98 per cent. quality. *Hyposulphite*, 6s. to 8s. per cwt. *Acetate*, 35s. to 37s. 6d. per cwt. for the chemically pure, and 15s. for refined white crystals. *Caustic*: 60 per cent., £6 15s. to £7; and 70 per cent., £7 15s. to £8 per ton. *Phosphate*, 16s. to 17s. 6d. per cwt.

SPICES (VARIOUS).—*Black pepper*: 30 bags Lampong sold at 3¾d., the bulk being bought in at 3⅞d., 217 bags Singapore sold before the auction; of Tellicherry 27 bags sold at 4¼d. *White pepper* all bought in, Singapore 7⅝d. to 8d., Penang 6½d. *Long pepper*: 50 bags bought in at 24s. *Chillies*: 149 bales Zanzibar, of old import, sold, without reserve, middling dull to fair, at 35s. to 37s. 6d., 7 cases fine bright Japan bought in at 52s. 6d. *Capsicums*: 9 bags brownish East India, on stalk, sold at 25s. 6d., 8 bags brown Japan, sea-damaged, sold at 25s.; 1 bale old Natal sold at 70s. *Cassia Lignea*: Steady, but quiet, at about previous prices. *Cinnamon Chips*: 53 bags Ceylon sold, common, 2¼d.; good, 4½d. to 4¾d.; 21 packages broken quill sold at 8d. to 11d. *Mace*: 3 cases Penang sold, ordinary red partly wormy, 1s. 6d.; 3 boxes West India sold at 1s. 7d. to 1s. 8d. *Nutmegs* dull. *Pimento*: Of 245 bags offered 75 bags sold at 4⅝d.

SULPHONAL.—The two makers will still only book quite limited orders at 7s. 3d. per lb. for *crystals* or *powder*, maintaining that they are losing money on all they sell at the price. It is, however, curious that they should be willing to continue selling at a price which, as they maintain, shows them not a profit, but a loss.

The Drug Auctions to-day passed off quietly, only a moderate amount of business being transacted, there being no very striking changes in values.

ALOES.—Of 35 boxes *Curaçoa* part bought in at 20s., for *Capey* 17s. being refused, good hard *Zanzibar* selling for 55s. to 57s. 6d. per cwt. 14 cases *Cape* all sold at 22s. to 23s. 6d. for fair hard bright down to 19s. for rather drossy. 25 kegs good *Socotrine* realised 80s. per cwt.

AMBERGRIS.—1 case *Auckland* sold at 40s. per oz. for fair, part fossilised, and at 23s. to 28s. for undeveloped, part chalky, 1 tin selling at 30s.

ANATTO SEEDS —13 bags fair quality were bought in.

ANISEEDS.—25 bags *Spanish* held for 27s. per cwt.

ANTIMONY.—50 cases crude *Japan* bought in at 20s. per cwt.

ASAFETIDA.—The new arrival from the Persian Gulf, partly damaged by coal, owing to being stored in the coal bunkers, was offered to-day, but, with the exception of one or two lots which had been sold previous to the auctions, there was no interest shown in the article. Holders are firm, and bids based upon late "without reserve" sale have been declined.

BALSAM COPAIBÆ.—7 cases all sold at 1s. 6d. per lb.

BALSAM TOLU.—3 cases held for 1s. 8d. per lb.

BUCHU LEAVES.—32 bales *rounds* sold with good competition at 3¾d. to 4¼d. per lb. for fair stalky green to good dark green.

CAMPHOR OIL.—13 cases *black* taken out at 40s. per cwt.

Cardamoms. — About 200 cases were offered, the bulk selling at about 2d. per lb. advance on last sale rates. Fine bold pale *Mysores* sold up to 4s. 3d. per lb. ; medium ditto, 3s. 9d. to 3s. 10d. per lb. ; small, 2s. 9d. to 3s. 4d. per lb., *decorticated* realising 3s. 2d. per lb. *Malabar* sold at 2s. 7d. per lb.

Cascarilla Bark.—25 barrels siftings taken out at 20s. per cwt.

Castor Oil.—25 cases *Calcutta* seconds held for 3¼d. per lb.

Chalmugra Oil.—One case yellow sold at 1s. 5d. per lb.

Cinchona Bark.—Of 96 bales flat *Yellow bark* part sold at 7d. to 9d. per lb., rest taken out at 8d. to 1s. 3d. 11 cases red bark taken out at 5s., a bid of 2s. 3d. per lb. being declined ; 2 bales mossy *East Indian* cinchona bark bought in at 1s. 6d. per lb. ; 6 bales fair bold *Carthagena* held for 5d.

Cinchonine.—2 cases *Whiffen's* alkaloid and 5 cases *Howard's* sulphate sold with all faults at 1½d. per oz.

Civet.—1 horn good fair light colour held for 12s. per oz.

Coca Leaves.—33 bales, somewhat inferior *Truxillo* held for 5½d. to 6d. per lb.

Colocynth.—5 cases fair bold, rather brownish *Turkey* held for 1s. 2d. per lb. 5 cases ditto, small to medium, part broken, for 1s. 1d.

Colombo Root.—3 bags fair washed were held for 57s. per cwt. A new arrival of this scarce article, amounting to 187 bags good bright, but very mixed, with stem, sold well at 42s. 6d. to 45s. per cwt., 5 bags fair washed, part wormy, sold at 50s. per cwt.

Cubebs.—65 bags black and gray mixed part mouldy taken out at 35s. per cwt., 14 bags selling, subject to approval, at 28s.

Cummin Seeds.—50 bags taken out at 20s. per cwt.

Cuttle Fish.—36 mats fair pale broken held for 3½d. per lb.

Dragon's Blood.—This article was in poor supply, fine quality, which is wanted, being still absent; 7 cases in reed, but poorly packed, was taken out at £8 15s., whilst further 3 cases in reed well packed were held for £9. Two lots of seedy lump were withdrawn at £7. Dull, dark-coated slabs held for 85s. per cwt.

Ergot of Rye.—2 cases very weevily *Spanish* sold without reserve at 6¼d. per lb., 8 cases good ditto being bought in at 1s. 9d. Fair *Russian* held for 9d. per lb.

Gamboge.—Offered in fair quantity, but all was bought in, except 3 cases pickings, which sold cheaply at £6 17s. 6d. per cwt. Good bright softish held for £8 5s. per cwt.

Gentian.—10 bales fair *root* bought in at 24s. per cwt., 5 bags fine *powder* held for 30s.

Guaza-—20 bales brownish tops, part very dark, held for 5d. per lb.

Gum Arabic.—1 case fair grain bought in at £7 per cwt ; 2 cases picked fair pale small to medium at £11 ; 6 bales fair yellowish sorts held for 82s. 6d., and 45 bags insoluble Persian for 20s. to 25s.

Gum Benjamin. — Very fine seconds *Sumatra* sold at £9 17s. 6d. to £10 15s., fair ditto at £6 7s. 6d., to £7 12s. 6d., down to 90s. for lower Penang character quality, grey almondy seconds selling cheaply without reserve at 45s. up to £5 5s., according to quality ; fair *Penang* held for £5 down to 60s. for common, a bid of 50s. being declined, fair *Palembang* sold at 35s., bold to boldish free *Siam* held from £15 to £18 ; dusty seed and pea, blocky, part free, selling at £7 10s. down to 45s. for inferior.

Gum Chicle.—One bag bought in at 7s. 6d. per lb.

Gum Guaiacum.—1 case part fair glassy block, part drossy sold, without reserve, at 8d. per lb.

Gum Kino.—4 cases *African* part sold very cheaply at 2s. per lb. ; 2 tins fair *Cochin* bought in at 15s.

Gum Mastic.—4 cases good pale held for 2s. per lb.

Gum Myrrh.—10 barrels fair sorts bought in at 75s. per cwt.

Gum Opoponax. — One case genuine bought in at 7s. per lb.

Honey.—3 packages medium *Jamaica* sold at 21s. per cwt. 38 packages *Australian* taken out at same price.

Ignatius Beans.—20 bags fair quality held for 3d. per lb., only 1d. being bid.

Ipecacuanha—Was in better supply, although stocks remain low and holders continue very firm. The bulk of the *Rio* root was bought in, fair wiry being held for 8s. per lb., at which one good bale sold, and fair bold natural at 8s. 6d. per lb.; whilst 14 bales of picked, received from France, were bought in at 9s. per lb. *Carthagena* quality is held for 6s. 6d. to 6s. 9d. per lb.

Jalap.—26 bales small fair heavy held for 6½d. per lb.

Kamala.—2 cases of rather dull appearance taken out at 5d. per lb.

Licorice Juice.—10 cases in 4-oz. sticks held for 60s. per cwt.

Licorice Root.—7 bags crushed bought in at 17s. per cwt.

Menthol.—6 cases rather oily *Japan* held for 6s. 6d. per lb., 2 cases ditto selling very cheaply at 6s. 2d. to 6s. 3d.

Musk.—Of 8 tins 75s. per oz. was the price required for small to bold thin-skinned blue, a few broken, and 40s. for old-fashioned untrimmed ; small to bold fair shape, pile 3, part damaged, being held for 22s.

Oils (Essential).—*Globulus* held for 2s. 3d. per lb. *Cygnet* brands for 1s. 9d. *Kangaroo Island* and *Lubra* brands for 1s. 8d., and fair commercial for 1s. per lb. *Cajeputa* : 1 case, of which no sample was forthcoming, held for 4s. 3d. per bottle. 8 cases ditto at 4s. 1d. *Lemon* : 3 cases *Battaglini* held for 3s. 9d. per lb. *Sassafras* : 2 cases Dodge & Olcott's held for 1s. 9d. per lb. 4 cases *Cinnamon* for 4d. per lb., 3 cases *Cinnamon leaf* for 4d. per oz. 12 drums *Citronella* sold without reserve at 12⅝d. to 12¾d. per lb. 10 cases Japan Peppermint oil, guaranteed to contain 40 per cent. of menthol, bought in at 5s. per lb., *dementholised* ditto selling very cheaply at 2s. 6d.

Orange Peel.—23 cases fair thin cut held for 8d. to 8½d. per lb.

Orris Root.—Of 57 bags fair *Florentine*, 10 bags sold at 38s. per cwt., balance being taken out at 40s., a bid of 37s. being refused.

Patchouli Leaves.—34 bales, all more or less country damaged and mixed with sand, bought in at 4d. per lb.

Quillaia Bark.—5 bales of fair quality were held for 24s. per cwt.

Quinine.—3 cases *Brunswick* bought in at 1s. per oz.

Rhubarb.—Very bold round *Canton* fair fracture held for 1s. 5d. per lb., ditto small to medium for 1s. 3d., small trimmings for 1s. 7d., 1 case flat ditto selling for 1s. 7d. Rough pickings round or flat held for 1s., horny high-dried for 8d., ditto small pale coated, very little colour, for 10d. 16 cases pale coated ditto, fair colour, sold cheaply at 11¾d., and 16 cases rough horny ditto sold at 7d. to 7¼d., mainly at the latter figure. Good round *Shensi* held for 2s. 6d. per lb.

Sarsaparilla.—6 bales good *Jamaica* sold at 1s. 7d. to 1s. 9d. per lb. ; 28 bales *Lima* bought in at 1s. 6d. ; 1 bale red native *Jamaica* sold at 11½d., and 1 bale grey ditto at 11d. per lb.

Scammony Root.—167 bags taken out at 32s. per cwt.

Senna.—Only a few odd lots of second-hand *Tinnerelly* were offered, about 20 selling at from 2d. to 3½d. per lb. for small spotty to fair yellowish bold. Stocks are lower than they have been for a long time past, and holders are very firm. *Mecca* kind, of which 45 bales were offered, met with no demand. Supplies of *Alexandrian* were large, and a portion sold very cheaply at 5d. per lb. for fair leaf slight yellowish, good siftings at 2¾d., and pods at 4d. per lb.

Squills.—Four bags held for 3d. per lb.

Star Aniseed.—10 cases *China* bought in at 110s. per cwt.

Sticklac.—105 cases *Siam* held for 42s. 6d. per cwt.

Tamarinds.—21 barrels *West Indian* were bought in.

Tonquin Beans.—4 cases boldish black foxy held for 1s. per lb.

Turmeric.—4 cases wormy *China* bulbs, part dark, sold without reserve at 3s. 3d. per cwt.

Vanilla—Was in small supply, and but little sold. *Mauritius* : 6 by 5½ inch at 18s. per lb. *Seychelles* : 7½ to 8 inch at 23s. per lb. *Tahiti* : All out, 8s. per lb. being asked.

Vermilion.—8 cases *China* held for 2s. per lb.

Wax.—5 bags fair *Zanzibar* sold at £6 5s. per cwt., 4 cases *Italian* held for £6 12s. 6d., 8 cases *China* held for £5 5s., 10 cases bleached *Calcutta* for £5 15s. 3 bags *Australian* fetched £6 15s., 3 cases ditto, £6 17s. 6d. 1 case *Bombay* sold subject to approval at 75s., 13 bags *San Domingo* realised £6 10s. to £6 12s. 6d. 25 packets fair *Madagascar*, £6 5s. to £6 15s. ; 12 bags *Jamaica*, £6 15s. to £7 5s. 50 cases vegetable *Japan* bought in at 37s. per cwt.

MANCHESTER CHEMICAL REPORT.

March 2, 1898.

There are no changes in price in heavy chemicals to report, and only a moderate business is passing here. Caustic Soda is steady, but Bleaching Powder is flat, and tends downwards. In miscellaneous articles Sugar of Lead has had a sharp advance, and is quoted £31 per ton station, Manchester, and Glycerine, double distilled, is locally about a shilling higher, ranging from 52s. to 53s. Brown Acetate of Lime is still rather scarce for prompt delivery at £6 per ton. No Welsh is offering forward, but American is quoted £5 to £5 15s. Sulphate of Copper is expected to advance in sympathy

with a rise in the price of the metal, and holders here are not inclined to sell. Yellow Prussiate is easier at 7d. for Lancashire make. Alum is dull. Epsom and Glauber Salts unchanged.

NEWCASTLE CHEMICAL REPORT.

MARCH 2, 1898.

This market remains quiet. Inquiries for spring shipment for the Baltic ports are now in circulation, but so far little new business has been booked. Prices are practically unchanged, and remain as follow:—Bleaching Powder, £6 5s. to £6 10s. Soda Crystals, basis, 45s. to 57s. 6d. Caustic Soda, 70 per cent. basis, £7 10s. to £7 15s. Soda Ash, 52 per cent., £4 5s. Alkali, 52 per cent., £5 5s. Sulphur, £4 15s. to £5 per ton.

LIVERPOOL REPORT.

MARCH 2, 1898.

The prices of chemicals generally are unchanged and the business done in them has been small.

AMMONIUM SALTS — Are unaltered, except the Sulphate, which has weakened to £9 17s. 6d. per ton.

BEESWAX.—Eight packages Gambia sold for £6 10s. per cwt.

BLEACHING POWDER — Still commands £5 12s. 6d. to £6 5s. per ton.

CANARYSEED—Is quieter and prices are slightly easier, 125 bags of Turkish seed have sold at 26s. to 27s. 6d. per 464 lbs.

CARNAUBA WAX.—Two tons of yellow sold at 75s. per cwt.

COPPERAS—Is still firm at 36s. to 38s. per ton.

COPPER SULPHATE—Is somewhat easier, but slow of sale at £16 10s. to £16 12s. 6d. per ton.

FŒNUGREC. — Numerous small sales of Egyptian seed have been made at 10s. per cwt.

GINGER.— Old-crop Sierra Leone has been selling at 22s. 6d. per cwt. ex store.

KOLA NUTS.—Dried have sold freely at 2d. per lb, about 100 packages having found buyers at this price.

LINSEED—Is selling at firm prices, spot lots of Calcutta at 37s. 6d. per 416 lbs., and River Plate at 35s., spot and forward. 100 bags of River Plate feeding seed sold at 37s. 6d. per 416 lbs.

OILS (FIXED) AND SPIRITS.—*Castor oils* command a fair share of business, and French 1st pressure has been selling freely at 3½d. per lb., which is also the price quoted for "good seconds" Calcutta. *Olive oil* of Spanish make has been selling at £33 10s. per ton. *Linseed oil* has again risen in price, and Liverpool-made oil is selling at 17s. 3d. to 17s. 6d. per cwt. *Cottonseed oil* is also higher viz., 15s. 3d. to 15s. 9d. per cwt. *Spirits of Turpentine* is steady at the recently improved price of 24s. 9d. to 25s. per cwt.

POTASH SALTS—Are unchanged from last week. *Potashes and Pearlash* are selling slowly at 21s. 6d. per cwt. for the former, and 37s. 6d. to 40s. per cwt. for the latter. *Cream of Tartar* is neglected at 76s. per cwt.

EXCHANGE.

OFFERED.

Miscellaneous.

Magic Lanterns, seeond-hand; triples and biunials; oxyhydrogen microscope; marvellous pamphengos oil lantern, gives 14-ft. picture; 60,000 slidcs and effects; 4-in. 4-wick lanterns, 18s. 6d. each, bargains; illustrated list post free, 2d.—Hughes, Brewster Housc, 82, Mortimer Road, Kingsland, N.

Overstocked.—1s. 1½d. Daisy, 8s. 6d. per doz.; Diamond Dycs, 1s. 8d. per doz.; 1s. Pilulcs and Tincturcs (Watson Wates), 2s. 3d. per doz.; Munyon's Remedies, 7s. 6d.; all fresh; list.—Ruxton, Chemist, Arbroath.

What offer for nineteen quarter-pound packets of Fullwood's Annatto, hard and dry, in perfect condition?—T. F. Hudson, Chemist, Grovc Road, Bow, E.

Southall's Materia Medica, collection D, complcte with key, cost £2 15s., will take 25s.; also Southall's Herbarium Collcction, cost 10s. 6d., will take 5s.—Potter, Chemist, Plaistow, E.

Dental Instruments, cost £15. Ncw. Forceps, etc. Sell £7 10s.—"Line," Mitcham Cyclists' Rcst, Mitcham.

Shop Fittings.

Entire Fittings of Chemist's Shop to be sold in onc lot or parts, or shop may be rentcd as fitted. Bcst offer accepted.—149, Barking Road, Canning Town, E.

Optical and Photographic.

For Sale.—Eastman Kodak (folding), 3 double dark slides, 45s.; also 7½ by 5 camera (Watson), 6 brass bound double dark slides, solid leather case, tripod, cloth, with 9 by 7 Ross U.S. lens, completc, £8; also Vogel portrait lens cabinet, £4.—A. Upson, Chemist, Maidenhead.

Apochromatic Objective, one inch, by Zeiss. New, perfect. Offers.—A. J. Callaway, Salisbury.

Books.

Perkins' 'Organic Chemistry,' both parts in one volume, 3s. 6d. Green's 'Botany,' vol. ii., 4s. Silvanus Thompson's 'Electricity and Magnctism,' 2s. 9d. Thomé's 'Botany,' 2s. Everett's 'Physics,' 1s. 9d.—P. Davies, 69, Market Street, Manchester.

Copies of thc 'Pharmaceutical Journal" for 1893 and 1894.—Addrcss, Miss Thompson, 66, Gough Road, Edgbaston.

Attfield's 'Chemistry,' fifteenth cdition; new, 15s., will takc 7s. 6d.—Laidlaw, 26, Clyde Street, Edinburgh.

WANTED.

Chemical Balance and wcights, in good working order.—Gatward & Wright, Chemists, Yeovil.

Wanted, old clectric lamps and scrap platinum, or old platinum utensils; utmost value promptly remitted by—P. Rowsell, 14, Walcot Square, Lambcth, London, S.E. (please mention this paper).

Wanted.—*Pharmaceutical Journal*, July 13, August 3, 1895. Full price will be paid for clean and eomplete copies by the publishers, 5, Serlc Street, London, W.C.

Football.

The match between the Pharmaceutical Football Club and Bloomsbury, played on Saturday last at Wormholt Farm, resulted in a win for the Square team by 1 goal to nil.

PHARMACEUTICAL TEAM.—Prescott, goal; Jones and Lescher, backs; Happold, Payne and Evans, half backs; Warren, Durbin, Owen (centre), Merrikin and Day, forwards.

The Westminster College met South London School (Muters) on Saturday, February 26, in a "friendly," the game ending in a win for Westminster by 5 goals to 1.

DIARY FOR THE WEEK.

SATURDAY, MARCH 5.

PHARMACEUTICAL FOOTBALL CLUB v. ST. MICHAEL'S UNITED at Wormwood Scrubbs. Kick off at 3 p.m.

TUESDAY, MARCH 8.

BRADFORD AND DISTRICT CHEMISTS' ASSOCIATION.
"With the Pink Party in Switzerland," by R. W. Silson.

BRIGHTON JUNIOR ASSOCIATION OF PHARMACY.
Lecture by Dr. F. J. Paley.

GLASGOW AND WEST OF SCOTLAND PHARMACEUTICAL ASSOCIATION, at 9 p.m.
"Drug Journals and Their Advertisers," by Arthur M'Kellar.

PHARMACEUTICAL SOCIETY, at 8 p.m.
Evening Meeting:—
"The Pharmacy of Cantharides," by Prof. H. G. Grecnish and Harold Wilson.
"Recent Additions to the Museum," by E. M. Holmes.

ROYAL COLONIAL INSTITUTE, at 8 p.m.
"Our West Indian Colonies," by George Carrington. (Whitehall Rooms, Hôtel Métropole.)

ROYAL INSTITUTION, at 3 p.m.
"The Simplest Living Things" (Lecture VIII.), by Professor E. Ray Lankester.

ROYAL PHOTOGRAPHIC SOCIETY, at 8 p.m.
"The Passage of a Few of the Salts uscd in Photography through Gelatin Septa," by A. Haddon.

WEDNESDAY, MARCH 9.

NEWCASTLE-ON-TYNE AND DISTRICT CHEMISTS' ASSOCIATION, at 8 p.m.
"Apprenticcs—Their Dutics and Ours," by Geo. F. Merson. (Métropole Hotel.)

MIDLAND CHEMISTS' ASSISTANTS' ASSOCIATION, at 9.15 p.m.
Musical and Social Evening.

MANCHESTER PHARMACEUTICAL ASSOCIATION, at 7.30 p.m.
(1) "The Detection of Water in Ether; (2) "A Comparison of the Melting Points of Commercial Specimens of Soft Paraffin," by James Grier. The prizes gained in the recent competition will also be awarded at this meeting.

SHEFFIELD PHARMACEUTICAL AND CHEMICAL SOCIETY, at 8.30 p.m.
"Poor Law Dispensers," by J. F. Eardley.

PHARMACEUTICAL SOCIETY, at 11 a.m.
Preliminary Meeting to arrange for the Annual Dinner.

THURSDAY, MARCH 10.

CHEMISTS' ASSISTANTS' ASSOCIATION, at 9 p.m.
"Résumé of Mercury," by J. Fothergill.

NOTTINGHAM AND NOTTS. CHEMISTS' ASSOCIATION, at 8 p.m.
Annual Dinner. (Albert Hotel, Derby Road.)

ROYAL INSTITUTION, at 3 p.m.
"Recent Researches in Magnestism and Diamagnetism" (Lecture II.), by Prof. J. A. Fleming.

LIVERPOOL CHEMISTS' ASSOCIATION, at 7 p.m.
Second General Meeting.
"Glucose Determination at the Dispensing Counter," by R. C. Cowley and J. P. Catford.
"Necrology (The Disposal of the Dead): Short Historical Sketch," by H. B. Morgan.
"Notes on Piquia Oil and Pichurim Beans," by T. H. Wardleworth.

FRIDAY, MARCH 11.

CAMBRIDGE PHARMACEUTICAL ASSOCIATION.
"Some of the Mechanisms of Plants," by Prof. J. Reynolds Green.

EDINBURGH CHEMISTS', ASSISTANTS', AND APPRENTICES' ASSOCIATION, at 9.15 p.m.
Open Meeting. Arrangements by W. B. Cowie.

NEW IDEAS & TRADE NOTES

THE "PAZO" COMPRESSOR.

The "Pazo" compressor for tablet making at the dispensing counter, described some time ago in the *Pharmaceutical Journal* (last vol., p. 548), has now been placed on the market and affords a ready and convenient means of compressing all kinds of drugs into tablet form without lubrication or granulation. These are essential points for dispensing counter use, and also for all conditions where exactness is required, such as test tablets. It is also an important tool to the manufacturer, as he can produce small quantities up to 250 in less time than he can set the tools of a power automatic machine. The "Pazo" compressor differs from other tablet machines in the uniform character of its product. The bottom die being adjusted to the tablet, every succeeding tablet falls from the machine an exact reproduction, the pressure being removed from the operator's control. The powder being placed in a funnel arranged just above the lower die, A, falls into that detachable die; the handle is brought down as far as it will go (Fig. 2), and then lifted completely back; the tablet will then have been compressed, extracted, and thrown from the machine. The only adjustment for pressure, according to the material and thickness, is in the stalk adjusting the bottom die, and that is set in a few seconds. The "Pazo" compressor is nickel-plated and bronzed, and the price is 50*s*. Extra dies can be supplied if required. The machine is made and supplied by the "Pazo" Company, Oldbury.

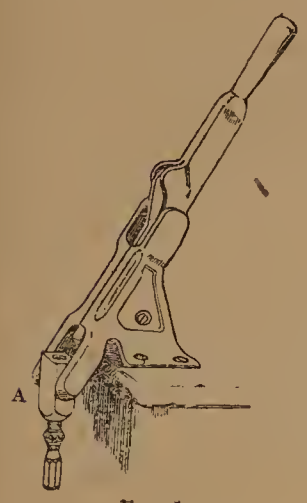


Fig. 1.

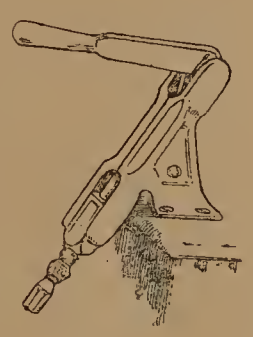


Fig. 2.

CONCENTRATED TOILET PREPARATIONS.

Messrs. Rouse Brothers, 61, Charlotte Street, Tottenham Court Road, W., send samples of excellent toilet articles made from their well-known concentrated preparations. These include a very nice Glycerin and Cucumber made from the firm's Cucumber Paste, which also makes a very satisfactory Milk of Roses. The Toilet Vinegar made from Ess. Toilet Vinegar is about as good as can be obtained anywhere, and the Florida Water, from Florida Water Ess., is equally good. The Eucalyptus Eau de Cologne, from Eucalyptus Cologne Ess., is a happy combination, both pleasant as a perfume and valuable as an antiseptic. The quality and get-up of the various preparations, are all that can be desired. The firm supplies very attractive labels for these preparations and the sheets of formulæ sent out not only give the formulæ, but also include a variety of particulars with a view to assisting the retailer in selling the articles. All the formulæ having first been the subject of numerous experiments and nothing taken for granted, they can be depended upon to yield satisfactory products.

HIGH-CLASS CHEMICALS.

Messrs. Harrington Brothers, 4, Oliver's Yard, City Road, E.C., send a copy of their wholesale price-list of chemicals, etc., for March. It contains a comprehensive list of chemicals for research, laboratory, and educational purposes, photographic and technical chemicals for potters and glass manufacturers, varnish makers, nickel and electro-platers, etc., together with the firm's business terms.

"FLYODOOMO" FLY STICKERS.

Mr. Jno. H. Smith, proprietor of the "Flyodoomo" fly stickers, is removing his factory from Balderton Gate to larger and more convenient premises at Carter Gate, Newark, of which he has bought the lease in order to compete with the increased demand which he anticipates this season. The numerous testimonials received from all parts of the country have been arranged in a printed list, which testifies to the increasing popularity of the "Flyodoomo" papers. It may be mentioned that Mr. Smith now does all his own printing, his machinery having been at work all through the winter, chiefly on "Flyodoomo" papers.

NEW VARIETY OF ASBESTOS.

The London Asbestos Company, of 101, Leadenhall Street, London, is bringing to the notice of chemists a new variety of asbestos, which, owing to the extreme fineness of its fibres, forms a silky wool-like material admirably suited for filtering chemicals. The material has been thoroughly tested by a well-known chemist, who reports that it serves excellently for filtering purposes, being of a peculiarly close or matted texture, and consisting for the most part of fibres of extreme fineness. It is a perfectly neutral material, and acids or alkalies, strong or dilute, have no sensible action upon it. For laboratory work it is admirably suited, not being brittle like glass-wool, and retaining the finest precipitates. Freshly precipitated barium sulphate, which passed through ordinary filter paper is completely retained, the filtrate being quite clear. This asbestos is said to be a better filtering material for chemicals than anything now in use, and it is much cheaper than glass-wool. The price is 10*s*. per lb.

Parliamentary Notes.

Dangerous Trades.—In Committee on the Civil Service Estimates Sir Charles Dilke called attention to a number of lead poisoning cases occurring amongst workers in the Potteries, and suggested that the employment of young people in dangerous processes should be prohibited. The Home Secretary, in reply, admitted the dangers arising from lead working, and expressed the opinion that the Workmen's Compensation Act, 1897, was to be interpreted as allowing compensation in cases of accidental poisoning. In the course of his remarks he revealed the fact that the Home Office is fully alive to the urgent need for more stringent precautions and better safeguards in the interests of the health of the operatives. The Department is, in fact, ready to assist manufacturers in experiments with a view to the discovery of innocuous ingredients for use in what are now dangerous processes. Here, then, is a field of activity for the chemical investigator, and the research laboratory which shall solve the problem of how to render lead working harmless will deserve well of the country and of humanity.

Poison Regulations Threatened.—The reply to Mr. Sam Wood's question as to the scheduling of carbolic acid has elicited a declaration from the Home Secretary that a Bill for the regulation of the sale of poisonous substances has been prepared, and will shortly be introduced. The Privy Council, he stated, does not think it expedient to add carbolic acid to the schedule to the Pharmacy Act, 1868, but it is of opinion that the sale should be regulated, and in accordance with a promise already given, the Government is prepared to submit to the House a proposal for effecting this. Such a declaration of opinion is of immense import to registered men; for it seems to foreshadow the advent of a third schedule, and the consequent admission of the dangerous principle that the education of the vendor of potent chemical substances is quite a secondary factor in preserving the public from accidental poisoning. It is to be hoped that the representatives of pharmacy will appreciate the gravity of the situation, and will at once take steps to confer with the public authorities on the subject.

Opium.—Sir Joseph Pease, the member for the Barnard Castle division of Durham, has given notice of a motion calling attention to the trade in opium between India and China. The Hon. Baronet represents the Society for the Suppression of the Opium Traffic, and believes that in time the House of Commons will be impressed with the iniquity of encouraging the trade in the drug. He has publicly stated that the trade is falling, and that though Malwa opium is bolstered by reduced duties and bounties to growers it cannot flourish.

Position of Bills.—The Food and Drugs Bill, of which a *résumé* is given at page 257, is down for second reading on Monday, the

21st inst. Midwives' Registration is relelated to Wednesday, May 11. Merchandise Marks Amendment—represented by two Bills, one introduced by Mr. McArthur, and the other by Sir Howard Vincent—appeared on the paper on the 9th inst., and is now passed over till another private members' night. The Registration of Firms Bill is patiently awaiting March 30, and is still unopposed, whilst the two Shops Bills (early closing) have a half chance of slipping into the committee stage as we go to press.

Personal Notes.

PROFESSOR CAREY FOSTER, who has occupied the Chair of Physics at University College, London, for more than thirty years, is about to vacate that position.

PROFESSOR BASTIAN'S retirement from the Professorship of Clinical Medicine, which he has held for twenty years, is announced, and also his resignation from the post of physician to University College Hospital, after thirty years' service. He has since been appointed Consulting Physician to the Hospital and Emeritus Professor of Clinical Medicine.

MR. J. S. RISIEN RUSSELL, M.D. (Edin.), F.R.C.P., has been appointed Assistant Physician to University College Hospital, London.

SERGT. JOHN GIBSON, chemist and druggist, was the chairman at a complimentary dinner given to the non-commissioned officers of the "A" (Hexham) Company of the 1st V.B. Northumberland Fusiliers on March 4 at the Royal Hotel, Priestpopple.

MR. J. HINTON LAKE, Vice-President of the Exeter Association of Chemists and Druggists, and Local Secretary of the Pharmaceutical Society, was unanimously elected Hon. Treasurer of the Exeter Camera Club for the ensuing year at the annual meeting last week.

LIEUT.-COLONEL CLIFFORD PROBYN has recently been elected Grand Treasurer of the Order of Freemasons.

MR. ALFRED THORBY LONG, pharmaceuceutical chemist, Bognor, has been elected as a member of the West Sussex County Council.

MR. A. F. POLLARD, B A. (Oxon.), son of Mr. H. H. Pollard, J.P., Ryde, I.W., has been recommended for the Arnold prize at his University. It is worth £60, and is open to all graduates of Oxford who have not exceeded twelve years from matriculation. Mr. Pollard graduated in first-class honours in the History School, 1891, and took the Lothian prize in 1892 with an essay on "The Jesuits in Poland." The subject of the Arnold is "Protector Somerset."

MR. R. A. ROBINSON, chemist and druggist of Brompton Road, S.W., and Tunbridge Wells, successfully contested the South Kensington division as one of the Moderate candidates at the recent London County Council election, gaining his seat—to which he was first elected in November, 1896, without a contest—by a majority of 2408 votes. Mr. Robinson, who is a native of Whitby, came to London in 1870, purchasing the business of Messrs. W. Malden and Co., Brompton Road, S.W., in 1875. For a number of years he has taken an active part in local affairs, and he has been elected chairman of various committees of the Vestry and Board of Guardians. In the last Council he was one of its representatives on the governing body of the Birkbeck Institute and the South-West Polytechnic, and also a member of its several committees.

MR. T. H. W. IDRIS, J.P., principal of the firm of Idris & Co., Ltd., last week was again elected at the head of the poll to the L.C.C. in the Progressive interest, as one of the members for North St. Pancras. Mr. Idris was elected to the first Council, and has since continued to represent the division. He has held several important offices since his first election to the Council, doing valuable work as Chairman of the Water Committee, the Rivers Committee, and the sub-committee of the Public Health and Water Committees. He has also done good service on the Councils of the Lea and Thames Conservancy Board.

LIEUT.-COLONEL PROBYN, J.P., head of the firm of Hooper, Struve & Co., chemists and mineral water manufacturers, etc., Pall Mall, W., received the highest number of votes in the Strand division at the L.C.C. election. He was one of the Moderate candidates, and has represented the division since the Council was first established. Prior to that he was a member of the Vestry of St. George's, Hanover Square, and also for some time the representative of Westminster on the London School Board. He has been the chairman of the Local Authority of St. Martin's-in-the-Fields since the Local Government Act first came into force, and while on the Council has been chairman of the Improvements Committee.

MR. C. G. CLARKE, J.P., member of the firm of Messrs. Potter & Clarke, Artillery Lane, E.C., who was one of the Progressive candidates for Peckham, found himself heading the poll by some 352 votes. He has long taken a deep interest in municipal affairs, having been a member of the Camberwell Vestry and Chairman of its Finance and New Streets Committee, a member of the Camberwell Board of Guardians, and manager of the Sumner Road Board Schools.

RECEIVING ORDERS IN BANKRUPTCY.

(From the London Gazette.)

Mark William McDonald, Surgeon, 2, Oxford Road, Waterloo, Lancs.

Dr. Isidore McWilliam Bourke, 63, Nevern Square, Earl's Court, S.W., and residing at 40, Redcliffe Square, W. Kensington, W.

Medical Jottings.

DR. W. S. PLAYFAIR, Professor of Obstetric medicine at King's College, will vacate this post at the end of the present winter session. Dr. Playfair, who is a younger brother of Lord Playfair, has been connected with King's College for the past thirty-five years, and now retires after having been professor for a quarter of a century.

MR. BRUDENELL CARTER lectured before the Society of Arts recently on "Children's Sight." Out of 8125 children attending the London Board Schools whose sight had been examined at Mr. Carter's instigation only 39·15 per cent. had normal vision with both eyes, so that nearly 60 per cent. of London school children between the ages of eight and thirteen do not see as acutely, that is, as well and as sharply, as they ought to do. On the whole, however, the state of these children in respect to the more injurious form of short sight and the higher and more injurious forms of flat eye compared favourably with that of children in many other capitals. Mr. Carter advocated that the vision of every child brought to school should be tested on admission, and in every case where subnormal the parent should receive official information, and should be recommended to obtain skilled advice before schooling was proceeded with, and that spectacles should be supplied of the kind required for the individual defect.

DR. J. ROSE BRADFORD, F.R.S., the Assistant Professor of Clinical Medicine at University College, London, will deliver the Goulstonian Lectures on March 15, 17, and 22, on the "Pathology of the Kidneys." The Lumleian lecturer this year will be Sir R. Douglas Powell, Physician to Middlesex Hospital. The subject chosen is "The Principles which Govern Treatment in Diseases and Disorders of the Heart," and the dates March 24, 29, and 31. The lectures will be delivered at the Royal College of Physicians, Pall Mall East, at 5 p.m., on the respective Tuesdays and Thursdays indicated by the dates.

DURING 1897 the Röntgen Rays were used in 416 cases at St. Thomas's Hospital, and it has been found necessary to appoint an assistant to the officer in charge.

THE late Mr. W. H. Burns has left a legacy of £1000 to the Royal National Pension Fund for Nurses. Mr. Burns was, at the time of his death, Chairman of the institution.

THE PROFESSORSHIP OF SURGERY at this University, vacated by the death of Sir George Humphry, is not to be filled up. We learn from the *Hospital* that for the time being the professorship will be suspended, and a Reader in Surgery appointed, upon whom will devolve all the ordinary teaching functions of the professorship. One difficulty thus surmounted is that a professor should have charge of hospital patients and be engaged in the active practice of his profession. This would have involved the appointment of one of the surgeons of Addenbroke's Hospital, who, however, are not chosen by the University

authorities. The stipend of the readership is to be £240 per annum. A further difficulty in regard to continuing the professorship was the inadequacy of the endowment.

A Meeting was held on Wednesday, the 2nd inst., at the rooms of the Royal Medical and Chirurgical Society, Hanover Square, to discuss the question of raising the funds necessary for the new Medical School Buildings in connection with the University of Cambridge, for which a site has been assigned by the Senate. A sum of £20,000 will be required, some of which has already been promised, including a thousand guineas from the Mercers' Company.

At the annual meeting of the Medical Defence Union held last week at St. Martin's Hall, the new President, Dr. W. S. A. Griffith, in the chair, the report of the Council was adopted, in which thanks were expressed to various bodies, and amongst them the Pharmaceutical Society for the greatest consideration and courtesy shown in all instances where they had been requested to deal with any matters brought before them by the Union officials. Mr. Victor Horsley was thanked for his valuable work whilst President for so many years, and assured of the sincere sympathy of the Union with him in the attacks that have been made upon him in the discharge of his duties on the General Medical Council.

Lord Charles Beresford is announced to take the chair at the annual dinner of the Irish Medical Schools' and Graduates' Association, to be held at the Café Monïco, London, on St. Patrick's day.

Professor Grimaux, who has been deprived of his professional chair of chemistry at the École Polytechnique, Paris, in consequence of his evidence given in favour of M. Zola at the recent trial, was given a remarkable ovation at a recent meeting of the Biological Society. Professor Richet, who prefaced his speech by the remark that it was the custom of the Society to congratulate its members when an honour was conferred on them, offered on the part of the members a warm tribute of homage and affection to their colleague.

Football.

The match between the Pharmaceutical Football Club and St. Michael's United, played on Saturday last at Wormwood Scrubbs, resulted in a win for the Square team by 3 to *nil*.

Pharmaceutical Team.—Prescott (goal), Jones and Lescher (backs), Evans, Nelson, and Payne (half-backs), Happold, Day, Owen (centre), Durbin and Warren (forwards).

Glasgow and West of Scotland School of Pharmacy Football Club *v.* Nobel's Explosive Co. Football Club.—Match played on March 5 at Pollokshields resulted in a win for the Pharmacy Club by 2 goals to 1.

Pharmacy Team:—Messrs. Dawson (goal), Macarthur and Banks (backs), D. Banks, Scott, and Drynan (half-backs), Russel, Lochhead, and Paton (centre), Buchanan and Wilson (forwards

News in Brief

Benevolent and Orphan Funds.—The following corrections to the list of subscribers to the Benevolent Fund have been supplied by the Secretary of the Pharmaceutical Society:—

On page 182*f* Calvert, E. C., & Co. should be entered under Manchester.

On page 182*f*, under Bradford, Yorks, Alexander, E. G., 10s. 6d., should read Edinburgh, Alexander, H. D., 10s. 6d.

On page 182*j*, under Harbury, for Gollins, E. de T., read Collins.

On page 182*m*, under London, Harry, E. H., £1 1s., should read Harry, E. H , 2s. 6d.

On page 182*n*, under Lowestoft, Hinde, A. H., should be 5s.

On page 182*o*, under Manchester, Jones, J. A., should read Jones, I. A.

On page 182*r*, under Southend, Heywood, J. H., should be 10s. 6d.

The following names appearing under South Molton should appear under Southport:—

Nuttall, R. H , £1 1s ; Ratcliffe, S., 5s. ; Righton, James, £1 1s. ; Round, Frederick, 10s. 6d. ; Smith, F. J., 5s. ; Surr, Edward, 10s. 6d. ; Whitworth, James, 5s. ; Wilding, G. J. (Birkdale), 5s. ; Winter, William, 10*s.* 6d.

The following were omitted:—

Under London, Jenkins, Henry, £1 1s.

Under Walsham-c.-Willows, Harrington, A., 5s.

Under Manchester, Waugh, J., 5s.

Donation omitted from Orphan Fund list:

Glasgow Meeting British Pharmaceutical Conference, £5.

Messrs. Willows, Francis, Butler & Aysoough Thompson, to whom Messrs. Herrings & Co. have sold their business, are extremely fortunate in having so quickly succeeded in obtaining such suitable premises. The building at 40, Aldersgate Street, which in future will be Messrs. Willows & Co.'s only address, is admirably equipped with laboratories, drug grinding mills, and every facility for the manufacture of pharmaceutical preparations. The warehouses are extensive and the situation central. Our readers will remember that Messrs. Willows' premises at 101, High Holborn were burnt out about a month since.

The Leicester Chemists' Social Union, hold their annual dinner on Tuesday, March 29, at the Wyvern Hotel, Leicester. All chemists and assistants in the town and county being eligible to attend. Tickets, 2*s.* 6*d.* each, may be obtained from the Hon. Secretary, F. W. Goodess, Hotel Street, Leicester.

North of England School of Pharmacy.—The third annual ball of this institution will be held on Wednesday, March 16, at the Grand Assembly Rooms, Barras Bridge, Newcastle-on-Tyne. Tickets (double, 7*s.* 6*d.*; gents, 5*s.* ; ladies, 3*s.*) may be obtained from the Hon. Secs., 55, Northumberland Street, Newcastle.

Late Association News.—Long reports of several meetings held this week have been received too late for insertion in this week's issue of the Journal. Thus, on Tuesday, Mr. Arthur McKellar read a paper on "Drug Journals and their Advertisers" before the members of the Glasgow Pharmaceutical Association. On Wednesday, Mr. James Grier read two papers before the Manchester Pharmaceutical Association; one dealt with "The Melting Point of Soft Paraffins," and the other with "The Detection of Water in Ether." On the same evening Mr. G. F. Merson read a paper entitled "Apprentices—Their Duties and Ours" before the Newcastle-on-Tyne Chemists' Association.

Sir James Pender, M.P., and the Draft Pharmacy Bill.—A memorial, signed by twenty pharmaceutical chemists and druggists residing in Northampton, was recently forwarded to Sir James Pender, M.P., the member for the Mid Division, calling his attention to the Pharmacy Bill, and asking him to support it. To Mr. F. C. Ashford, who forwarded the memorial, Sir James has replied as follows:—

Thornby Hall, Rugby,
February 27.

Dear Mr. Ashford,—Your Bill was read a first time on Thursday night. I will support it by my vote when it comes up later on.

Yours faithfully,
James Pender.

The Employees of Cockburn & Co., Ltd. (wholesale and retail chemists, Glasgow), and friends, held their annual supper and dance in the Cockburn Hotel, Bath Street, Glasgow, on Thursday, February 24. Dancing commenced at 8.30 p.m. Mr. Watson, director, in the unavoidable absence of Mr. Cowan, Chairman of the Company, presided at the supper. The toast of "The Firm" was proposed by Mr. Michie in well-chosen language, and the Managing Director, Mr. C. T. Cockburn, replied. A number of other toasts were duly honoured. Thereafter an adjournment was again made to the ball-room, where a most enjoyable programme was provided. "Auld Lang Syne" concluded an evening appreciated by all, and reflects the greatest credit on the indefatigable and genial Secretary, Mr. J. B. Surgenor, under whose generalship the whole proceedings were conducted.

Brighton Junior Association of Pharmacy.—The above Association held a musical and social evening on Wednesday, March 2, at Newburgh Hall, Cannon Place. The President was in the chair, and a very pleasant evening was spent.

'The Chemists' Opinion,' dated February, 1898, is issued by "Camwal," and contains a full report of the proceedings at the general meeting of shareholders held on Tuesday, December 7, 1897, at Anderton's Hotel, Fleet Street, E.C., when Mr. Horace Davenport, Chairman, proposed the adoption of the report and balance sheet. The report shows how the Association has been extending its operations in various districts, and altogether provides much interesting reading.

A QUANTITY OF LAUDANUM sold by Alfred Marsh, a Dover chemist's unqualified assistant, to a young woman named Stokes was the cause of her being brought before the Dover magistrates on a charge of attempted suicide. She was committed for trial at the next Quarter Sessions.

THE BRITISH ASSOCIATION—1900 MEETING.—On Monday last a public meeting, convened by the Mayor, was held in Bradford Town Hall, at which it was decided to invite the British Association to hold its meetings in the city in 1900. The resolution was proposed by Mr. J. Brigg, M.P., seconded by the Vicar of Bradford and carried unanimously. An Executive Committee was also appointed to make arrangements for the visit, if accepted.

OWENS COLLEGE, MANCHESTER.—Anonymous donations of £10,000 and £5000 have been made for the erection and maintenance at this college of a new physical laboratory.

MIDLAND PHARMACEUTICAL ASSOCIATION.—The members of this Association held a successful smoking concert at the Colonnade Hotel, Birmingham, on the 3rd inst. Mr. F. J. Gibson presided over a company numbering over one hundred, and conducted the proceedings with admirable tact. The excellent programme arranged by the Hon. Sec. (Mr. H. S. Shorthouse) was thoroughly enjoyed. At the conclusion Mr. Gibson proposed a vote of thanks to the artistes, which was cordially agreed to.

BRADFORD AND DISTRICT CHEMISTS' ASSOCIATION.—On Tuesday evening last, March 8, Mr. R. W. Silson (a member of the Association) delivered a lecture entitled: "The Pink Party in Switzerland" before the members of the Association and their friends at the Great Northern Hotel. Mr. Dunn, the President, occupied the chair, and there was a crowded attendance. The lecture was illustrated by sixty or more capital slides, taken by the lecturer whilst on a tour with the "Pink Party," and included mountain and lake scenery, and buildings of interest in Lucerne, Brussels, Antwerp, etc. Most of the views were quite works of the highest art, and caused much applause. At the conclusion Mr. A. H. Waddington thanked Mr. Silson for his highly entertaining lecture, being supported in his remarks by Messrs. Rimmington, Dunn, Branson (Liverpool), and Pickard, Mr. Silson suitably replied. At the conclusion of the lecture the meeting assumed a social character, the remainder of the evening being spent in conversation.

DEWSBURY AND DISTRICT CHEMISTS' ASSOCIATION.—A meeting of chemists was held on Monday evening the 7th inst. at Messrs. Nell and Co.'s auction rooms, Church Street, Dewsbury, when representatives were present from Dewsbury, Batley, Ossett, Heckmondwike, Mirfield, Ravensthorpe, West Town, and Batley Carr. Mr. A. Foster, Dewsbury, was elected chairman. Mr. Foster explained why the meeting had been called, and trusted that it would be the means of creating a good feeling amongst the chemists of the district, and also that they would be able to meet one another oftener than they had done. It was resolved to form an association under the title of the Dewsbury and District Chemists' Association. The election of officers then took place, which resulted as follows: President, Mr. A. Foster, Dewsbury; Vice-Presidents, Mr. C. Crooke, Mirfield; Mr. G. Walker, Dewsbury; Treasurer, Mr. W. Stead, Heckmondwike; Secretary, Mr. R. Gledhill, Dewsbury; members of the Council, Mr. T. Kerry, Ravensthorpe; Mr. W. Pickles, Batley Carr; Mr. W. L. Fewster, Dewsbury; Mr. J. W. Cussons, Ossett; Mr. C. G. Gloyne, Dewsbury; Mr. J. Day, Savile Town; Mr. G. N. Gutteridge, Dewsbury; Mr. R. Butler, Dewsbury. Subsequently a discussion took place on the Pharmacy Acts Amendment Bill, and the Secretary reported that he had forwarded the petition in favour of it to the borough member, and had also asked him to support it by his vote in Parliament.

Business Changes.

MR. J. R. VOLANS, late manager to Mr. Clarke, Pharmaceutical Chemist, Great Malvern, has purchased the business recently carried on by Mr. E. R. Cherrett, Trimdon Street, Sunderland.

MR. J. LAIDLAW EWING is retiring from the retail department at 9, Princes Street, Edinburgh, and going into the wholesale manufacturing department of Messrs. Duncan, Flockhart & Co.'s business at South Canongate. Mr. Andrew Hunter, chief assistant, has been assumed as a partner and will take Mr. Ewing's place at the East End retail establishment. Mr. Hunter is the son of a former partner, the late Mr. David Hunter, who was closely associated with Professor Sir J. Y. Simpson in the early experiments connected with the introduction of chloroform.

MR. F. J. RICHARDS, 152, Dudley Road, Birmingham, has disposed of his business to Mr. J. McLanachan, late of Lewisham, the negotiations being conducted through Messrs. Blackwell, Hayes, and Spilsbury.

PARTNERSHIPS DISSOLVED.

(From the London Gazette.)

J. W. Cook and E. G. Kenny, Medical Practitioners, Colchester.

James W. Smith and Albert Smith, Chemists and Druggist, Denbigh Pharmacy, 1A, Archer Street, Westbourne Grove. Debts will be received and paid by Albert Smith.

Alfred P. Balkwill, F. W. Hunt, C. T. Weary (trading as Balkwill & Co.), 106, Old Town Street, Plymouth, and Trafalgar Place, Stoke, Devonport, so far as C. T. Weary is concerned. The business at 106, Old Town Street, Plymouth, will be continued by Alfred Balkwill and F. W. Hunt under the style of Balkwill & Co., and the business at Trafalgar Place, Stoke, Devonport, by C. T. Weary under his own name.

Matthew Hallwright and Lauchlan Rose, Surgeons, etc., 215 and 124, Hagley Road, Edgbaston, Warwickshire. Debts will be received and paid by Matthew Hallwright.

MARKET REPORT and Prices Current

Specially compiled for the Pharmaceutical Journal

The quotations here given are in all cases the lowest cash prices for bulk quantities, and often the articles quoted have to be sorted in order to suit the requirements of the retail pharmacist. The cost of freightage from the chemical and drug works to the various distributing centres must also be considered. It is important that these conditions should be borne in mind in making any comparison between the prices quoted and those of the wholesale drug trade.

LONDON REPORT.

MARCH 10, 1898.

There has been a slight improvement in business in drugs and chemicals during past few days. Notwithstanding this, however, many complaints have been heard that so little was doing. Changes in value, either upwards or downwards, have been unimportant, the only advance of any moment being a rise in price of Atropin, caused, it is stated, by the continued scarcity of good yielding raw material. Phenacetin weak. Quinine unchanged. Opium and Morphia quiet, Codeia steady. Bromides and Iodides, Quicksilver and Mercurials, Bismuth salts, Lithia and Sulphonal without alteration. Glycerin and Cod-Liver Oil quiet and fairly steady. Acid Phosphoric rather dearer. Borax and Acid Boracic dull. Sulphate of Ammonia easier. Cascara Sagrada firm. Cream of Tartar higher. Acid Tartaric quiet. Acid Citric firm and slightly dearer. Ipecacuanha very firm, as is also Saffron. Cocaine without change. The following are actual prices:—

ACETANILID.—Is quiet at 1s. 2d. to 1s. 3d. per lb., according to quantity.

ACID ACETIC—Unchanged at 15s. 6d. per cwt. for the B.P. strength, and 40s. for the glacial.

ACID BORACIC—Quiet at 24s. per cwt. for *crystals* and 26s. for *powder*.

ACID CARBOLIC—Quiet at 6¼d. to 6⅞d. for the 35-36° C. *Ice crystal*, for quantity and in large bulk packing. *Crude* 60° F. 2s., 75° F. 2s. 9d. per gallon. *Liquid* 95 per cent. of pale straw colour 1s. 1d. to 1s. 2d. per gallon, according to quantity, in 40-gallon casks.

ACID CITRIC—Is firm, and rather dearer, 1s. 0½d. to 1s. 0¾d. per lb. on the spot.

ACID PHOSPHORIC.—There has been a small advance in price of the syrupy 1·750 quality, prices now ranging from 11d. per lb. upwards according to quantity and packing.

ACID TARTARIC—Somewhat slow of sale at 1s. 0½d. per lb., *c.i.f.*, for *foreign*, and 1s. 1d. for *English*.

AMMONIA COMPOUNDS.—*Sulphate* dull and easier; gray prompt 24 per cent., £9 10s. per ton. *Bromide*: 2s. 1d. to 2s. 2d. per lb. *Iodide*: 13s. 4d. per lb. *Sal ammoniac*: Sublimed firsts, 35s. per cwt; seconds, 33s.

Monthly Statement of Drugs, etc., Warehoused in London.—March 1, 1898.

		February, 1898.		Stocks, Feb. 28.	
		Arrivals.	Deliveries.	1898.	1897.
Aloes (all kinds)	packages	241	243	5,101	5,940
Balsams ,,	,,	18	44	319	624
Cinchona Bark	,,	3,232	2,756	19,293	21,612
Quinine Sulphate	ounces	28,736	7,760	1,692,256	1,400,032
Beeswax	packages	122	714	1,803	1,559
Camphor	,,	—	253	11,204	11,875
Cardamoms	,,	450	365	915	769
Cochineal	,,	148	221	2,622	2,410
Calumba Root	,,	14	19	26	201
Cubebs	,,	665	8	1,252	324
Dragon's Blood	,,	—	4	45	42
Galls (all kinds)	,,	167	399	3,375	5,473
Gum, Ammoniacum	,,	7	—	36	37
Arabic, all kinds	,,	1,354	1,723	12,523	11,860
Asafœtida	,,	120	104	745	348
Benjamin	,,	947	453	2,612	3,197
Galbanum	,,	—	—	—	1
Gamboge	,,	28	18	298	187
Guaiacum	,,	8	1	85	45
Kino	,,	3	4	21	22

		February, 1898.		Stocks, Feb. 28.	
		Arrivals.	Deliveries.	1898.	1897.
Gum, Mastic	packages	22	4	24	11
Myrrh	,,	1	42	504	554
Olibanum	,,	729	395	2,531	2,161
Tragacanth	,,	1,662	531	3,578	2,998
Ipecacuanha	,,	12	35	195	460
Jalap	,,	—	8	332	281
Nux Vomica	,,	18	—	123	452
Oils, Castor	,,	360	232	675	947
Olive	,,	273	203	711	1,084
Aniseed	,,	—	6	133	124
Cassia	,,	—	8	121	91
Rhubarb	,,	19	114	814	312
Saltpetre	tons	2,356	2,503	3,291	4,832
Sarsaparilla	packages	65	100	221	212
Senna	,,	71	512	992	2,321
Shellac	,,	2,584	3,335	52,289	43,079
Terra Japonica, Gambier	tons	1,681	1,770	1,930	1,146
Cutch	,,	69	76	1,339	1,732
Turmeric	,,	11	19	276	836

The stocks of camphor, oils of aniseed and cassia are incomplete, some warehouses not making returns.

per cwt. *Chloride*: The chemically-pure crystals are quoted 32s. 6d. per cwt.; 98 per cent. free from metals 26s. per cwt. *Sulpho-cyanide*: 1s. 2d. per lb. *Oxalate*: 6¼d. per lb. for crystals.

Antipyrine.—Dr. Knorr's article is still held for the fancy price of 2s. 1½d. per oz. The chemical equivalent, *Phenazone*, is, however, being sold freely at a third less money, according to quantity and packing.

Atropin.—In consequence of the continued scarcity of good and suitable raw material, makers advanced their price today to 16s. 5d. per oz. for the *pure*, and 14s. 1d. for the *sulphate P.B.*, price for 75 oz. contracts being 4d. per oz. less.

Belladonna Root.—Good root continues scarce, 45s. per cwt. spot being asked, and only quite limited quantity available.

Bleaching Powder—Steady at £7 5s. per ton on the spot.

Borax.—Lump is quoted at 14s. to 14s. 6d. per cwt., and *powder* 14s. 6d. to 15s. according to quantity.

Bromine and Bromides.—There is no change in price to report, *Pot. Bromide* being 1s. 9d. per lb. for 10 cwt.

Bismuth.—*Metal*: 5s. per lb. *Subnitrate*: 4s. 10d. for large quantity.

Caffeine—Remains unchanged at 14s. 4d. for the *pure* and 11s. 2d. per lb. for the *citrate*.

Camphor.—The market for *crude* is quiet, and for arrival a limited business has been done in China, March to April steamer, at 84s. 6d. per cwt. *c.i.f.* *Refined*; *German* is quoted lower at 1s. 2¼d. per lb. for bells in quantities of from 3 to 5 cwt.; ton lots 1s. 1¾d. per lb.

Cascara Sagrada.—Several large parcels have lately arrived, but these go probably direct into consumers' hands, and as there are no offers from the Pacific Coast the position of the article is firm. It is generally believed that practically nothing will be gathered this season. Prices on the spot range from 22s. to 26s. per cwt., according to quantity and quality.

Cloves.—Privately *Zanzibar* have receded during the week and close dull with sellers of April-June delivery at 3 3/32d., and June-August at 4 3/32d. At auction only 12 cases *Penang* were offered and bought in, middling to good picked 8½d. to 10d.

Coal Tar Distillation Products.—*Toluol*: 1s. 11d. *Benzole*: 60 per cent., 1s. 8d. per gallon; 90 per cent., 1s. 5d. *Crude Naphtha*: 10d. *Solvent Naphtha*: 95 per cent. at 160° C., 1s. 11½d. per gallon.

Cocaine—Is quiet, makers' prices for best brands being unchanged at 10s. to 10s. 9d. per oz. according to quantity and packing; makes less in favour are being offered at cheaper figures, without, however, meeting with much response on part of buyers, who find it preferable to handle only known and reliable brands of the article.

Codeia—Steady at 11s. 3d. to 11s. 6d. per oz. for the *pure* in quantity, the salts being quoted 1s. per oz. less.

Cod Liver Oil.—Market is quiet, price of new non-congealing *Norwegian* in tin-lined barrels ranging from 62s. 6d. to 70s., according to quantity and brand.

Colycynth.—Stock of Turkey apples is moderate, and is held for 1s. 2d. to 1s. 3d. per lb. according to quality, but business in the article is quiet.

Cream of Tartar—Is dearer at 76s. per cwt. for first white *crystals* on the spot, whilst for *powder* 78s. to 79s. per cwt. is asked.

Ginger.—Only 350 bags *Cochin* offered, and 293 bags sold, ordinary to good fair washed at 23s. 6d. to 26s., fine lot 26s. 6d., limed rough 22s. 6d., common small part wormy 20s. 6d.; 275 bags limed *Japan* sold without reserve, sound at 18s. 6d., mouldy 17s. 6d.

Glycerin—Quiet and unchanged. It is possible, however, that the present bleak weather may stimulate the demand for the medicinal qualities, which has been somewhat slack this winter owing to the mild weather which prevailed. Best *German* white chemically-pure double-distilled 1·260 quality in tins and cases is quoted 52s. 6d. to 57s. 6d. per cwt., *English* being obtainable at a slightly lower price.

Herbs.—*Aconite* varies from 27s. 6d. to 42s. per cwt. according to quality. *Arnica*: 22s. 6d. to 26s. per cwt. *Belladonna*: 48s. to 56s. per cwt. *Centaury*: Bunches are quoted at 37s., cut, 48s. per cwt. *Hemlock*: 26s. per cwt. *Henbane*: 38s. to 45s. per cwt. *Hyssop* in bunches 18s. 6d. per cwt. *Mellilot* with flowers cut 22s. 6d. per cwt. *Motherwort*: 26s. 6d. per cwt. *Parsley*: 42s. per cwt. *Pulsatilla*: 31s. per cwt. *Rue*: Bunches 33s. per cwt. *Stramonium*: Ordinary, 32s. to 42s. per cwt., rubbed, 40s. to 48s. per cwt. *Tarragon*: Bunches 35s. per cwt. *Wormwood*: Bunches 14s. to 21s. 6d. per cwt., cut 24s. per cwt.

Hypophosphites Remain in good demand at 3s. 3d. per lb. for *Lime*, *Soda*, and *Potash* salts in 10-cwt. lots, smaller quantities being charged higher in proportion.

Iodine and Iodides—Unchanged. 7½d. per oz. being price of the former and 9s. 9d. to 10s. 3d. for *Pot. Iodide*, according to quantity.

Ipecacuanha.—*Rio* is very firmly held at 8s. to 9s. per lb., according to quality. Business, however, is quiet.

Jalap—Is in good inquiry. Some arrivals of new crop have taken place in New York but condition is very poor. Spot price of desirable lots is firm at 6½d. to 7d. per lb. according to quantity.

Leaves.—*Bay*: 24s. per cwt. *Belladonna*: 6d. Fine picked are held for 65s. per cwt. for foreign. *Coca*: Green Truxillo are held for 7d. to 8d. per lb. *Comfrey*: 30s. 6d. per cwt. *Damiana*: 8d. per lb. on the spot. *Foxglove*: Foreign are quoted at 40s. to 45s. per cwt. according to quality. *Henbane*: 8d. to 9d. per lb. for foreign. *Hyssop*: 32s. per cwt. *Marshmallow*: 20s. 6d. per cwt. *Mullein*: 23s. per cwt. *Rose*: 1s. 6d. per lb. *Tarragon*: 65s. per cwt.

Lithia.—Firm at 10s. 8d. per lb. for the *carbonate*, 6s. for the *citrate cryst.*, and 6s. 6d. for *citrate powder* in quantity.

Menthol—Is fairly firm, prices ranging from 7s. to 7s. 6d. per lb., according to brand and quality.

Mercurials.—Makers still quote *Calomel*, 2s. 6d., and *corrosive sublimate*, 2s. 2d. per lb. for half-ton lots.

Morphia—Without change, manufacturers still quoting 4s. 3d. to 4s. 6d. for the *Hydrochlorate* salt in powder.

Oils (Essential).—*Star Aniseed* is in slow demand, nominal quotation being 7s. per lb. on the spot, and for arrival, 6s. 6d. to 6s. 7d. per lb., *c.i.f.* *Cassia* quiet: For

arrival 70 to 75 per cent. sold at 4s. 4½d. per lb.; 75 to 80 per cent., 4s. 6d. per lb., both *c.i.f.* terms. *Lemongrass* quiet at 5d. per lb. *Peppermint*: American quiet; *HGH*, on the spot, 5s. 6d. per lb.; for arrival, 5s. 1d. per lb., *c.i.f. Japanese*: Dementholised, 3s. 3d. per lb. *Lemon* continues firm, and the same may be said of the other Messina essences.

OILS (FIXED) AND SPIRITS.—*Linseed*: The market has been exceedingly quiet, and prices have given way, closing spot, pipes, £16, and £16 7s. 6d. for barrels. *Rape* is also lower at £22 15s. for ordinary brown on the spot and £24 5s. for refined. *Cotton* is a shade easier. London crude, on the spot, £13 12s. 6d. Refined, on the spot, £14 15s. to £15 10s, according to make. *Olive*: Spanish or Levant, £33. *Cocoanut* firm, at dearer prices. *Ceylon*, on the spot, £23. *Cochin*, spot, £28. *Palm*: Lagos continues firm at £23 10s., on the spot. *Turpentine* has improved in value, and closes dearer at 25s. 3d. per cwt. for American, on the spot. *Petroleum Oil* is quiet, but unchanged at 4⅜d. per gallon for Russian, on the spot, and 4⅝d. per gallon for American, same position. Water white, 5¾d. per gallon. *Petroleum Spirit*: American, 5½d. per gallon; deodorised, 6d. per gallon.

OPIUM.—With but little doing in the article prices range as follow:—*Persian*, 10s. to 11s. 3d. per lb.; *Soft chipping*, 10s. 6d. to 12s. 6d.; *Druggists*,' 9s. 6d. to 10s. 9d.; *Manufacturing*, 8s. 6d. to 9s. 6d. per lb.

PERMANGANATE OF POTASH—Weak at 60s. per cwt. for *small crystals*, and 5s. per cwt. more for *large crystals* in half-ton lots.

PHENACETIN—Remains weak at late prices, say, 3s. 9d. to 4s. per lb., according to quantity and make.

PILOCARPINE — Firm at 1s. 3d. per gramme for both the *Hydrochlorate* and the *Nitrate salt*.

POTASH COMPOUNDS.—*Chlorate*, spot, 3½d. to 3¾d. per lb. *Prussiate*: Yellow, 6¾d. per lb.; 1s. 2d. per lb. for red. *Permanganate* very quiet and in full supply at 62s. 6d. per cwt. for small crystals and 67s. 6d. per cwt. for large crystals. For large contracts these prices could be shaded. *Bromide* unchanged at 1s. 10d. per lb. *Iodide* steady at 9s. 9d. to 10s. 3d. per lb. *Oxalate*: Neutral, steady at 5d. per lb. *Cyanide* firm at 1s. 2d. per lb. for the 98 per cent. cake. *Bichromate*: 3⅞d. to 4d. per lb. *Bicarbonate* firm at 30s. per cwt. for powder.

QUICKSILVER—Continues firm at £7 2s. 6d. per bottle from first hands, whilst second hands are willing to take 6d. less.

QUININE—Market is in a very undecided condition, the agents for one of the best *German* brands state that having sold all that they had to offer, they would have to first submit any further orders to their principals, their price being however nominally still 11d. per oz. for 1000 ozs. lots in 100-oz. tins. From second hand it would be possible to buy below this figure especially for brands less in favour on this market.

ROOTS.—*Aconite* steady at 42s. per cwt. *Alkanet*: Picked 39s. per cwt., natural, 28s. per cwt. *Angelica*; Loose 24s., twisted 31s. per cwt. *Arnica*: Picked is quoted at 80s. per cwt. *Belladonna* is very firm at 45s. per cwt. for good. *Calamus*: Crude aromatic, 25s. 6d., peeled, 31s. per cwt. *Colchicum*: Sliced, 36s. 6d. per cwt. *Comfrey*: 25s. per cwt. *Dandelion*: Whole is quoted at 44s. per cwt., cut, 52s. per cwt. *Enula*: 26s. 6d. per cwt. *Hellebore*: White is scarce, and no stocks of any importance are available; without fibre a small lot is quoted at 36s. 6d. per cwt. *Golden-seal* is advancing in America, on the spot 2s. 1d. per lb. is quoted. *Mezereon*; 26s. 6d. per cwt. *Bark root*; 50s. 6d. per cwt. *Valerian*: 24s. 6d. to 32s. per cwt., according to quality. *Zedoary*: 25s. 6d. per cwt.

SAFFRON—Remains very firm at 36s. to 45s. for *Valencia* and 25s. to 27s. 6d. per lb. for *Alicante*.

SALICINE—Is in good inquiry at 10s. 3d. to 10s. 6d. per lb., according to quantity.

SCAMMONY. — *Virgin*: Firsts have been dealt in at 30s. per lb. and good seconds at 23s. 6d. per lb. *Resin* firm at 6s. 6d. to 7s. per lb. *Roots*: Whilst supplies are increasing, holders decline to reduce values, which remain at 27s. 6d. to 30s. per cwt.

SENNA.—*Tinnevelly*: There has been a good deal of inquiry for small leaves at 2¼d. to 2½d. per lb., but very little is to be had, and it seems evident more money will have to be paid.

SHELLAC.—The market is exceedingly quiet, although prices remain steady; spot, *TN Orange*, 64s. to 65s. per cwt.

SPICES (VARIOUS).—*Black pepper*: Penang bought in at 4¼d; 40 bags Singapore sold at 4d. *White pepper*: 294 bags, good to fine bold, Singapore bought in at 8½d. to 9½d. *Cassia Lignea*: 50 boxes sold at 50s., and 45 bales broken at 34s. to 36s. *Cinnamon Chips*: Only 40 bags Ceylon sold at 3d. to 3½d. *Mace* in good demand at rather better prices: 10 cases Penang sold, red, 1s. 8d. to 1s. 10d., good bright palish, 2s. 4d.; 2 packages Grenada sold, damaged, 1s. 5d., good pale, 2s. 3d. *Nutmegs* steady; 2 cases Bombay sold 93's at 1s. 6½d.; 7 packages Goenada sold 96's at 1s. 3d., 126's at 1s.; 19 packages Penang bought in, 64's at 2s. 8d., 79's at 1s. 10d. *Pimento* quiet; 579 bags bought in at 4⅝d. to 4¾d.

SULPHONAL.—Makers are still booking orders at 7s. 3d. per lb., only, however, for quite limited quantities.

SODA COMPOUNDS.—*Crystals*: 60s. per ton, ex-ship terms. *Bicarbonate*: £7 5s. per ton for the commercial 98 per cent. article and 18s. 6d. for the free from mono-carbonate quality. *Hyposulphite* steady at 6s. to 8s. per cwt. *Nitrate*: Refined £7 15s. per ton. *Caustic*: £7 15s. per ton for the 70 per cent. white, and £1 less for the 60 per cent.

SPERMACETI—Is quoted 1s. 3d. to 1s. 3½d. per lb. on the spot.

SULPHATE OF COPPER—Is firm at £16 10s. to £17 5s. per ton on the spot, according to brand.

TURMERIC—Remains quiet, although steady. Small sales of good *Malabar* finger at 19s. per cwt., *Bengal* quoted at 14s. per cwt., and *Cochin* split bulbs at 8s. to 8s. 6d. per cwt.

LIVERPOOL REPORT.

MARCH 9, 1898.

A considerable advance has taken place in the price of Quillaya Bark, which has risen £2 10s. per ton. An upward tendency is also observable in Cream of Tartar and Olive Oil. Spirits of Turpentine has been selling well at 1s. per cwt. more than last week. Small sales of Guinea Grains, Kola Nuts, African Beeswax, and Chilian Honey are reported at about recent figures.

AMMONIUM SULPHATE—Is lower and dull, viz., £9 12s. 6d. per ton.

BEESWAX.—Sierra Leone has brought £6 6s. 3d. per cwt., and Gambia, £6 15s.

BLEACHING POWDER—Is unchanged, viz., £5 12s. 6d. to £6 5s. per ton.

CANARYSEED.—Though the amount offering is small, the price for Turkish, 26s. to 27s. per 464 lbs., does not tempt buyers.

CASTOR SEED.—800 bags of Brazilian made 10s. 3d. per cwt.

GUINEA GRAINS—Have been selling in small amount at 23s. per cwt.

KOLA NUTS.—9 barrels dried sold at 1½d. per lb.

LINSEED—Continues scarce, 900 bags of River Plate "feeding" variety sold at 37s. per 416 bags, and 300 bags Turkish ditto at 38s. 6d. per 416 lbs.

OILS (FIXED) AND SPIRITS.—*Castor Oils* enjoy a better inquiry, and a steady tone prevails. Both Calcutta and French still fetch 3⅝d. per lb. *Olive Oil*: A firmer feeling obtains at present, due to higher rates in Seville and Malaga. Spanish oils are quoted at £33 to £33 10s. per tun. *Linseed Oil* is steady at 17s. 3d. to 17s. 6d. per cwt. *Cottonseed Oil* is easier in tone at 15s. 3d. to 15s. 9d. per cwt.

SPIRITS OF TURPENTINE—Is firmer, and notwithstanding an advance of 1s. per cwt., is selling well at 26s.

POTASH SALTS.—*Cream of Tartar* is scarce, *i.e.*, finest white, and 77s. per cwt. is asked for spot parcels. *Potashes* and *Pearlashes* are unchanged for last week.

QUILLAYA BARK.—Early in the week all the Chilian at £16 10s. per ton was bought up, and since then sales have been made at £17, £18, and £19 per ton. Some 150 bales in all have been disposed of.

NEWCASTLE CHEMICAL REPORT.

MARCH 9, 1898.

Although not much business is passing, the prospect, through better inquiries for heavy goods, is more hopeful. Fair orders for Soda Crystals are in circulation. Prices unchanged as follow:—Sulphur, £4 15s. to £5. Alkali, 52 per cent., £5 5s. Soda Ash, 52 per cent., £4 5s. Bleaching Powder, £6 5s. to £6 10s. Soda Crystals, basis, 45s. to 57s. 6d. Caustic Soda, 70 per cent. basis, £7 10s. per ton.

MANCHESTER CHEMICAL REPORT.

MARCH 9, 1898.

In heavy chemicals a fair business appears to be passing locally, but export demand is weak. The Board of Trade Returns are, on the whole, unsatisfactory. There are few changes in the price of any products here, but they are firm generally. Sulphate of Copper is dull at £16 15s. to £17 for best brands delivered Manchester. Sugar of Lead is firm at the recent advance to £31 per ton here. Salt Cake is easy at 18s. to 19s. per ton on rails. Pitch in better demand at 17s. 6d. per ton, *f.a.s.*, Manchester Ship Canal. Green Copperas scarcely so active, but a few inquiries are

to hand, and full prices are asked by local makers. Glycerin is firm at £52 to £54 for double distilled, *f.o.b.* or *f.o.r.* Manchester. Yellow Prussiate, notwithstanding reports to the contrary, is still quoted 7d. per lb. for best makes. Stocks in first hands remain low.

Benevolent Fund Album.

The following is a list of past and present Annuitants on the Benevolent Fund, whose portraits are not in the above album, with the dates of their election. The Secretary will be glad to receive copies of photographs in those cases. They should be addressed to him at 17, Bloomsbury Square.

Anderson, Chas. T., 1870
Atherton, Wm., 1876
Barber, Joseph, 1883
Barker, John, 1880
Bellingham, H. J., 1874
Bensley, George D., 1877
Bowen, Margaret S., 1881
Brown, Eliza, 1890
Chapman, Richard Jos., 1888
Collins, J. Richard, 1885
Cooke, John, 1883
Davies, Henry E., 1882
Dixon, Mary E., 1882
Eastes, Thomas H., 1875
Farrow, Martha J., 1869
Fife, George, 1886
Gason, Elizabeth J., 1879
Gilbert, Edward, 1877
Gilkes, Mary, 1869
Goadsby, Elizabeth, 1887
Godden, George, 1887
Greaves, Hannah, 1870
Hellowell, Mary A., 1881
Henson, Sophia P., 1872
Higgs, John S., 1878
Hollinworth, Chas. F., 1879
Horncastle, Anne, 1886
Jones, Augusta, 1888
Kennett, George B., 1873
Kennett, Louisa, 1880
Linging, Bine, 1875
Markland, Edwin, 1875
Moss, Mary, 1874
Mumbray, Henry G., 1889
Novis, Thomas, 1866
Parkes, Ellen, 1878
Pitman, Emma, 1889
Phillips, Dorothy, 1875
Potts, Thomas, 1873
Pownall, L. Sarah, 1887
Robinson, Samuel, 1881
Rogers, John, 1867
Sanders, George L., 1834
Snowdon, Hester, 1881
Skoulding, William, 1890
Slater, William Hy., 1878
Spendelow, Mary E., 1890
Stevens, Elizabeth J., 1888
Stephenson, Thomas, 1885
Stone, Thomas W., 1886
Sutterby, Catherine M. A., 1882
Taylor, Henry, 1883
Trumper, Richard, 1868
Trumper, Susan, 1876
Tucker, Charles, 1883
Wavell, John, 1883
Whitehead, Annie, 1878
Wick, James, 1868
Wick, Sophia, 1874
Wilson, Sarah, 1871
Yates, W. L, 1879

Publications received.

Illustrated Catalogue of the Homœopathic Central Pharmacy of Dr. Willmar Schwabe at Leipzig, Germany. Second English edition. Pp. viii. + 122. London: Charles Yarrow & Co., 36 Basinghall Street, E.C. 1897. From the Publishers.

The Tallerman Treatment by Superheated Dry Air. Case Notes and Medical Reports, with numerous illustrations. Edited by Arthur Shadwell, M.A., M.B. (Oxon), M.R.C.P. Pp. xii. + 173. 63 plates, 8vo. Price 3s. 6d. net. London: Baillière, Tindall & Cox, King William Street, Strand. 1898. From the Publishers.

Extract from Heinrich Haensel's Quarterly Report on Essential Oils and Fruit Essences. January, 1898. Pp. 19. Manchester: William Poppelreuter, 54, Portland Street. 1898. From the Publisher.

Geschichte der Pharmazie, unter Mitwirkung angesehener Historiker und Fachgenossen. Herausgegeben von Dr. J. Berendes. Pp. 80. Leipzig: Ernst Günthers, Verlag. 1898. From the Publisher.

Pharmacopée Homœopathique Française. Par H. Ecalle, L. Delpech, et A. Peuvrier, avec la collaboration de MM. les Docteurs Marc. Jousset et Vincent Léon-Simon. Pp. vii. + 400 + 8. Price 6 francs. Paris: Librairie J. B. Baillière and Fils, uue Hautefeuille, 19, près du boulevard Saint-Germain. 1898. From the Publishers.

Die Neueren Heilmittel ihre Eigenschaften Anwendung und Dosirung. Pp. viii. + 126. Wien: G. & R. Fritz, Medicinal-Droguen Grosshandlung. November, 1897. From the Publishers.

Jaaroverzichten Betreffende den Handel in Koloniale Producten. 1897. Reprint from 'De Indische Mercuur.' No. 5 dd., January 29, 1898. Amsterdam: J. H. de Bussy. From the Publisher.

Diary for the Week.

Saturday, March 12.

Pharmaceutical Football Club, Practice game at Wormholt Farm at 3 p.m.

Monday, March 14.

Society of Chemical Industry, at 8 p.m.
"Electrical Industries at the Foyers Waterfalls," by R. W. Wallace.

Tuesday, March 15.

Royal Institution, at 3 p.m.
"The Simplest Living Things" (Lecture IX), by Professor E. Ray Lankester.
Royal Photographic Society, at 8 p.m.
"Half-tone Negative Making," by W. H Lascelles.

Wednesday, March 16.

Brighton Junior Association of Pharmacy. Social Evening.
Bristol Pharmaceutical Association, at 7 p.m.
Annual Dinner. (Stuckey's Restaurant, Wine Street.)
North of England School of Pharmacy (Newcastle), at 7 30 p.m.
Presentation to Mr. and Mrs. Morson, followed at 8 p.m. by the Third Annual Ball. (Grand Assembly Rooms, Barras Bridge.)
Pharmaceutical Society (North British Branch), at 8.30 p.m.
Evening Meeting:—
"The Determination of Ash as an Analytical Method," by D. B. Dott.
"A Syringe for Filling Capsules," by J. A. Forrot.
"Invisible and Sympathetic Inks," and "Methylated Spirit in Photography," by J. Rutherford Hill.
"Additions to Library and Museum."
Royal Microscopical Society, at 8 p.m.
"Exhibition of Mounted Rotifers," by C. F. Rousselet.
Western Chemists' Association (of London), at 9 p.m.
Discussion on the Proposed Alteration of the Name of the Association.

Thursday, March 17.

Chemical Society, at 8 p.m.
"The Reduction of Bromic Acid and the Law of Mass Action," by Winifred Judson and J. Wallace Walker.
"The Action of Ferric Chloride on the Ethereal Salts of Ketone Acids," by R. S. Morell and J. M. Crofts.
"Note on the Volatility of Sulphur," by T. C. Porter.
"Action of Ammonia and Substituted Ammonias on Acetylurethane," by George Young and Ernest Clark.
Chemists' Assistants' Association, at 9 p.m.
"Demonstration: Water Analysis," by E. W. Hill.
Linnean Society of London, at 8 p.m.
"Natural Selection the Cause of Mimetic Resemblance and Common Warning Colours," by Professor E. B. Poulton.
"On the Brain of the Edentata (Including Chlamydophorus)," by Dr. Elliott Smith.
"On Limnocarpus, a New Genus of Fossil Plants from the Tertiary Deposits of Hampshire," by Clement Reid.
Liverpool Chemists' Association, at 7.30 p.m.
Annual Dinner (Adelphi Hotel).
North Staffordshire Chemists' Association, at 5 p.m.
Annual Dinner (Copeland Arms Hotel, Stoke).
Royal Institution, at 3 p.m.
"Recent Researches in Magnestism and Diamagnetism" (Lecture III.), by Prof. J. A. Fleming.

Friday, March 18.

Royal Institution, at 9 p.m.
"The Bringing of Water to Birmingham from the Welsh Mountains," by James Mansergh.
Sheffield Microscopical Society, at 8 p.m.
"The Helps and Hindrances of the Microscope as a Scientific Instrument," by William White.

EXCHANGE Offers & Wants

Prepaid Notices not exceeding thirty words, including name and address, are inserted at a fee of Sixpence each, if they do not partake of the nature of ordinary advertisements. For every twelve words (or less) extra, the charge is Sixpence. A price, or two initials will count as one word. The fee for use of the Serle Street address, including re-direction of replies, is Sixpence. The right is reserved to omit any notice if considered necessary. All communications should be addressed "Pharmaceutical Journal," 5, Serle Street, Lincoln's Inn London, W.C., where notices can be received until 10 a.m. on Thursdays.

OFFERED.

Shop Fittings.

Entire Fittings of Chemist's Shop to be sold in one lot or parts; or shop may be rented as fitted. Best offer accepted.—149, Barking Road, Canning Town, E.

Miscellaneous.

Five 5s., 6 2s. 6d, and 10 2s. Chapman's Cattle Oils, good condition. What offers?—Filtness, Chemist, Crowboro'.

Lamp, £3 5s.; Cafe, £3 15s.; Vulcaniser, £2 5s.—Chemist, 84, Park Street, Camden Town.

Books.

'Pharmaceutical Journal,' 1859–1879, 20 vols., bound, 30s.; 'Year-Book Pharmacy,' 1870, 1871, 1873, 2s. each.—"Kentish Gazette" Office, Canterbury.

WANTED.

Wanted, old electric lamps and scrap platinum, or old platinum utensils; utmost value promptly remitted by—P. Rowsell, 14, Walcot Square, Lambeth, London, S.E. (please mention this paper).

Wanted.—*Pharmaceutical Journal*, July 13, August 3, 1895. Full price will be paid for clean and complete copies by the Publishers, 5, Serle Street, London, W.C.

Two 1-gall. swan-neck carboys, 2-grain pill machine, glass show-stand; price and description.—Eagle Tresecot, Gosport.

Wanted.—Nest of Small Shop Drawers, mahogany, about 4½ by 5, must be in good condition. 20 and 30 oz. N. M. Shop Rounds. Casing for Counter Front 6 ft. by 33 in. Syrup bottle 40 oz.—Dignus, "Pharm. Journ." Office, Serle Street, W.C.

The Questions, practical and oral, asked recently at Assistants' Examination, Apothecaries' Hall. State remuneration.—W. Smith, 2, The Avenue, Carmarthen.

GENERAL INDEX to the PHARMACEUTICAL JOURNAL

A general index to the "**Pharmaceutical Journal**" for the seventeen years ending June 29, 1895—including volumes IX. to XXV. of the 3rd series—will be printed by subscription if a sufficient number of orders are received. The subscription price will be one guinea, and a suitable order form is appended for the convenience of intending subscribers.

SPECIAL NOTICE.—If the work is to be proceeded with, it is necessary that orders should be sent without delay to the

Editorial Department, "PHARMACEUTICAL JOURNAL,"

17, Bloomsbury Square, London, W.C.

ORDER FORM.

Please add my name to the list of subscribers for the proposed General Index to the "**Pharmaceutical Journal**," *to be published at the price of one guinea.*

Name.....

Address.....

Date..... *Number of Copies required*.....

The World of PHARMACY Week by Week

A SPECIAL PHOTOGRAPHIC SUPPLEMENT will be published with the *Pharmaceutical Journal* for April 2, and the editor will be glad to receive suitable communications for that issue from photographic readers. Chemists who have dark rooms for the use of customers and stock photographic goods are requested to notify the facts to the Editor as early as possible, and he will also be glad to receive any suggestions as to ways in which the Supplement may be rendered generally useful to readers.

At an Evening Meeting in Edinburgh on Wednesday last Mr. D. B. Dott introduced a discussion on "The Determination of Ash as an Analytical Method," and Mr. J. A. Forret exhibited a Syringe for Filling Capsules (pp. 282, 283, 298).

The President of the Society, Mr. Walter Hills, asked the Bristol pharmacists on Wednesday last to consider what would be the condition of pharmacy in this country if the Pharmaceutical Society did not exist (p. 298).

Mr. G. T. W. Newsholme, Vice-President of the Pharmaceutical Society, has specified a few reasons why the Society is not popular in some quarters (p. 296).

Opposition to the Pharmacy Bill has arisen in an unexpected quarter (p. 300).

Mr. W. A. H. Naylor replies to question No. 12 of the 'Blue List' issued by the British Pharmaceutical Conference *re* the "Alkaloidal Constituents of Cascarilla Bark" (p. 279).

The Histology of Cardamom Seeds is dealt with in this week's issue, being a continuation of the articles on "Practical Pharmacography" (p. 279).

Mr. H. P. Hearder has devised a Simple Mould for Suppositories, an illustrated description of which is given (p. 281).

Palladium Hydrogen was the subject of a paper recently read at a meeting of the Royal Society of Edinburgh by Mr. John Shields. We quote the three theories put forward (p. 281).

'Doctors and Patients: Hints to Both' is the title of a book by Dr. Robert Gersuny, of Vienna, which, together with several others, is reviewed on p. 288.

Messrs. R. C. Cowley and J. P. Catford, at a meeting of the Liverpool Chemists' Association on March 10, described a simple process for "Glucose Determination at the Dispensing Counter," by means of which they think chemists may gain a reputation for smartness (p. 283).

The Double-Staining of Sections with Hæmatoxylin and Safranine is dealt with by Mr. F. A. Upsher Smith (p. 284).

Sir Richard Quain died on Sunday last, and a few particulars of his career are the subject of an editorial note (p. 289).

The Difference of Opinion between Dr. Hesse and Professor Schmidt with regard to scopolamine hydrobromide is the subject of a note on page 290.

Pharmaceutical Education at Aberdeen.—The report of the Education Committe of the Aberdeen Pharmaceutical Association is summarised (p. 290).

Adulteration and Misrepresentation were discussed at a dinner of the London Chamber of Commerce on Tuesday (p. 290).

The Benevolent Fund is the richer by twenty-five guineas, owing to the success of the recent Chemists' Ball (p. 290).

The Remarkable Career of Sir Henry Bessemer ended on Tuesday last. A brief account is given of his lifework (p. 291).

Under the Heading "Pharmaceutical Transactions," reports of various London and provincial associations are given, including several interesting papers on practical pharmaceutical work (p. 292 *et seq.*).

The Melting Point of Soft Paraffins and the Detection of Water in Ether are dealt with by Mr. James Grier (pp. 293, 294).

Several Members of Parliament have sent favourable replies to letters from their constituents asking them to support the new Pharmacy Bill.

Sir Alfred Hickman, M.P. (Wolverhampton) says, "It appears to me that the members of your Society are the best judges as to the government of, and admissions to it, and I am therefore prepared to give the most favourable consideration to any legislation proposed by it."

Mr. P. A. Muntz, M.P. (North Warwickshire): "Your circular shall receive my careful attention."

Mr. J. L. Gibbons, M.P. (South Wolverhampton), writes: "The subject-matter of your letter shall receive my careful consideration."

Mr. F. A. Newdigate, M.P. (Nuneaton), expresses himself as follows: "With regard to the Pharmacy Acts Amendment Bill, which you say is being introduced into the House of Commons by Mr. Smith, I will give the matter my best atttention and consideration. I never like to take upon myself to support any Bill without first hearing the debate thereon, unless it is something before the country about which one has already made up one's mind on one side or the other. If, as you say, the Bill is a non-contentious one, it ought to be got through the House of Commons without much difficulty. In any case, I will give your representations my best consideration."

Colonel Victor Milward, M.P (Stratford-on-Avon), says: "I am in receipt of your circular, but you will be glad to hear I have been well approached by my own constituents on the subject."

Mr. A. Drucker (Northampton), says: "When the Pharmacy Bill comes before the House of Commons again it will have my strong support."

The Western Chemists' Association (of London) had before it on Wednesday the question of the advisability or otherwise of altering its name. For some time past it has been suggested, from outside sources, that the proper style of the body ought to be "The London Chemists' Association," and in order to test the feeling of the members in the matter, the President (Mr. J. H. Mathews) had given notice of his intention to bring the subject up for discussion. This he did in an informal way on Wednesday evening, and in an eminently impartial and judicious manner he put the case for and against the proposed change of name. His audience was a thoroughly representative one, and the members present discussed the question in all its bearings, but not a single advocate of the proposed change presented himself, and the President therefore closed the discussion with the intimation that no further steps would be taken in the matter. At the same time he desired it to be clearly understood that any chemist in business would be welcomed as a member of the Association, which already includes as members chemists in other parts of London than the West End.

NEW IDEAS & TRADE NOTES

BLONDEAU'S NEW TOILET PREPARATIONS.

ON previous occasions we have drawn attention to the attractive manner in which Messrs. Blondeau put up their various toilet articles, and judging from the taste and finish displayed in their latest productions, this firm finds that it is politic not only to study the quality of the various

ingredients employed, but that the dainty and artistic method of enveloping their productions all tends to secure a ready sale for them. The Vinolia Liquid Dentifrice, a tonic astringent, of pleasant taste, compares favourably with the best American and Parisian dentifrices. For those who like a tooth soap Messrs. Blondeau supply an article in flat metal case, delicately perfumed and artistically embossed; the manufacturers remind their customers that it is made in Great Britain. Blondeau's Lavender Smelling Salts in fancy green glass-stoppered bottles, artistically labelled and capped, should sell readily. The Vinolia Toilet Water is another charming production. The Premier Vinolia Pomade, in

screw-topped glass jar, is handy for use; the basis is probably lanoline, and can be recommended to those who require a little extra grease to the scalp when Nature has ceased to secrete the necessary supply. Savon Violettes de Parme is a delightfully scented soap, with the well-known Vinolia basis, and maintains the reputation of this firm, who first achieved their success in the manufacture of high-class toilet soaps.

OREXIN PILLS AND TABLETS.

MESSRS. A. & M. ZIMMERMANN, 9 and 10, St. Mary-at-Hill, London, E.C, send samples of Orexin Pills and Chocolate Tablets. The use of orexin has been found by Dr. Ferdinand Steiner, of Vienna, to be attended with satisfactory results where loss of appetite follows the shock of severe operations, also in tuberculosis, anæmia, and chronic gastric catarrh. The difficulty of dispensing such an intensely bitter substance has been overcome in these pills and chocolate tablets, which are readily taken by all patients.

ON THE P.A.T.A. LIST.

MESSRS. F. BARKER & SON, of Finsbury Park, have placed their Shaving Paper on the P.A.T.A. protected list.

NEWS IN BRIEF

THE INSTITUTE OF CHEMISTRY will hold its annual dinner at the Trocadero Restaurant, Piccadilly, W., on Thursday, April 28, and the chair will be taken on the occasion by the President, Dr. Thomas Stevenson.

THE ROYAL PHOTOGRAPHIC SOCIETY will, as already announced, hold an International Photographic Exhibition at the Crystal Palace this year, and H.R.H. the Prince of Wales has graciously consented to open the Exhibition. We are now asked to notify that the date of the opening of the Exhibition by His Royal Highness has been fixed by him for Monday, April 25, and not Wednesday, April 27, as originally announced. Exhibitors are requested to note, therefore, that the latest date for the reception of exhibits in each section will be two days earlier than that first stated on the prospectus.

A MEMORIAL TO AUGUST KEKULÉ, the famous chemist, is to be erected in the Chemical Institute of Bonn, where he was professor for nearly thirty years. A Committee for this purpose has been formed, of which Privy Councillor von Rottenburg is the Honorary President, and Dr. Curtius, Director of the Chemical Laboratory, the acting President. Contributions should be sent either to the Treasurer of the German Chemical Society, Dr. J. F. Holtz, Müllerstrasse, 170, 171, Berlin, N., or to Consul Jos. Zuntz, Popplesdorferalle, 63, Bonn.

CARBOLIC ACID.—For some inscrutable reason the Privy Council experience an invincible repugnance to placing carbolic acid in the schedule to the Pharmacy Act, in spite of the numerous victims who weekly succumb to the effects of this terrible poison taken accidentally or for suicidal purposes. Carbolic acid is about the most dangerous antiseptic of its kind. It is intensely poisonous, as much so in fact as ordinary prussic acid, it is intensely caustic, and in incautious hands is productive of the most formidable lesions, yet it is allowed to be sold absolutely without restriction. It is some small satisfaction to be informed that the Government contemplate introducing a Bill to regulate the sale of the acid as well as of certain other poisonous substances, but until we know what are the safeguards to be introduced it is impossible to regard the matter as having been disposed of. The only explanation we can suggest of the supineness of the Government in respect of carbolic acid is a desire to avoid restricting the sale of the drug to qualified chemists, which might excite a feeling of hostility among the grocers and oilmen who at present dispense the poison with indiscriminating hands.—*Medical Press and Circular.*

THE FUNERAL OF SIR RICHARD QUAIN took place at 4 o'clock on Wednesday afternoon at Hampstead Cemetery. A large number of guests and others assembled at 67, Harley Street during the afternoon, and the coffin was covered with a mass of beautiful wreaths. Other floral tributes sent by Sir Richard's many colleagues and friends filled a large car which preceded the hearse. The hearse was followed by about fifty private carriages containing the principal mourners. Among those at the graveside were Lord Rathmore, Sir Samuel Wilks (President of the Royal College of Physicians), the Registrar of the College and several of the Censors, Sir H. Thompson, Sir Squire and Lady Bancroft, Sir Dyce Duckworth, Sir W. Roberts, Mr. Inderwick, Q.C., Mr. Brudenell Carter, Dr. Mitchell Bruce, and many other prominent medical men. Mr. Walter Hills, President of the Pharmaceutical Society, was unable to be present, owing to a prior engagement at Bristol, but Mr. and Mrs. Hills were amongst those who sent wreaths.

THE NEXT CINDERELLA DANCE of the Chemists' Assistants' Association will be held on Thursday, March 24, at the Dorset Hall, Portman Rooms, this being the last Cinderella of this session. Tickets may be obtained from the Hon. Secretaries, Mr. H. H. Robins, 113, Ridley Road, Forest Gate, and Mr. F. Cooper, 48, Baker Street, W.

PLYMOUTH, DEVONPORT, STONEHOUSE AND DISTRICT CHEMISTS' ASSOCIATION.—In connection with the above, a smoking concert was held at the Balfour Hall, Plymouth, on Wednesday, March 9. Owing to the absence (through indisposition) of Mr. J. H. Bailey, the chair was taken by the President (Mr. J. Cocks), and a most enjoyable time was spent by a company numbering about seventy. The arrangements were admirably carried out by the following committee: Messrs. Jas. Cocks (President), F. Maitland, H. Reynolds, E. T. Cocks, with E. W. H. Green and H. C. Cantle (Hon. Secretaries).

MICROBES AND SANITATION.—Mr. F. W. Richardson, the Bradford City analyst, gave a lecture recently at Bradford on "Microbes and Sanitation." Alderman Willis Wood presided. The lecturer, by means of lantern slides, elucidated the subject of the nature and distribution of germs. The principal zymotic and contagious diseases received full treatment, and the diminution of the death-rates was shown to be concomitant with improvements in sanitation. He described typhoid fever as "filth disease," one day to be blotted out through the final abolition of insanitary conditions. Sewer gas was undoubtedly responsible for the spread of typhoid, sometimes directly and in other cases by its potent action in reducing the vital resistibility of the organism. Bad plumbing in the way of defective drains and traps had very much to be responsible for, and the examination and

registration of plumbers was a sign of real progress. Tubercular consumption can be largely prevented, and the importance of preventing promiscuous expectoration on the part of consumptives was emphasised. The other chief infectious diseases were considered in brief, and the best methods of sanitary prevention were outlined.

Legal Intelligence.

A Trade Mark Action.—On Saturday last the action of Pullen *v.* The British Medicinal Capsules Company, Limited, and W. J. Rendell's Trade Mark, No. 182,688, came become Mr. Justice Romer in the Chancery Division of the High Court of Justice. Mr. Ingpen said the action was brought to restrain the defendants from passing off certain medicated articles as and for the plaintiff's. An injunction had been already granted, and the motion of the defendants to expunge plaintiff's trade mark was directed to come on with the action. The defendants had consentcd to a perpetual injunction, and to deliver up all boxes and labels, and to pay the costs of the action. It had also been arranged that the motion to expunge the trade mark should be dismissed with costs. Mr. F. G. Hart appeared for the defendants. His Lordship made an order in the terms agreed.

Messrs. T. Christy & Co., of Lime Street, E.C., have instituted proceedings against Mr. Max Schliephak, of Victoria Street, S.W., in consequence of an infringement of their patents in the Morstadt Cachet Apparatus. We are informed that the defendant has consented to an order for a perpetual injunction being made against him, and has expressed his regret at having unintentionally infringed Messrs. Christy's rights.

Sale of a Chemist's Business.—In connection with the brief report of the proceedings in the case of Faithfull *v.* Kemp, published in last week's Journal (p. 276), we are asked to explain that a claim for £1000 damages was put forward by Mr. Faithfull in respect of the sale of Kemp's chirata preparations, the property in which, however, had been expressly and absolutely reserved by Mr. Kemp in the memorandum of agreement. The claim was withdrawn when the case came into court, and the decision of the Judge accorded exactly with an offer made by Mr. Kemp to Mr. Faithfull before the hearing. His Lordship said: "I do not think I can do better than follow the terms which both parties very nearly agreed to, and that is, the plaintiff to have the costs of the action, and the defendant the costs of the counter-claim." The counter-claim—Kemp *v.* Faithfull and James Wylie—was in respect of a promissory note accepted in payment of the balance of the purchase money for the business in question, with interest and rent due.

Pilfering a Londonderry Chemist.—On Monday last, March 14, Patrick Devine, who was in the employment of Mr. T. J. Rainey, chemist and druggist, Londonderry, as a messenger, was charged with the larceny of a number of articles, including hair brushes, nail brushes, sponges, paints and paint-brushes, tablets of soap, and other articles to the value of £40 from the shop of his employer. He was sentenced to three months' imprisonment with hard labour. On the application of Mr. O'Doherty, the magistrates agreed to make the sentence date from the time of arrest. Cases against John Slevin, dealer, and William Sheills, stall-keeper, for receiving the goods were adjourned.

At the Bradford County Court on Tuesday, March 15, before His Honour Judge Bompas, Q.C., Elizabeth Hamilton sued Herbert Bairstow, 264, Barkerend Road, Bradford, to recover a sum of 30s., the price of a set of artificial teeth.—In the course of evidence it appeared that in 1892 the defendant undertook to make a set of teeth for the plaintiff for £2 10s., and 7s. 6d. for painless extractions. The teeth were paid for but had never fitted, and after the plaintiff had taken them many times to be altered, they could not be made to fit; thereupon she got another dentist to make her a set, for which she paid 30s., the amount sued for. — The defendant admitted that he was not a registered dentist, but claimed to be a chemist, although his name does not appear on the Register of Chemists and Druggists for 1898. Judgment was given for the plaintiff for the amount claimed.

Personal Notes.

Messrs. W. McEwen and E. Lawrence have been presented with handsome gifts on the occasion of their leaving the employment of Messrs. Frazer & Green, Ltd., of Glasgow. The presentation was made on the 28th ult., and took the form of a gold-mounted umbrella and pocket-book to Mr. McEwen (who enters on an engagement with Messrs. Squire & Sons, London), whilst a pipe and tobacco-pouch was presented to Mr. Lawrence. Mr. Hunter made the presentations, and the two gentlemen expressed their appreciation of the gifts in fitting terms. Thereafter songs and recitations were rendered by various members of the company, and the proceedings terminated with a vote of thanks to Mr. Jas. Robb, who presided.

Mr. John Laurence, who has recently resigned his position as manager of Messrs. Frazer and Green's Sauchiehall Street branches, was waited on last week by a deputation representing the assistants of the firm, and presented with a gold-mounted walking-stick as a memento of their long and pleasant intercourse with him. The engraved band bore the inscription "To John Laurence, Glasgow. February 28, 1898," and was the workmanship of Messrs. George Edward & Sons, Her Majesty's goldsmiths in Glasgow.

Football.

Pharmaceutical Football Club.—The present season's list of fixtures will terminate on Saturday, March 26, with the Old Boys Match. The game will be played at Wormholt Farm, and will be followed by a smoking concert at the Bush Hotel, Goldhawk Road.

Marriages.

Snow—Towse.—On Thursday, March 10, at the Parish Church, Filey, by the Rev. A. N. Cooper, Charles Metcalfe Snow, chemist and druggist, Bradford, to Annie Elizabeth Towse, daughter of Mr. Samuel Towse, the postmaster of Filey.

Business Change.

Messrs. Clift & Crow's premises, Lee Bridge, Lewisham, having been acquired by the London and Midland Bank, Limited, they have removed their business to the house next door, which they have refitted as a most complete pharmacy.

PARTNERSHIPS DISSOLVED.

(From the London Gazette.)

George Stanton and Herbert Sumpter (trading as Gibbs & Atkins), Chemical Manufacturers, 17, Lewis Road, Loughborough Junction, London, S.W. Debts will be received and paid by Herbert Sumpter.

Joseph S. Revely and John J. Vernon, Physicians and Surgeons, 25, Greek Street, and Turncroft Lane, Stockport. Debts will be received and paid by John H. Vernon.

John Fellowes Wallop and Geo. Hewett (trading as Thomas Mayo & Co.), Mineral Water Manufacturers, 23, Augustus Street, Regent's Park.

RECEIVING ORDER IN BANKRUPTCY.

(From the London Gazette.)

Alexander R. Dodd, Surgeon, 24, Montagu Street, Portman Square, W.

NEWCASTLE CHEMICAL REPORT.

March 16, 1898.

There is very little change on this market. Inquiries are fair for spring movements for the Upper Baltic ports, but so far not much actual business is booked for heavy chemicals. Prices are:—Bleaching Powder, £6 5s. to £6 10s. Soda Crystals, basis, 45s. to 57s. 6d. Caustic Soda, 70 per cent. basis, £7 10s. to £7 15s. Soda Ash, 52 per cent., £4 5s. Alkali, 52 per cent., £5 5s. Sulphur, £4 15s. Sulphate of Ammonia, £9 7s. 6d., all ports.

ADVERTISEMENT

(Received too late for Classification).

Rectification of the Register

In Accordance with the Pharmacy Act, 1868.*

The names given hereunder are those of persons whose addresses are unknown to the Registrar, and communications sent to them have been returned through the post. The Registrar therefore desires to make known as widely as possible that any registered person who fails to communicate his whereabouts, is, under Section X. of the Act, liable to have his name erased from the Register :—

Those marked * are Pharmaceutical Chemists.

Adams, Walter	Church Street, Chesham.
Adcock, William	Back 64, Ladywood Road, Birmingham.
Alexander, Ernest Glover	Opposite Carlisle Hotel, Manningham, Bradford.
Allen, John Wilfred	41, Roseberry Street, Liverpool.
Anderson, Edward Ellice	183, High Street, Battersea, London, S.W.
*Appleton, Robert	Hawthorn, near Melbourne, Victoria.
Ashford, Francis	Deptford High Street, London, S.E.
Atkinson, Robert John	45, Harcourt Street, Newcastle-on-Tyne.
Baillie, Janet	Tranent, Haddingtonshire.
*Baldwin, Arthur Henry	40, Peascod Street, Windsor.
Balfre, Juan Morday	1, Reporton Road, Fulham, London, S.W.
Banfield, Harold	26, Urswick Road, London, N.E.
Banks, Benjamin	23, Comerford Road, Brockley, London, S.E.
Banks, James Dinsdale	Kington, Hereford.
Bardill, Draper Welch	St. Peter Street, Derby.
Bartle, William Thomas	5, Market Place, Brigg, Lincs.
Bartlett, Percy John	"Elstree," Hawk Rd., Upper Norwood, London, S.E.
*Baugh, John William Mahanoora	Leinster House, Bexley Heath.
Beesley, Thomas	203, Clapham Road, London, S.W.
Belcher, Robert Brown	6, St. Peter's Street, Stapenhill, Burton-on-Trent.
*Bennett, George	10, New Bridge Street, York.
Bentley, Charles Saville	136, Hanover Street, Sheffield.
Beynon, Benjamin	125, High Street, Swansea.
Bosustow, Frederick Samuel Matthews	12, Morrab Road, Penzance.
Bowden, Ambrose	13, Charles St., St. James's, London, S.W.
Brightmore, Walter	102, Parade, Leamington.
Bromwich, Thomas	82, Shepherdess Walk, London, N.
Browell, John James	11, Everton Road, Birkdale, Southport.
Brown, Thomas	62, Church Street, Seaham Harbour.
Brown, William Herbert	High Street, Totton, Hants.
Bruce, Harvey	Wilson St., Kangaroo Point, Brisbane, Queensland.
Buck, Charles Burton	8, Lower Brook Street, Ipswich.
Burch, Libbis Napier	26, Bowker Street, Higher Broughton, Manchester.
Burnham, Charles John, jun.	11, Axe Street, Barking.
Burrows, Frank	145, Chesterton Road, Cambridge.
Bush, George	High Street, Chelmsford.
Calkin, John Ernest	16, Rollestone Street, Salisbury.
Campion, Rowland	166, High Street, Deritend, Birmingham.
*Carr, Tom Wormald	The Grange, Minskip, Boroughbridge.
Carrie, Robert Smith	113, Murray Gate, Dundee.
Carroll, George	42, St. Werburgh's Park, Bristol.
Casey, Edward	55, Little Lever Street, Manchester.
*Chabôt, Frank	27, Grosvenor Road, Tunbridge Wells.
Challis, Frank	66, Lowth Road, Denmark Hill, London, S.E.
*Chapman, Joseph George	P. O , Boston, U.S.A.
Charlton, Thomas Dixon	104, Newgate Street, Bishop Auckland.
Cheyne, William Alexander.	31, Panmure Place, Edinburgh.
Child, Thomas	84, Wellington Road, New Wortley, Leeds.
Chippendale, John Richard.	17, Well Street, Gray's Inn Road, London, W.C.
Clarke, Peter Thomas	7, Bridge Place, Edinburgh.
Clue, George May	312, Fratton Road, Portsmouth.
Cockerill, Thomas	81, North Street, Ripon.
Cocking, Frederick John	The Hawthorns, Alvingham, near Lough.
Colebank, John	Fernworth Cottage, Graham St , Longtown, Cumb.
Coleman, Friend	44, Wood Vale, Lordship Lane, London, S.E.
Cookson, Joseph	115, Bridge Street, Bradford, Yorks.
Cooper, Edwin	Bracebridge, Simcoe, Canada
Cory, James Thomas Haines	9, Red Cross Street, London, E.C.
Count, Sydney	17, High Street, King's Lynn.
Cox, Arthur Wellesley	Bishop Sutton, Alresford, Hants.
Creasser, Matthew	Aldborough, Yorks.
Crichton, George	481, St. Vincent Street, Glasgow.
Cross, Robert	15, Drake Street, Rochdale.
Crossland, George	63, Kenworthy Street, Stalybridge.
*Cuff, George Henry	25, College Green, Bristol.
*Cule, Taliesin	Dynevor House, Pontypridd, Glamorganshire.
Darley, Edward	Earlstown, Newton-le-Willows.
Davies, Daniel Evan	34, Oxford Street, Mountain Ash, S. Wales.
Davies, George Edward	33, Broad Street, Welshpool.
Davison, William Henry	66, High Street, Hastings.
Daykin, Thomas	Pateley Bridge, Yorks.
Denton, Henry Thomas John	128, Exeter Street, Plymouth.
Dickinson, William	1, Queen's Gardens, Bayswater, London, W.
Dillon, Charles Linder	420, Main Street, Buffalo, New York State.
Dismorr, Henry	42, Windmill Street, Gravesend.
Dorsey, Martin	11, Eresby Road, Kilburn, London, N.W.
Dunn, Daniel	129, Belle Vue Road, Leeds.
Eaton, Robert	40, Chatburn Road, Clitheroe, Lancs.
*Edwards, William	Pleasley Hill, Mansfield, Notts.
Elliott, George Henry	10, Ilbert Street, Plymouth.
Ellis, Charles Edward	High Street, Thornbury, Gloucestershire.
Ellis, Walter	Thornbury, Gloucestershire.
Endall, Edward Albert	5, Southwater Road, St. Leonards.
Errington, William	10, Oakwood St., Whetley Hill, Manningham, Yorks.
Evans, Barrow	Curzon Street, Derby.
Evans, Thomas	22, Brunswick Street, Swansea.
Evans, William Willoughby	8, Lascelles Terrace, Eastbourne.
Fenton, John Mailler	Cakwood, Waterloo, Ashton-under-Lyne.
Field, Reeve Holyoake	35, Trinity Square, Borough, London, S.E.
Filmer, John Honeywood	26, King Street, Plymouth.
*Ford, James	20, Hill Street, Montrose.
Forrester, Thomas	41, Drumsheugh Gardens, Edinburgh.
Foster, Alexander John	St. Margaret's Banks, Rochester.
Fowles, Frederick William	94, Edinburgh Road, Liverpool.
Francis, George	Market Place, Romsey, Hants.
Franklyn, Thomas	Westcroft, West Street, Brighton.
Frater, Mark W.	3, High Street, Salisbury.
Frost, John Arthur	Bedford Villa, Hartington Street, Derby.
Gant, Robert Boddy	39, Artillery Place, Woolwich.
Garforth, John	14, Netherthorpe Street, Sheffield.
Garner, Thomas	75, Allen Road, Stoke Newington, London, N.
Geldart, John	23, Netherfield Road N., Everton, Liverpool.
Gelston, Percival John Neill	39, Deansgate, Manchester.
Gibson, James Edward	107, London Street, Reading.
Gibson, Mary	Redcar, Yorks.
Gilmour, Andrew	451, Stockport Road, Longsight, Manchester.
*Goss, George	62, Tweedy Road, Bromley, Kent.
*Goucher, John	21, Beaconsfield Villas, Brighton.
Grant, John Ashlin	129, Hainton Street, Great Grimsby.
Green, John	16, New Heath Street, Hampstead, London, N.W.
Green, Robert	23, Hare Street, Woolwich, London, S.E.
*Green, Walter	288, Elgin Avenue, London, N.W.
Greenhalgh, Clifton	48, Ludlow St., Chorlton-on-Medlock, Manchester
Greenwood, John Tatam	Woodville, near Burton-on-Trent.
Griffiths, Charles John	20, Thames Street, Kingston.
Griffiths, Henry Thomas	10, Victoria Street, Clifton, Bristol.
Haddon, John	Stockdale Street, Kimberley, South Africa.
Haining, Edward	81, Montague Street, Sheffield.
Harding, Christmas	151, Hoxton Street, London, N.
Harradine, Henry Ground	65, Load Street, Bewdley, Worcestershire.
Harrison, Christopher	53, Chapel Street, Prahran, Melbourne, Victoria.
Harrison, Thomas Henry	29, Causeyside, Paisley.
*Haworth, Benjamin Henry	37, Portman Street, Moss Side, Manchester.
Haynes, Alexander	25, Park Street, Derby.
*Hayward, Walter Edwin	Cambridge House, Castlemére Street, Rochdale.
Hill, Robert Bryden	15, West Richmond Street, Edinburgh.
Hindle, John	Oulton Broad, near Lowestoft.
Hircock, George Walter	Montague Street, Kettering.
Hollingworth, Oliver Albert	2, Corporation Street, Barnsley.
Holt, John	83, Clowes Street, West Gorton, Manchester.
Hopkinson, Stephen	1, Soresby Street, Chesterfield.
Howard, Henry	Colkirk, Norfolk.
Howorth, Frederick Arthur	36, Great Avenham Street, Preston.
Hoyle, John William	96, St. James Road, Southsea.
Hughes, George	50, Paddington, Liverpool.
Hughes, William Charles	151, Hoxton Street, London, N.
*Hulme, Richard Gleave	9, Bruton Street, Berkeley Square, London, W.
Hunt, Archibald James	59, St. Mary's Butts, Reading.
Huntley, George Frederick	The Square, Wimborne, Dorset.
Inman, Joseph Henry	53, Gloucester Street, Sheffield.
Jackson, Henry Frederick	1369, St. Catherine Street, Montreal.
James, John	35, Trinity Square, London, S.E.
Jeffery, Elias	94, Richmond Road, Barnsbury, London, N.
Jeffries, Gilbart	39, Victoria Road, Peckham, London, S.E.
Jenkins, William Thomas	12, Princes Row, Victoria, London, S.W.
Jessop, Jonathan	4, Clare Road, Halifax, Yorks.
Johnson, Fletcher Atkinson	30, Darley Street, Bradford.
Johnson, Frederick	142, Kingsland Road, London, E.
Johnstone, James	218, Kentish Town Road, London, N.W.
Jones, Edward	Board School House, Corris R.S.O., Merioneth.
Jones, Edward David	Foregate Pharmacy, Chester.
Jones, Edwin	28, Scotland Street, Ashton-under-Lyne.
Jones, Henry David	2, Bridge Street, Newcastle Emlyn.
Jones, John Daniel	Southend House, New Court, Llanybyther.
Jones, John Rothwell	21a, York Place, Edinburgh.
Jones, Thomas	Accra, West Coast of Africa.

* X.—"It shall be the duty of the Registrar to make and keep a correct Register, in accordance with the provisions of this Act, of all persons who shall be entitled to be registered under this Act, and to erase the names of all registered persons who shall have died, and from time to time to make the necessary alterations in the addresses of the persons registered under this Act ; to enable the Registrar duly to fulfil the duties imposed upon him, it shall be lawful for the Registrar to write a letter to any registered person, addressed to him according to his address on the Register, to inquire whether he has ceased to carry on business or has changed his residence,—such letter to be forwarded by post as a registered letter, according to the Post Office regulations for the time being ; and if no answer shall be returned to such letter within the period of six months from the sending of the letter, a second, of similar purport, shall be sent in like manner ; and if no answer be given thereto within three months from the date thereof, it shall be lawful to erase the name of such person from the Register, provided always that the same may be restored by direction of the Council of the Pharmaceutical Society, should they think fit to make an order to that effect."

Jones, William Nathanael ..	62, Albion Road, Stoke Newington, London, N.
Joy, Thomas George.....	Queen's Road, Hong Kong.
Kay, John	Corner of Workman St. and Hawkins St. East, Los Angeles, S. California.
Keall, Francis	33, High Street, Ilfracombe.
Kenward, Robert	63, Arundel Street, Landport.
Kerr, George Jobling	Derby Road, Huyton, near Liverpool.
Keys, Sydney Hudson.....	48, Waldemar Avenue, Fulham, London, S.W.
Kilkenny, Andrew	1, Well Street, Wellclose Square, London, E.
*King, Arthur	8, West Parade, Norwich.
Laidlaw, Walter.....	Church Street, Romsey.
Laurence, Henry French....	48, Victoria Road, Seacombe, Liverpool.
Leal, Alexander.....	17, North Bridge, Edinburgh.
Lees, David	108, West Regent Street, Glasgow.
Leslie, George.....	101, St. Mary's Road, Sheffield.
Lester, Theodore Christopher	Skipsea, Hull.
Lewis, David	23, Richards Street, Cathays, Cardiff.
Lewis, William Spencer	Castle View, Castle Street, Kendal.
Liddle, Thomas Martin	11, Bridge Street, Middlesborough.
Lightfoot, John.....	43, Strand Street, Cape Town, South Africa.
Linay, William Thomas Marshall	2, Fernhead Road, London, W.
Lindley, Henry	57, South Street, Moor, Sheffield.
Littlefair, Thomas.....	2, Gladstone Street, Cornholme, near Todmorden.
Lowe, Walter	29, Bryom Street, Manchester.
Lucraft, William Henry	Broad Clyst, Exeter.
McAllister, Robert Dempster	70, Radford Boulevard, Nottingham.
*McClumpha, Robert	4, Strawberry Place, Newcastle-on-Tyne.
McConochy, John	3, Thorburn Square, Bermondsey, London, S.E.
McDonald, Alexander Minto	14, Gladstone Terrace, Edinburgh.
MacDonald, Donald Ewen ..	52, Rydal Road, Lancaster.
McIntyre, James	Ballintomb, Grantown-on-Spey, N.B.
McKenzie, Alexander Thomas	102, Parade, Leamington Spa.
McKenzie, Charles.....	36, Pembroke Street, Glasgow.
McKenzie, James	49, High Street, Hampstead, London, N.W.
Macleod, Thomas	154, Broomielaw, Glasgow.
McMillan, James	69, Dombey Street, Toxteth Park, Liverpool.
McNeil, Margaret	220, Sauchiehall Street, Glasgow.
Maddock, Herbert.....	The Elms, Walmer Road, Birkdale, near Southport.
Malcolm, Alexander.....	125, Victoria Road, Dundee.
Mangnall, Thomas..... ..	Park View, Phillips Park Rd., Bradford, Manchester.
Mansergh, William	451, Stockport Road, Manchester.
Marrett, Charles Ayton	Norwich Road, Wisbech.
Marshall, Alexander James	High Street, Linlithgow.
Marshall, George	Alexander Terrace, Birtley, Durham.
Marshall, Robert	15, Regent Place, Abbeyhill, Edinburgh.
Martlew, Ernest Hercules ..	22, Clifton Villas, Camden Square, London, N.W.
Mason, Henry Humble	65, Old Street, London, E.C.
Maw, Solomon Gervas.....	Rotherham.
May, James	42, South Clerk Street, Edinburgh.
May, John	Garden Wharf, Battersea, London, S.W.
Mercer, George Thomas	Wooler, Northumberland.
Messer. Frederic	49, Berners Street, London, W.
Mitchell, James.....	16, St. Saviour's Road, Croydon.
Mitchell, William	6, Cornbrook Street, Old Trafford, Manchester.
Moody, William Morton	6, Queen Street, Louth.
*Morgan, William Ellis	Normanhurst, Llandudno.
Morris, Sarjeant Witton ..	Upper Fore Street, Edmonton, Middlesex.
Mould, Charles	225, Katherine Street, Ashton-under-Lyne.
*Naylor, Thomas Hamilton	120, Malvern Road, Prahan, Melbourne, Australia.
*Neve, Francis Charles	48, Dingwall Road, Croydon.
Newton, John Titus..... .	202, Moseley Road, Birmingham.
Nicholls, Arthur Lindley .	4, Victoria Street, Ventnor.
Nichols, William Hartley ..	46, Huntspill Street, Tooting, London, S.W.
Nicholson, Walter Joseph ..	29, Congreve Street, Birmingham.
Nicholson, William Ostler ..	13, Granville Square, London, W.C.
Ockenden, James	149, High Street, Notting Hill, London, W.
Ogilvie, James Hay	27, Henning Street, Battersea, London, S.W.
Oldfield, Herbert	71, New Square, Chesterfield.
Olds, Arthur Charles	75, Shaw Street, Liverpool.
*Olliver, George Edward ..	Shillington, Hitchin.
Onion, Hannah Maria	Poyntington, West Hill Road, Bournemouth.
Oswell, William Henry	19, Almond's Green, West Derby, Liverpool.
Otley, John	12, Parker's Road, Sheffield.
Padley, William	170, Clarendon Street, South Melbourne, Australia.
Parker, Charles	Main Street, Kirkby Lonsdale.
Parker, Henry George	Dalkeith Place, Kettering.
Parkinson, Christopher	King Street, Blackburn, Lancs.
Parry, Alfred	27, Crewdson Road, Brixton, London, S.W.
Paterson, Alexander	Kimberley (Box 206), S. Africa.
Patrick, Herbert Waring ..	High Street, Rushden.
Patterson, James	560, Commercial Road, London, E.
Patterson, John.....	206, Morrison Street, Edinburgh.
*Peacock, William Henry ..	52, Ivanhoe Road, Denmark Park, London, S.E.
Pearce, Edward Edwin	2, Mary Street, Southwick, Durham.
Pentney, James Chapman ..	15, St. Benedict's Street, Norwich.
Pereira, Frederick Arthur ..	16, Wellington Road, Barnsbury, London, N.
Phillips, George Henry	5, The Pavement, Merton Road, Merton.
Pickard, James	Leeds Road, Bradford, Yorks.
Pickering, Richard	4, Hall Street, St. Helens, Lancs.
Pool, George	5, Honor Oak Rise, London, S.E.
Poyser, Robert	West Kent General Hospital, Maidstone.
Pratt, Francis.....	39, Alexandra Road, Selhurst, London, S.E.
Pridgeon, Henry Paccy	151, Grove Green Road, Leytonstone, London, N.E.
Priest, Benjamin William ..	14, Parliament Street, Westminster, London, S.W.
Priestley, John Andrew	Napier Street, Bradford, Yorks.
Pring, Charles Herbert	41, High Street, Bristol.
Pye, John	Barrington Road, Brixton, London, S.W.
Radford, Thomas Charles ..	Ferrybridge, Yorks.
Reboul, Anthony Percy	60, Liverpool Road, N.
Rees, John	285, Bute Street, Cardiff.
Rees, Llewellyn Vosper	11, Woodwell Crescent, St. George's Road, Bristol.
*Richards, Thomas	Station Road, Porth, Glam.
Rishworth, Henry	Aberford, Yorks.
Robins, John..	Framlingham, Suffolk.
Robinson, Charles Montague	Church Street, Attleborough, Norfolk.
Robotham, George Henry ..	54, Dale End, Birmingham.
Rothwell, William Thomas	50, Manchester Road, Heywood.
Royal, Andrew	203, County Road, Liverpool.
Royse, Alfred.....	Middleton, near Manchester.
Ryan, Walter Thomas.....	1, Sandringham Villas, Weston-super-Mare.
Sampson, Nicholas Mackey	18, Pomona Place, Walham Green, London, S.W.
Sanderson, James Boyer ..	Barnack, Northamptonshire.
Saunders, William John	34, Surrey Square, London, S.E.
Savege, Ernest	50, George Street, Croydon.
Sclater, John George	15, Livingstone Place, Edinburgh.
Scott, Malcolm	45, South Clerk Street, Edinburgh.
Scruby, John Charles	3, Holcroft Road, South Hackney, London, N.E.
Shadford, Major	9, Abbey Street, Derby.
*Sharp, David Blakey	Tavistock Place, Borough Road, Sunderland.
Silverwood, Joseph	Elm House, Shelley, near Huddersfield.
Sime, William	21, Cathcart Place, Edinburgh.
Simpson, Robert	177, Crown Street, Aberdeen.
Simpson, Thomas	3, Park Cottage, Brighton Road, Croydon.
Skeates, Frank	14, Shaftesbury Avenue, Lower Weston, Bath.
Skirrow, Frederick James..	Burton Villa, Burton Road, Withington.
Smith, Charles	81, Bishopgate Street, London, E.C.
Smith, John Barker.....	High Street, Dulwich, London, S.E.
Snell, Charles Henry	East House, Church Street, Stoke Newington, London, N.
Sollitt, Arthur	Shipton Street, Clifton, York.
Southam, Stanley.....	92, Upper Lloyd Street, Moss Side, Manchester.
Spence, George	68, George Street, Oxford.
Stamford, Frederick	Manor House, Skidby, Hull.
Stanfield, Francis Parkin ..	Sheffield.
Stedman, Charles Richard..	1, The Pavement, Surbiton.
Steer, James Herbert	35, High Street, Sheffield.
Stenson, Joseph.....	116, High Street, Camden Town, London, N.W.
Stephens, Thomas Fowle ..	49, Wells Street, Oxford Street, London, W.
*Stoneham, Philip	56, Ashmore Road, St. Peter's Park, London, W.
Strachan, Binny	63, White Post Lane, Manor Park, Essex.
Stubbs, Thomas Shaw.....	22, Nicholas Street, Bristol.
Sturt, Clifford Henry	Leeds Road, Dewsbury.
Sutton, Allan	80, Holt Road, Liverpool.
Sykes, John.....	50, Houghton Street, Southport.
Taylor, Edward	Lower Brailes, Shipston-on-Stour.
Taylor, Henry Pearson	Shawdon Lodge, Alnwick.
Taylor, Philip Neville	Charters Towers, Queensland, Australia.
Taylor, Thomas Ernest	St. John's Theological College, Highbury, London, N.
Thacker, Henry Ransley ..	164, St. Ann's Well Road, Nottingham.
Thom, John.....	99, High Road, Streatham, London, S.W.
Thomas, Frederick William..	5, Fitzhugh Place, Southampton.
Thompson, Wilson	15, Sneinton Hermitage, Nottingham.
Thomson, George William ..	Brighton, near Melbourne, Victoria.
Titmas, John Herbert	51, Long Street, Middleton, Lancs.
Tomlinson, George	Waddingham, Lincolnshire.
Tonlson, James Augustine Hartley	136, North Street, Leeds.
Townend, George Frederick	6, Newlands Ter., Byne Rd., Sydenham, London, S.E.
Troughton, Reginald	16, Bolton Road, Kearsley, near Bolton.
Tupholme, John James	De Beer's Road, Kimberley, South Africa.
Venables, George	14, Ordnance Road, The Hard, Portsea.
Waddy, Ernest Alfred	Dover.
Wadsworth, Edgar	Birk House, Dalton, Huddersfield.
Walker, George	Athol House, Milward Road, Hastings.
Wallis, John.....	"Collingbourne," Christchurch Road, Boscombe.
Wallis, William	Little Ouseburn, York.
Walton, John	1, Bishop's Avenue, Newcastle-on-Tyne.
Warburton, William.....	28, Bolton Street, Ramsbottom.
Ward, Thomas Rowland	11, Russell Street, Manchester.
Wardle, Martin Cook	14, Parliament Street, Middlesborough-on-Tees.
Watson, Thomas Bell	West Street, New Alresford, Hants.
Weir, James Anthony	2, Heaton Terrace, Heaton.
Weir, Thomas	Biggar, N.B.
Wellington, Frederick	St. James's Street, South Petherton, Somerset.
Wells, Robert Joseph	3, Linden Avenue, Kensal Rise, London, W.
West, Arthur Thomas Taylor	High Street, Barrow.
Wheeldon, Joseph, jun.	90, Warde Street, Hulme, Manchester.
Wheeldon, William Henry ..	42, Crompton Street, Derby.
Wheeler, Alfred	23, Hartington Road, Brighton.
Whelpton, Robert	30, Defoe Road, Tooting, London, S.W.
White, Frederick Ernest....	141, Pear Tree Road, Derby.
White, William Stokoe.....	268, Waterloo Road, Cheetham, Manchester.
*Wild, George Herbert	57, Cranmer Road, Forest Gate, London, E.
Wildman, Harry George....	The Industrial Schools, Feltham.
Williams, George	141, Upton Lane, Forest Gate, London, E.
Williams, Herbert Edward..	44, Wind Street, Swansea.
Williams, Llewellyn.....	Llangoed, Anglesea.
*Williams, William	7, Pool Street, Carnarvon.
Wine, John Alfred	Hospital for the Insane, Yarra Bend, Melbourne, Victoria.
Wood, Frederic Percy	Victoria Bridge, Manchester.
Woodland, Walter Bayly ..	38, Doddington Grove, Kennington, London, S.E.
Worfolk, Alfred Egbert	818, Holloway Road, London, N.
Wright, George	Buckie, N.B.
Wright, Joseph Newton	Ecclesfield House, Crescent Road, Reading.
Wynhall, George John Reynolds	Melton Villa, Church Rd., Willesden, London, N.W.
Young, Dixon.....	South Otterington, Northallerton.
Young, James John	Midsomer Norton, Som.

MARKET REPORT and Prices Current

Specially compiled for the Pharmaceutical Journal

The quotations here given are in all cases the lowest cash prices for bulk quantities, and often the articles quoted have to be sorted in order to suit the requirements of the retail pharmacist. The cost of freightage from the chemical and drug works to the various distributing centres must also be considered. It is important that these conditions should be borne in mind in making any comparison between the prices quoted and those of the wholesale drug trade.

LONDON REPORT.

MARCH 17, 1898.

The past week has again passed off very quietly as regards business in drugs and chemicals, there having been but little doing, while there are practically no changes of importance to report. Quinine is dull. Cocaine fairly steady. Sulphonal expected to be dearer. Phenacetin and Acetanilide quiet. Codliver Oil dearer for new Norwegian, owing to reported limited catch. Quicksilver and Mercurials, Iodine and Iodides, Bromine and Bromides without change. Ipecacuanha very firm. Cream of Tartar firm and dearer. Acid Tartaric dull. Acid Citric firm and the turn harder in price for spot, there being no sellers of quantity for forward delivery. Acid Boracic and Borax dull and weak. Sulphate of Ammonia again lower. The following are actual prices :—

ACETANILIDE—Steady at 1s. 2d. to 1s. 3d. per lb., according to quantity.

ACID BORACIC—Very dull at 23s. to 24s. per cwt. for *crystals*, and 25s. to 26s. per cwt. for *powder* on the spot.

ACID CARBOLIC—Remains quiet at 6¾d. for 35/36° C. *Ice crystal* in large drums and overcasks and for large quantity, other qualities and packing in proportion. *Crude* 60° F. 2s., 75° F. 2s. 7½d. per gallon. *Liquid*: 95 per cent. of pale straw colour 1s. 3d. per gallon in 40-gallon casks.

ACID CITRIC—Is very firm on the spot, but a limited business only is passing at 12½d. to 12¾d. per lb. for *crystals*.

ACID TARTARIC—Dull at 1s. 1d. per lb. for *English* crystals, and 12½d. per lb. for *foreign*.

AMMONIA COMPOUNDS.—*Sulphate* is lower and market is very flat. Gray prompt 24 per cent., London, £9 5s. per ton. *Bromide* steady at 2s. 1d. to 2s. 2d. per lb. *Iodide* firm at 13s. 4d. per lb. *Sal ammoniac* unchanged at 35s. per cwt. for sublimed firsts and 33s. for seconds. *Oxalate* unchanged at 6¼d. per lb. for crystals. *Chloride*: 32s. 6d. per cwt. is noted for the chemically pure crystals, whilst for the ordinary quality free from metals 26s. per cwt. is asked. *Sulphocyanide* is in fair demand at 1s. 2d. per lb.

BORAX—Fairly steady at last week's quotations of 14s. to 14s. 6d. per cwt. for *crystals*, and 14s. 6d. to 15s. per cwt. for *powder*.

ASAFETIDA.—The whole of the coal-damaged lots ex last auctions has been cleared at private rates, and in addition several lots of low brown quality at about 40s. per cwt.

BALSAM TOLU—Is firmly held here at 2s. 2d. per lb., but New York values are lower with a large stock. It is thought, however, that the bulk of this is of poor quality.

BISMUTH—Unchanged at 5s. per lb. for the *metal*, and 4s. 10d. for the *subnitrate* in 5 cwt. lots.

BLEACHING POWDER.—A moderate business doing at £7 5s. per ton for quantity on the spot.

BROMINE and BROMIDES—Unchanged, the former at 2s., *Pot. Bromide* at 1s. 10d. per lb.

CAMPHOR—Is dull, *crude* being quoted 85s. per cwt. for China March-April steamer, and 90s. per cwt. for Japan near at hand and distant, both quotations *c.i.f.* terms.

CINCHONA BARK.—At the monthly auctions on Tuesday the supplies amounted to 2880 packages, being slightly in excess of the quantity offered at the February auctions. The bulk consisted of East India shipments, which met a fair demand mainly for English and American quinine manufacturers, but the decline in values established at the last Amsterdam sales was fully confirmed. Succirubra barks met a good demand at full rates. *Ceylon*: 206 bales offered, and 105 bales sold, according to analysis; Succirubra, natural stem chips at 2½d.; renewed shavings, good at 4¼d.; Hybrid root, good at 3⅞d. to 4¼d. *East Indian*: 2292 bales and 42 cases offered and 1621 bales and 28 cases sold, red stem chips and shavings, fair at 2⅛d. to 2¾d., fair root at 2¼d. to 2⅝d., good silvery Druggists' quill at 7d. to 7¼d., fair renewed red quill at 3½d. to 4½d.; renewed chips and shavings, ordinary to fair at 1⅝d. to 2⅞d.; *Officinalis*, good chips and shavings 4d. to 4¼d., ordinary to fair at 1¼d. to 3¼d., fair mossy thin quill at 4¼d., fair renewed split ditto at 5¼d.; renewed chips and shavings, fair to good at 4d. to 5½d., ordinary to middling at 2⅜d. to 3⅜d.; *Ledger* natural stem chips, ordinary to fair at 2⅝d. to 4⅝d., common 1½d. to 2¼d., *Ledger* branch at 2⅜d. to 3d. *Java*: Of 43 bales and 151 bags offered 43 bales sold, *Ledger* dusty stem chips at 4⅜d. to 4½d. *South American*: 31 bales *Bolivian cultivated Calisaya* quill offered and 26 bales sold at 5d. to 5⅞d. *Carthagena* 25 bales, *Pitayo* 4 bales, and *Maracaibo* 29 bales all bought in. *African*: 57 bales offered and 5 bales damaged sold.

CLOVES.—Privately *Zanzibar* are dull, sales include April-June delivery at 3¾d., June-August at 3⅞d. At auction 270 bales *Zanzibar* sold at 3¼d. to 3⅞d., one lot good 4⅛d. 30 bags *Amboyua* bought in at 5½d.

COAL TAR DISTILLATION PRODUCTS.—*Toluol*: 1s. 10d. per gallon. *Benzole*: 60 per cent., 1s. 7½d.; 90 per cent., 1s. 5d. *Crude Naphtha*: 10½d. *Solvent Naphtha*: 95 per cent. at 160° C., 2s. per gallon.

COCAINE.—Best brands are firmly held by the makers, 10s. to 10s. 6d. per oz. for quantity and bulk packing; brands less in favour are being pressed for sale at rather lower prices, without, however, meeting with much demand.

CODEIA—Steady at 11s. 3d. to 11s. 6d. per oz., according to quantity.

COD-LIVER OIL.—The market for new oil is decidedly firmer, and it is stated that the agents for the best brands of non-congealing *Norwegian* in tin-lined barrels are asking 77s. 6d. to 80s. per barrel for the new oil; last year's oil remains, however, weak and slow of sale at 65s. to 70s., according to brand.

CREAM OF TARTAR—Is very firm and dearer at 76s. 6d. per cwt. for first white *crystals* on the spot, *powder* being quoted 78s. to 79s. per cwt. The higher strengths are proportionately dearer up to 85s. per cwt. for the 99 per cent. crystals.

GINGER.—*Cochin* is flat, and at auction of 1080 bags only 248 bags sold at easier rates, ordinary to good washed rough at 25s. 6d. to 27s. 6d., and medium to small rough washed, without reserve, 23s. 6d. to 28s. 6d. Of limed *Japan* 200 bags sold, without reserve, at 16s. 6d. to 17s. For new *Jamaica* there was a good demand, and higher prices were realised; common dark and lean *Rhatoon* 64s. to 66s. 6d.; ordinary small and lean scraped 68s. to 72s.; good ordinary brownish and low middling 74s. to 78s. 6d.; middling plump washed 80s. to 84s.

GLYCERIN—Is quiet but steady at 52s. 6d. to 57s. 6d. for best *German* white double-distilled chemically pure 1·260 quality in tins and cases, *English* being quoted slightly below these figures, according to quantity.

GOLDEN SEAL ROOT.—Quotations from New York come lower at 1s. 8½d. per lb. *c.i.f.*, but it is pointed out that the stock in the country is very limited, and any improvement in the demand would surely cause another rise in the market.

IODINE and IODIDES.—Without alteration. *Pot. Iodide*, in 2-cwt. lots, 9s. 9d. per lb.

JAPAN WAX—Continues dull, and but little business is reported; good squares are quoted 35s. 6d. per cwt. on the spot, whilst for arrival 33s. per cwt. *c.i.f* is asked.

MENTHOL CRYSTALS.—A small business in fine dry crystals has been done at 7s. 3d. to 7s. 6d. per lb. according to quantity.

MERCURIALS—Unchanged at 2s. 6d. per lb. for *Calomel*, and 2s. 2d. per lb. for *Corrosive sublimate* in half-ton lots.

MORPHIA—Remains very dull, the position of the article being also somewhat undecided, in sympathy with that of the crude drug. Makers still quote 4s. 3d. to 4s. 6d. per oz. for the *Hydrochlorate Salt* in powder. For large quantities, however, somewhat less than the lower figure would probably be accepted. The position of the article has been further shaken by the fact that a German manufacturing chemist, who had already attained a hardly enviable notoriety, in consequence of his continued aggressive attitude towards his fellow manufacturers, both here and on the Continent, has entered the lists, quoting low prices for morphia broadcast, with the intimation that stock is held in London. In view of the fact that the manufacturer in question has of late years been more distinguished for the exceeding cheapness of his prices than for the surpassing excellence of the quality of his preparations, buyers here will probably decide to continue to give the preference to the home-made article.

OIL OF TURPENTINE.—A large German firm is supplying through his London agent

a very high-class article under the name of *Oleum Pini Sylvestris*, his price for quantity being 1s. 3d. per lb. in 14-lb. tins. We fear, however, that he will find a difficulty in selling even the very finest quality of "Turps" at the above figure.

Oils (Essential).—*Peppermint H.G.H.* is firmer, and sales have been made at 5s. 6d. to 5s. 7½d. per lb. on the spot, forward being dearer at 5s. 9d. *c.i.f. Japan* quiet at 3s. per lb. for dementholised and 4s. 9d. per lb. for 40 per cent. *Star Aniseed* continues slow of sale at 7s. per lb. on the spot. *Cassia* also very stagnant, quotations 4s. 6d. per lb. for 70 to 75 per cent., and 4s. 7½d. per lb. for 75 to 80 per cent. *c.i.f.* terms. *Lemon* is slightly easier at 2s. 6d. to 4s. per lb. according to quality. *Citronella*: 1s. 2d. per lb. is now the lowest price for both drums and tins. *Lemongrass* quiet, but quotations unchanged, 5d. per oz. nearest value.

Oils (Fixed) and Spirits.—*Linseed* is again lower this week at £15 12s. 6d. for pipes, and £16 for barrels. *Rape* lower and closes quiet at £22 10s. for ordinary brown on the spot; refined, £24. *Cotton* also lower at £13 for *crude*, and for *refined*, £14 10s. to £15, according to make. *Olive* very firm, but unchanged at £33 for Spanish or Levant on the spot. *Coco-nut* continues firm at £23 for Ceylon on the spot, and £28 for Cochin, same position. *Palm*: Lagos on the spot, £23 10s. *Turpentine* is lower at 24s. 9d. per cwt. for American on the spot. *Petroleum Oil* is dull and easier. Russian, on the spot, 4⅞d. per gallon; American, 4⅝d. per gallon. *Petroleum Spirit*: American, 5⅜d. per gallon; deodorised, 5¾d. per gallon.

Opium—Is very quiet, there being but very little doing. Prices remain about same as last week, with, however, a somewhat weaker tendency.

Phenacetin.—Inferior makes are being hawked round at almost any price; reliable quality costs 3s. 9d. to 4s. 3d. per lb., according to quantity.

Pilocarpine—Is firm at 1s. 3d. per gramme or 28s. per oz. in 1-oz. lots.

Potash Compounds.—*Chlorate*, continues dull of sale at 3½d. per lb. on the spot. *Prussiate*: Yellow is quiet at 6¾d. per lb., red being unchanged at 1s. 2d. per lb. *Permanganate* slow of sale at 60s. per cwt. for small crystals and 65s. per cwt. for large crystals in half-ton lots. *Bromide*, quiet at 1s. 10d. per lb. *Iodide*, unchanged at 9s. 9d. to 10s. 3d. per lb., according to quantity. *Oxalate*: Neutral firm at 5d. per lb. *Cyanide* firm at 1s. 3d. per lb. for 98 per cent. cake, and very scarce for prompt delivery. *Bichromate*: 3⅞d. to 4d. per lb. as to quantity. *Bicarbonate*: Crystal and powder quoted 30s. per cwt.

Quicksilver — Continues steady at £7 2s. 6d. per bottle from first hands, and 6d. less from second-hand holders.

Quinine—Is quiet, manufacturers still quoting 11d. per oz. for best *German* brands in 100-oz. tins for 1000-oz. lots, there being sellers from second hand at something below this figure.

Shellac.—The market is in an inactive condition, and at the auctions on Tuesday a further decline of from 1s. to 2s. per cwt. was established, and *TN Orange* is now quoted 62s. per cwt. Only moderate supplies were catalogued, but barely one-third found buyers. A total of 982 cases offered and 300 cases sold: *Second Orange*, of 605 cases, 267 sold, partly without reserve, flimsy palish flat free at 63s., middling to fair bright red at 61s. to 62s., ordinary red broken flat at 60s., ordinary to fair red cakey to blocky at 58s. to 61s. *Garnet*: Of 196 cases 10 sold, fair flat free *AC* at 73s. *Button*: Of 181 cases 23 sold, good pale coloury resinous at 82s. 6d., ordinary resinous *BL2* at 68s., fair *BL3* at 58s. to 59s.

Soda Compounds.—*Crystals*: 60s. per ton, ex-ship terms. *Benzoic*: The artificial is quoted 2s. 3d. per lb., whilst for the pure article from gum 4s. per lb. is asked. *Bicarbonate*: £7 5s. per ton for the commercial 98 per cent., and 18s. per cwt. for the free from mono-carbonate quality. *Hyposulphite*: 5s. 6d. to 8s. per cwt. *Iodide*: 11s. 7d. per lb. *Nitrate*: Refined £7 15s. to £8 5s. per ton. *Caustic*: £7 15s. per ton for the 70 per cent. and £6 15s. per ton for the 60 per cent. *Sulphite*: 17s. 6d. to 22s. 6d. per cwt. as to brand.

Spices (Various).—*Black pepper*: 213 bags Singapore bought in at 4⅛d. to 4⅜d. *White pepper*: 233 bags Penang bought in at 6½d. *Chillies* dull; Zanzibar bought in at 40s. to 42s. 6d.; of 163 bags fine Japan 101 bags sea-damaged, were sold, first class, at 46s. *Cinnamon Chips*: 40 bags bought in at 4d.; 16 bags Ceylon quillings, etc., sold at 9d. to 9½d. *Mace*: Of 68 cases Penang 10 cases sold, ordinary wormy, broken, 1s. 7d.; the remainder bought in. Pickings, 1s. 6d.; ordinary, 1s. 8d.; good bold pale, 2s. 8d. to 2s. 10d.; 26 packages West India sold at 1s. 5d. to 1s. 8d. *Nutmegs* quiet; Penang chiefly bought in; 88 packages West India mostly sold at about previous rates: 60's, 2s. 8d.; 68's, 2s. 3d.; 74's, 1s. 11d.; 81's, 1s. 8d., and ranging from 87's to 131's at 1s. 7d., down to 1s. *Pimento* quiet; of 277 bags only 32 bags sold at 4½d. to 4⅝d.

Sulphate of Copper—Firm at £16 5s. to £17 per ton according to brand.

Sulphonal.—One of the two principal makers has declined orders at 7s. 3d.; the other, however, continues to supply limited quantities at this figure, while the outside maker, whose competition was the cause of the reduction in price, appears to be sold out, he having raised his price to nominally 8s. 6d. per lb.

To-day's drug auctions passed off quietly. Cardamoms sold well, and Ipecacuanha was firmly held. The following are the particulars, as far as it is possible to give same, up to time of going to press:—

Aloes.—50 kegs good softish *Socotrine* held for 80s. per cwt., dull hard *Cape* part drossy sold at 16s. to 16s. 6d.

Ambergris.—3 tins were bought in at at 60s. for dark and grey, fair flavour.

Annatto Seeds.—2 barrels good bright held for 6d. per lb.

Argol.—32 bags *Cape* realised 48s. 6d. to 50s. per cwt.

Buchu Leaves.—6 bales fair green rounds sold at 4¼d. to 4½d. per lb.

Camphor Oil.—21 cases *Japan* white sold, without reserve, at 24s. to 30s. per cwt.

Caradmoms—Sold freely, fair bold *Ceylon* up to 4s. 2d. per lb., medium ditto at 3s. 1d. to 3s. 4d., ditto splitting at 2s. 6d. to 2s. 7d., pale brownish *Mysore* at 3s. 2d., brown *Malabar* at 2s. 8d., *Seed* at 3s. to 3s. 3d. per lb.

Cascara Sagrada.—60 bags of only medium quality taken out at 22s. per cwt., 20s. being, however, the price which would have been accepted.

Cascarilla Bark.—Fair bright bold quilly sold at 46s. to 46s. 6d. per cwt.

Castor Oil.—125 cases *Calcutta* all bought in, good seconds being held for 4¼d., ordinary ditto for 3½d. per lb.

Cinchona Bark.—40 bales *Crown Bark* part sold at 5d. to 8d. per lb.; 18 bales *Yellow Bark* taken out at 1s.; 2 bales *E.I. Cinchona Bark* at 1s. 6d.

Coca Leaves.—25 bales good green *Truxillo* were held for 7d. per lb.

Codliver Oil.—27 casks *JHR* brand last year's *Norwegian* oil bought in at 75s. per barrel.

Colocynth.—22 cases fair *Turkey* apple were held for 1s. 2d. per lb., smaller ditto part broken for 1s. 1d.

Colombo Root.—5 bags washed, slightly wormy, bought in at 55s. per cwt.

Coriander Seed.—222 bags *Morocco* held for 7s. 3d. per cwt.

Cummin Seed.—50 bags of medium quality held for 20s. per cwt.

Dragon's Blood.—5 cases bought in, price required being £8 5s. to £8 15s. for fair to well-packed reeds, somewhat dull to bright.

Ergot of Rye.—21 bags good bold sound *Spanish*, slightly greyish in colour, held for 1s. 4d. per lb., 23 bags slightly weevily, fairly bold *German* for 8½d., fair sound *Russian* for 9d.

Essential Oils.—*Lemon*: 4 cases *Battaligni* bought in at 4s. 3d. per lb.; 5 cases Hamnett's at 4s. 6d. *Cajeputa*: 1 case of fair quality held for 4s. 6d. per bottle. 10 cases *Cassia*, 70 per cent. cinnamic aldehyde, bought in at 5s. per lb.

Gamboge.—38 cases were bought in at £3 to £8 10s. per cwt. for good bright to slightly softish down to 80s. for good softish. 5 cases pickings sold at £6 7s. 6d.

Gentian Root.—10 bales good bold, slightly chumpy, held for 24s. per cwt.

Gum Arabic.—2 cases fair white small to medium picked held for £10 10s. per cwt., soft sorts for 80s.

Gum Benjamin.—Medium fair to good seconds *Sumatra* sold at £7 5s. to £10, lower quality ditto being held for £5 10s. to £6 5s. per cwt. Small to medium free *Siam* held for £18 down to £7 for blocky seed. *Penang* held for 70s. per cwt.

Gum Guaiacium.—2 cases, part drossy, part glossy block sold at 6d. to 6½d. per lb.

Gum Kino.—5 packages red *Calicut* held for 10s. per lb.

Gum Mastic.—1 case fair white held for 2s., pale yellow for 1s. 8d. per lb.

Gum Myrrh.—9 casks sifted sorts, rather dark colour, held for 40s. per cwt., 1 case pickings selling at 15s.

Honey.—Of 257 packages catalogued by one broker only 1 barrel low *Jamaica* was disposed of at 18s. per cwt. Fair *Australian* held for 21s., good *Canadian* for 25s. 200 cases *Californian* part sold, pale to brownish liquid at 25s., yellowish to pale at 29s. to 32s. per cwt.

Kola Nuts.—11 bags bought in at 6d. per lb. for good bright.

IPECACUANHA.—14 bales good *Carthagena* were held for 6s. 6d. to 6s. 9d. per lb., at which figure there were, however, no buyers. 1 bale 2Cs damaged selling at 5s. 8d. per lb. 21 bales *Rio* held for 8s. per lb.

LICORICE ROOT.—10 bales thin to chumpy decorticated Russian held for 35s. per cwt.

MENTHOL.—2 cases good dry white *Kobayashi* brand held for 7s. per lb.

MUSK.—4 tins bought in at 62s. for thin skin grey *Tonquin*, small to medium, fairly dry, few broken, down to 35s. for ditto, pile 3.

ORANGE PEEL—Realised lower prices, good bright, thin-cut selling at 7½d. per lb.

ORRIS ROOT.—20 bags fair *Verona* were held for 30s. per cwt.

PISTACHIO NUTS.—2 cases *Syrian* held for 1s. 4d. per lb.

PODOPHYLLIN RESIN.—10 tins brand McKeeson & Robbins were held for 11s. 6d. per lb.

RHATANIA ROOT.—12 bales of fair quality sold without reserve at 5½d. per lb.

RHUBARB.—Good medium round *Shensi* of fine colour was held for 3s. 2d. to 3s. 3d. per lb., good bold flat ditto, slightly rough, sold at 1s. 6d. down to 1s. 4d. for second size, and 1s. to 1s. 2d. for pickings; good small *high-dried* held for 1s. 2d. per lb., very bold orange coated round *Canton* pinky and grey fracture for 1s. 3d., ditto small trimming for 1s. 5d. Medium to bold flat ditto for 1s. 2d. to 1s. 4d. per lb.

SAFFRON.—14 tins fair *Valencia* held for 35s. per lb.

SARSAPARILLA.—Good *Lima*, part sold at 1s. 5d. per lb. for good thin down to 2d. per lb. for 4 Cs damaged. 8 bales *Honduras* held for 1s. 8d. per lb.

SCAMMONY ROOT.—20 bags of fair quality bought in, a bid of 20s. per cwt. not being entertained.

SENEKA ROOT.—18 bales fair bought in at 1s. 2½d. per lb.

SENNA.—7 bales *Tinnevelly* sold at 4¼d. per lb. for fair to good, down to 3¼d. for somewhat lower quality.

SQUILLS.—13 bags held for 4d. per lb. for good.

STAVESACRE SEEDS.—4 bags bought in at 34s. per cwt.

TAMARINDS.—22 barrels black *E.I.* sold at 12s. 6d. to 14s. 6d. per cwt.

VANILLA.—About 500 tins were offered but the demand was very slow and the bulk had to be withdrawn. Such lots as were sold found buyers only at a reduction of from 1s. to 1s. 6d. per lb. upon last sale's rates. It is said present rates do not pay shippers, and that consignments to the Continent are realising better prices than can be obtained on this market. Fine *Vanillon* was held for 15s. per lb.—sundry lots "without reserve" of common quality were withdrawn owing to the lack of interest shown by the room.

WAX.—Fair *Zanzibar* slightly drossy sold at £6 2s. 6d. per cwt., fair *Australian* at £6 17s. 6d. subject to approval, good *Jamaica* at £7 5s. to £7 7s. 6d. 3 bags *East Indian*, all more or less damaged by heat, realised £5 12s. 6d. to £5 15s. 2 cases *Mogador* bought in at £6. 16 casks ditto at £5 2s. 6d. 20 cases *Japan* taken out at 35s. per cwt.

LIVERPOOL REPORT.

MARCH 16, 1898.

In view of considerable arrivals of French 1st pressure Castor Oil and Calcutta, "good seconds" prices have slightly dropped. This is the case also with Spirits of Turpentine. A slight advance has taken place in Cream of Tartar, but the business done has not been of any moment. A parcel of Brazilian Tonka Beans withdrawn at the auctions has since been disposed of on private terms.

AMMONIUM SALTS.—*Carbonate* is firm at 3d. per lb. *Sal ammoniac* is firm at 33s. to 35s. per cwt. *Sulphate* is again lower at £9 7s. 6d. to £9 10s. per ton.

BLEACHING POWDER—Is still quoted at £5 12s. 6d. to £6 5s. per ton.

CANARYSEED—Is unchanged at 26s. to 27s. per 464 lbs. for Turkish.

CARNAUBA WAX.—Sales of yellow are reported at 72s. 6d. per cwt.

OILS (FIXED) AND SPIRITS.—*Castor oils*, both Calcutta and French are quoted at 3¼d. to 3⅝d. per lb. *Olive oils*: Spanish Seville quoted at £33 10s. to £34 per ton. In Spain oils for shipment are dearer. *Linseed oil* is quiet at last week's rates, 17s. 3d. to 17s. 6d. per cwt. *Cottonseed oil* is firm at 15s. 3d. to 15s. 9d. *Spirits of turpentine* is quiet and prices have receded to 25s. 9d. per cwt.

POTASH SALTS.—*Cream of Tartar* is a turn dearer, viz., 77s. to 78s. per cwt., but business is slow. *Potashes* 21s. 6d. per cwt. *Pearlash*, 37s. 6d. to 40s. per cwt. *Prussiate*, 6¾d. per lb. *Saltpetre* is firmer at 21s. 6d per cwt.

QUILLAYA BARK—Is selling to arrive, March shipment, at £18 10s. to £19 per ton.

SODA SALTS.—*Bicarbonate*: £6 15s. per ton. *Caustic*: 70 per cent., £7 5s.; 60 per cent., £6 5s. per ton. *Crystals*: £2 17s. 6d. per ton. *Borax*: Firm, crystals £13 10s., powder £14 per ton. *Nitrate* is selling steadily at 7s. 6d. to 7s. 9d. per cwt.

TONKA BEANS.—16 bags of Brazilian offered at auction were withdrawn as 4d. per lb. was the highest bid. They have since been sold on private terms.

MANCHESTER CHEMICAL REPORT.

MARCH 16, 1898.

The course of the market here has not varied greatly for two or three weeks past. Locally there is a fair consumptive demand, and in view of the opening of the navigation the inquiries for northern shipment are now coming forward. Caustic Soda and Ammonia Alkali continue firm, and Bleaching Powder is steady at £5 5s. to £5 10s. per ton on rails for softwood casks. Brown Acetate of Lime is easier at £5 15s. to £6 for both Welsh and American. Sulphate of Copper does not respond to the rise in the price of the metal, although best brands are firm at £16 15s. to £17 per ton, delivered Manchester. Aniline Oil and Salt are a trifle better at 3½d. and 4¾d. respectively. Alum is quiet at £4 17s. 6d. to £5 per ton for loose lumps on rails, £5 2s. 6d. lump in tierces, and £5 10s. ground in bags. Salt cake is in better demand at 18s. to 19s. per ton. Pitch is also in more request at 17s. 6d. to 18s. per ton *f.a.s.* Manchester Ship Canal. Yellow Prussiate varies from 6¾d. to 7d. for best local make. Benzols are dull.

DIARY FOR THE WEEK.

SATURDAY, MARCH 19.

PHARMACEUTICAL FOOTBALL CLUB v. BLOOMSBURY a Acton. Kick-off at 3 p.m.

TUESDAY, MARCH 22.

GLASGOW AND WEST OF SCOTLAND PHARMACEUTICAL ASSOCIATION, at 9 p.m.
Short Papers by Members.

ROYAL INSTITUTION, at 3 p.m.
"The Simplest Living Things" (Lecture X.), by Professor E. Ray Lankester.

ROYAL PHOTOGRAPHIC SOCIETY, at 8 p.m.
"The Gum Bichromate Process," by Robert Demachy.

WEDNESDAY, MARCH 23.

MIDLAND CHEMISTS' ASSISTANTS' ASSOCIATION, at 9.15 p.m.
Ordinary Meeting.

THURSDAY, MARCH 24.

CHEMISTS' ASSISTANTS' ASSOCIATION, at 7.30 p.m.
Cinderella Dance (Dorset Hall, Portman Rooms, Baker Street, W.).

MIDLAND PHARMACEUTICAL ASSOCIATION, at 8.30 p.m.
"The Bacterial Purification of Water," by Dr. P. Frankland.

ROYAL INSTITUTION, at 3 p.m.
"Recent Researches in Magnetism and Diamagnetism" (Lecture IV.), by Professor J. A. Fleming.

FRIDAY, MARCH 25.

EDINBURGH CHEMISTS', ASSISTANTS', AND APPRENTICES' ASSOCIATION, at 9.15 p.m.
Communication by Mr. Peter Boa.

EXCHANGE.

OFFERED.

Shop Fittings.

Entire Fittings of Chemist's Shop to be sold in one lot or parts, or shop may be rented as fitted. Best offer accepted.—149, Barking Road, Canning Town, E.

Miscellaneous.

Gem Soda Water Machine, price £12, cost £28.—Farrington, Spa, Diss.

Magic Lanterns, second-hand; triples and biunials; oxyhydrogen mieroscope; marvellous pamphengos oil; lantern gives 14-ft. picture; 60,000 slides and effects; 4-in. 4-wiek lanterns, 18s. 6d. each, bargains; illustrated list post free, 2d. Animated photographs: A splendid machine for £9 9s.—Hughes, Brewster House, 82, Mortimer Road, Kingsland, N.

Microscope in mahogany case, coarse and fine adjustments, two eye-pieces, 2 and ¼-inch object glasses, £2; Green's 'Botany,' 2 vols., new, 10s., or offers.—Morris, Winchmore Hill, N.

Overstocked.—3 dozen Buchanan's Scotch Food, 1s. 6d. size; will accept first postal order for £1; carriage paid; all clean and in good condition.—Hampshire, 143, Upperthorpe Road, Sheffield.

Overstocked.—Patents, clean, 2s. 9d. C. B. Chlorodyne, 22s. 6d. Pills: Cockle's, 8s. 3d. per dozen; Seigel's, 8s. 10d. per dozen; Towle's, 8s. 6d. per dozen; Norton's, 9s. per dozen; 2s. 9d. Steedman's Powders, 21s. Cheque with order 50s., carriage paid.—Yardley, Bloxwich.

Books.

'Pharmaceutical Journal,' 27 volumes, 1841 to 1868, bound in half calf, clean, in good condition. 'Chemist and Druggist,' vol. 51, unbound. What offers or exchange?—Kendall, 163, Dewsbury Road, Leeds.

WANTED.

Wanted, old electric lamps and scrap platinum, or old platinum utensils; utmost value promptly remitted by—P. Rowsell, 14, Walcot Square, Lambeth, London, S.E. (Please mention this paper).

Wanted.—*Pharmaceutical Journal*, July 13, August 3, 1895. Full price will be paid for clean and complete copies by the Publishers, 5, Serle Street, London, W.C.

The World of Pharmacy Week by Week.

A Review of Current Work in connection with pharmacy and the allied sciences is again given this week (p. 301).

Various Formulæ for Perfumes, in making which heliotropin, ionone, hyacinthin, and other synthetic bodies are used, are published in this week's issue (p. 302).

Chemists' Assistants who are thinking of taking situations in Ceylon will find interesting information concerning the climate, etc., of the "Spicy Isle" in this issue (p. 303).

The Resins of Podophyllum, Indian and American, have been examined by Mr. E. J. Millard, and his results should prove useful (p. 304).

The History of Russian Pharmacy, with the account of the English pharmacists engaged in the service of the Tsars during the sixteenth and seventeenth centuries, is concluded (p. 305).

The Progress of the Pharmacy Bill and the curious opposition of Mr. Alexander Cross, M.P. for Camlachie, are briefly commented on (p. 319).

The Students' Page this week is occupied by more explanatory notes on the B.P., the series being now almost completed (p. 310).

The British Pharmacopœia is the subject of an editorial, and information is also given regarding the forthcoming publication of the new Pharmacopœia (pp. 311-2).

The Question of the Registration of medical men has been raised at the Westminster Police Court, and the magistrate has expressed the opinion that such registration is not compulsory (p. 313).

Annual Dinners have been held at Liverpool and Stoke-upon-Trent, when the loyalty of the local chemists to the Pharmaceutical Society was very marked, as also their strong desire to witness the success of the new Pharmacy Bill (p. 314).

Three Pharmacy Act Cases are reported, in which penalties have been recovered by the Council of the Pharmaceutical Society from persons who have sold poison contrary to the provisions of the Act.

The Leicester Chemists' Social Union will hold its annual dinner at the Wyvern Hotel, Leicester, on Tuesday next, March 29, at 8 p.m. There will be a musical programme. Tickets (2s. 6d.) may be obtained from the Hon. Sec., Mr. F. W. Goodess, Hotel Street, Leicester.

News in Brief

The Photographic Supplement to the *Pharmaceutical Journal* will be published next week, and whilst thanking the many hundreds of correspondents who have already sent him information in connection therewith, the Editor will be glad to hear from any others who stock photographic goods, maintain dark-rooms for the use of customers, or have any photographic novelties or specialties to which they would like attention directed. It will not be amiss also if they will briefly state what there is to interest photographers in their respective localities, whilst the Editor will be only too glad to know how he can help any reader in connection with his business.

The Information Sent by correspondents will be utilised as fully as possible, whilst notes will be taken of the numerous useful hints supplied. It is necessary to point out, however, that a few correspondents who have sent information on postcards have unfortunately omitted to append their names and addresses. These include one at Chelmsford, one at Glasgow, and one at Portmadoc. This much can be gathered from the postmarks, but unless the correspondents referred to will take the trouble to write again it will be impossible to utilise some of the information they have kindly furnished.

Mr. P. C. Maitland, chemist and druggist, London, has been granted the diploma of the Society of Apothecaries of London.

Mr. Henry Fraser, Pharmaceutical Chemist, Pereira Medallist, and late Teacher of Pharmacy to the Aberdeen Pharmaceutical Association, at the recent medical examination held at Marischal College, Aberdeen, was successful in gaining the Fyfe Jamieson Gold Medal in anatomy, also 1st for Reginal Anatomy, 1st Materia Medica and Therapeutics, and 2nd in Physiology.

Mr. Charles A. Pratt, chemist and druggist, Chichester, has opened a business at 38, Fore Street, Saltash.

Bradford and District Chemists' Association.—The newly formed cycling section of the above Association selected Ilkley for a run on Tuesday afternoon last. The route taken was via Otley and Asquith, and from thence to Ilkley, where tea was partaken of, the party returning home about 8 o'clock after a very enjoyable outing.

Spirit of Nitre Case.—John F. Kingzett, chemist and druggist, Evesham, was summoned at the local Borough Sessions last week for selling half a pint of spirit of nitre that was alleged to be adulterated. The spirit was analysed by Dr. Swete, who is reported to have stated, though on what grounds does not appear, that the spirit of nitre was not of the nature and substance demanded by the purchaser. Apparently an attempt was made to persuade the magistrates that spirit of nitrous ether and spirit of nitre are synonymous terms, but the attempt failed, and the case was dismissed.

Olive Oil or Salad Oil.—At the Evesham Borough Sessions last week, John Foster, grocer, Bengeworth, was summoned for selling adulterated olive oil. The oil was supplied in a flask, for which sixpence was charged. Dr. Swete's analysis showed that the oil was adulterated with foreign oil to the extent of at least 30 per cent. For the defence it was urged that pure olive oil is never sold in flasks now, but only in bottles. But that artless tale failed to convince the magistrates, who were of opinion that the purchaser asked for olive oil, and did not get what he asked for. The defendant was therefore fined 5s. and 14s. costs, and Thomas Baker, another grocer, Vine Street, who was charged with a similar offence, was fined 5s. and 9s. costs.

Publications received.

Cumulative Index of Author, Subject, and Title of British Literature. Being a monthly supplement to 'The New Book List.' Edited by Cedric Chivers and Armistead Cay. Containing the publications of 1897 from January to December. Price 1s. 6d. London: Cedric Chivers, 10, Bloomsbury Street, W.C. January, 1898. From the Publisher.

Zur Kenntnis der Salophenwirkung. Von Dr. Richard Blocii. Being a reprint from 'Die Heilkunde Monatsschrift fur Praktische Medicin.' Pp. 6. Wien: Dr. Julius Weiss. From the Publisher.

"Scientific American Supplement" Reference Catalogue. Being a Catalogue of Valuable Papers. Pp. 48. New York City: Munn & Co., publishers, 361, Broadway. From the Publishers.

Jahresbericht über die Fortschritte der Chemie und verwandter Theile anderer Wissenschaften, begrundet von J. Liebig und H. Kopp, unter Mitwirkung namhafter Fachgenossen, herausgegeben von K. non Buchka. Fur 1896 (Erstes Heft, November, 1897). Braunschweig: Druck und Verlag von Friedrich Vieweg und Sohn. 1897.

Einige klinische und experimentelle Untersuchungen über Analgen und seine Anwendung bei Malaria, von Professor G. Scognamiglio in Neapel. Reprint from "Die Heilkunde Monatsschrift für praktische Medicin."

Ueber Tannon ein neues Antidiarrhoicum, von A. Bristowski. Reprint from *Pharmaceutischen Centrallhalle* 1897. No. 49

Algæ and Antiseptics. By Professor Rodney H. True. Reprint from the *Pharmaceutical Review*. Vol. VX., No. 8. From the Publishers.

MARKET REPORT and Prices Current

Specially compiled for the Pharmaceutical Journal

The quotations here given are in all cases the lowest cash prices for bulk quantities, and often the articles quoted have to be sorted in order to suit the requirements of the retail pharmacist. The cost of freightage from the chemical and drug works to the various distributing centres must also be considered. It is important that these conditions should be borne in mind in making any comparison between the prices quoted and those of the wholesale drug trade.

LONDON REPORT.

MARCH 24, 1898.

The week just ending has neither been characterised by any particular activity in the Drug and Chemical Markets, nor have any special changes worthy of record taken place. Iodine and Iodides still maintain their price. Quinine is quiet. Antipyrine Knorr is practically being superseded by its chemical equivalent Phenazone. Ipecacuanha is very firm, and appears likely to go even dearer. Rhubarb in good demand. New Cod-Liver Oil active and dearer, while last year's oil remains a drug on the market. Sulphate of Ammonia again lower. Bromine and Bromides, Quicksilver and Mercurials, Opium, Morphia, and Codeia without change. Cocaine quiet. Acetanilide and Phenacetine dull. Sulphonal expected to be higher. Glycerin quiet. Cream of Tartar and Acid Tartaric steady. Camphor dull for crude and steady for refined. Acid Boracic and Borax very quiet. Acid Citric very firm. The following are actual prices ruling for articles of chief interest :—

ACETANILIDE—Very quiet at 1s. 2d. to 1s. 3d. per lb. for *crystals* or *powder*, according to make, quantity and packing.

ACID BORACIC—Quiet at 23s. to 24s. per cwt. for *crystals*, and 25s. to 26s. per cwt. for *powder*.

ACID ACETIC.—The B.P. strength (33 per cent.) is quoted 15s. 3d. per cwt. in carboys; 70 per cent., 28s. 6d.; 80 per cent., 32s.; and the glacial (98-100 per cent.), 39s. 3d. per cwt.

ACID CARBOLIC—Dull at 6½d. to 6¼d. per lb., according to quantity and make for the 35° to 36° C. *ice crystal* in large bulk packing, other qualities and packing in proportion. *Crude*: 60° F., 2s. per gallon; 75° F., 2s. 6d. *Liquid*: 95 per cent of pale straw colour, 1s. 2d. to 1s. 3d. per gallon in 40-gallon casks.

ACID CITRIC—Continues to be very firmly held at 12¾d. to 1s. 1d. per lb., and the general feeling is that we shall shortly see higher values.

ACID OXALIC AND OXALATES.—The Convention is reported to be very busy with these articles. *Acid crystals* are quoted 3⅝d. per lb. in large bulk, and *powder* 4⅛d. per lb. *Sal acetos*: Crystals 5d. per lb., powder ¼d. per lb. more. *Neutral oxalate potash*: 5d. per lb.

ACID PHOSPHORIC.—The slightly higher price lately fixed by makers for the 1·750 syrupy quality is maintained, the figure being 11d. per lb. for quantity in bulk.

ACID TARTARIC.—The position of this article has improved, and for *foreign* crystals 12⅝d. to 12¾d. per lb. is now quoted, *English* being firm at 1s. 1d. per lb.

ALOES.—*Cape* slightly firmer at, however, unchanged prices.

AMMONIA COMPOUNDS. — *Sulphate* continues a declining market. Gray prompt 24 per cent., London, £9 per ton. *Bromide* steady at 2s. 1d. to 2s. 2d. per lb. *Iodide* unchanged at 13s. 4d. per lb. *Sulpho-cyanide* firm at 1s. 2d. per lb. *Chloride*: Chemically pure small crystals, 32s. 6d. per cwt., free from metals 98 per cent., 26s. per cwt. *Oxalate*: 6¼d. to 6½d. per lb.

ANTIPYRINE.—Price of *Dr. Knorr's* article remains unchanged at 2s. 1½d. per oz. for quantity in 1-oz. tins.

ASAFŒTIDA.—A small, but steady inquiry goes on, and various little lots have been sold at from 45s. to 60s. per cwt. for low to medium qualities.

ATROPIA.—Very firm at the lately advanced prices of 16s. 5d. per oz. for the *pure* and 14s. 1d. for the *Sulphate P.B.*

BELLADONNA ROOT—Remains very scarce, especially for good quality, for which 45s. per cwt. is asked.

BISMUTH.—Unchanged at 5s. per lb. for the *Metal* and 4s. 10d. per lb. for the *Subnitrate* for large quantity.

BLEACHING POWDER.—Steady at £7 5s. per ton for quantity on spot.

BORAX.—A moderate trade passing at last rates—14s. to 14s. 6d. per cwt. for *lump*, and 14s. 6d. to 15s. per cwt. for *powder*.

BROMINE AND BROMIDES—Firm at late rates, say 2s. per lb. for the former and 1s. 10d. per lb. for *Potass. bromide*.

CAFFEINE—Without change at 14s. 4d. per lb. for the pure and 11s. 2d. per lb. for the *citrate*.

CAMPHOR.—*Crude* remains very dull, with very little business doing. Quotations: 87s. 6d. for *China*, and 92s. 6d. per cwt. for *Japan c.i.f.* *Refined* firm at unchanged prices, makers being fairly busy.

CASCARA SAGRADA.—Steady at 22s. 6d. to 24s. per cwt., according to quality and quantity.

CLOVES.—Privately *Zanzibar* are weak. Business has passed at 3⅝d. to 3⅞d. for spot, April to June delivery 3⅞d., and June to August 3¾d. to 3 23/32d. At auction of 203 bales *Zanzibar* 163 bales sold, middling to fair at 3½d. to 3⅝d., fine bright 4d. to 4¼d. *Penang* bought in at 6½d. to 10d.

COAL TAR DISTILLATION PRODUCTS.—*Toluol*: 1s. 11d. per gallon. *Benzole*: 50 per cent., 1s. 7½d.; 90 per cent., 1s. 4d. per gallon. *Crude Naphtha*: 30 per cent. at 120° C., 10d. *Solvent Naphtha*: 95 per cent. at 160° C., 1s. 11d. per gallon.

COCAINE—Remains quiet, the brands most in favour being held for 10s. to 10s. 6d. per oz. according to quantity, while makes less favourably known are being offered below this figure; it is, however, positively stated that the position of *crude cocaine* would rather point to an advance in price of the refined article than to a decline.

CODEIA.—Without alteration at 11s. 3d. to 11s. 6d. per oz., according to quantity.

COD-LIVER OIL.—There has been a considerable business this week in new season's *Norwegian* at full to rather dearer prices up to 80s. per barrel, and the market closes strong, but the large second-hand stock prevents any big rise, such as the position of the new oil would appear to warrant. Old oil is dull, and is quoted 65s. to 70s. per barrel.

CREAM OF TARTAR.—Whilst business is restricted makers are firm, and an advance is anticipated with any improvement in the demand. First white French *crystals* on the spot are quoted 76s. per cwt.; *powder*, 78s. to 79s. per cwt.

ESERINE.—Price of the *sulphate* is 1s. 6d. per gramme.

GENTIAN ROOT—Is slightly weaker, good root being quoted at 23s. per cwt. on the spot.

GINGER.—The large quantity of 2816 bags rough *Cochin*, chiefly new crop, was offered at auction, but the demand was slow, and only 310 bags sold at rather easier rates: Cuttings, 17s.; shrivelled small pickings, 17s. 6d.; ordinary small old washed rough, 19s.; good new bright washed rough, 25s. to 26s. 94 cases new *Calicut* sold at steady rates, small and ends, 35s. to 36s; medium and small, 45s. to 46s., bold and medium 73s. to 76s., bold cut 86s. to 88s. 100 bags *Bengal* sold, without reserve, at 19s. 6d. 80 bags limed *Japan* bought in at 18s. New *Jamaica* is steady, the better qualities fetching higher prices. 350 barrels sold, low and common lean and dark Rhatoon 65s. to 66s., good common 72s., low middling brownish and small scraped 75s. 6d. to 81s. 6d., middling washed 83s. 6d. to 87s. 6d., one lot good middling bright 93s. 6d.

GLYCERIN—Quiet and somewhat slow of sale at 52s. 6d. to 57s. 6d. per cwt., according to quantity and brand, for the best German white double distilled chemically pure 1·260 quality in tins and cases. Other qualities and packing cheaper in proportion, English being offered at slightly cheaper figures than the above.

HYPOPHOSPHITES—Are in good demand. makers' prices being 3s. 3d. per lb. for either *Lime*, *Soda*, or *Potash*, in 10-cwt. lots.

ICHTHYOL —Prices of *Ichthyol ammonia* have now been fixed at 13s. per lb., including ½-lb. and 1-lb. tins, for smaller lots, and 12s. 6d. per lb. for 10 lbs. in one delivery. *Ichthyol soda*: 16s. per lb.

IODINE AND IODIDES.—So far the feared collapse in price has not taken place. Iodine remains at 7½d. per oz., and *Potass. Iodide* at 9s. 9d. per lb. for 2-cwt. lots in one delivery.

IPECACUANHA—Continues very firm at 8s. per lb. for ordinary *Rio*, at which a small business has been done this week, it being stated that a further advance in value is not improbable.

LITHIA—Is firm at the late advance, price of the *Carbonate* being 10s. 8d. per lb., and of the *Citrate* 6s. for the *cryst.*, and 6s. 6d. for the *powder* in 2-cwt. lots.

MENTHOL—Is firmer at 7s. 3d. to 7s. 6d.

per lb., whilst for arrival 7s. to 7s. 3d. per lb., March to May steamer, is the quotation.

Mercurials—Are without change at 2s. 2d. per lb. for *Corrosive sublimate* and 2s. 6d. per lb. for *Calomel* for large contracts.

Morphia.—Very quiet but unchanged as to price, 4s. 3d. per oz. being still quoted for the *Hydrochlorate powder* in quantity and in bulk.

Nitrate of Silver.—*Crystals* are quoted 1s. 5d. per oz.; *sticks*, 1s. 5¼d. per oz.

Nitrate of Soda—Steady at £8 per ton for *refined*.

Oils (Essential).—*Peppermint*: American has been in better demand, and prices close firmer. *HGH*: 5s. 9d. per lb. *Wayne County*: 3s. 9d. per lb. for choice. *Japanese*: Dementholised, on the spot, 3s. 3d. per lb. whilst for arrival the same price is asked, *c.i.f.* terms; 40 per cent., for arrival, 4s. 3d. per lb., *c.i.f.* *Star Aniseed* is in better demand at 6s. 9d. to 7s. per lb. on the spot, with sellers for arrival at 6s. 6d. per lb., *c.i.f.* *Cassia* quiet and unchanged on the spot; for arrival 75 to 80 per cent. has been done at 4s. 6½d. per lb., but more money is now asked; 80 per cent. quoted 5s. per lb. *c.i.f.* *Citronelle*: Some sales have taken place at 1s. 2d. per lb. for both drums and tins *Lemongrass* is quiet, but holders are firmer, 5d. per oz. being the nominal value.

Oils (Fixed) and Spirits.—*Linseed* has experienced a heavy fall since our last, but at the close show a partial recovery from lowest price touched, and the market has an upward tendency. On the spot pipes £15 5s., barrels £15 15s. *Rape* is lower and closes quiet. Ordinary brown on the spot £22, refined spot £23 10s. *Cotton*: The crude is unchanged at £13, but the refined is the shade easier at £14 5s. to £14 15s., according to make. *Olive*: These oils are firm. *Cocoanut*: Ceylon on the spot is unchanged at £23, but Cochin is rather easier at £28. *Palm*: Lagos, on the spot, £23 10s. *Turpentine* is again lower, closing very dull at 23s. 10½d. per cwt. for American on the spot. *Petroleum oil* is quiet and again lower at 4⅛d. per gallon, for Russian, and 4⅝d. per gallon for American. *Petroleum spirit* unchanged at 5⅜d. per gallon for American, deodorised 5¾d. per gallon.

Opium—Very quiet at about last week's prices, there being very little doing, quotations are *Soft shipping*: 10s. 3d. to 12s. 6d.; *Druggists*: 9s. 3d. to 10s. 6d.; *Manufacturing*: 8s. 4d. to 9s. 3d. per lb. *Persian*: A few cases have changed hands, prices remaining nominally 10s. to 11s. per lb.

Permanganate of Potash.—Market is steadier at 60s. per cwt. for *small crystals*, and 5s. more for *large crystals* in 1-cwt. kegs and for half-ton lots.

Phenacetin—Dull, the best makes are held for 3s. 9d. to 4s. per lb. according to quantity for both crystals and powder.

Phenazone—Is in growing demand, and is rapidly superseding Dr. Knorr's article, price being very considerably cheaper, in fact, just half, while chemically and otherwise the two articles are practically identical.

Pilocarpine.—Is firm at makers' price of 28s. per oz. for both the *Hydrochlorate* and the *Nitrate*.

Potash Compounds.—*Chlorate* is quiet with but few transactions passing, 3½d lb. is the nearest value in quantity. *Bromide* steady at 1s. 10d. per lb. *Iodide* steady at 9s. 9d. to 10s. 3d. per lb. *Prussiate*: Yellow 6¾d. per lb., red 1s. 2d. per lb. *Permanganate* slow of sale at 60s. per cwt. for small crystals, and 65s. per cwt. for large crystals in half-ton lots. *Oxalate*: Neutral firm at 5d. per lb. *Cyanide* very firm at 1s. 3d. per lb. for 98 per cent. cake, and still scarce for prompt delivery. *Bichromate*: 4d. per lb. *Bicarbonate*: 30s. per cwt. for crystal or powder.

Quinine—Remains very quiet, makers' prices for the best *German* brands being still 11d. per oz. for 1000-oz. lots in 100-oz. tins, whilst from second hand it is possible to buy somewhat below this figure. Opinions as to the future course of the article are somewhat divided. Buyers can, however, hardly be very wrong in securing a fair stock at present reduced value.

Rhubarb.—This article continues in good demand, and a fair business has been done privately this week in high dried at 1s. 2d. per lb., and *Canton* at 1s. 4d. to 1s. 5d. per lb.

Saccharin.—The question as to the rights of the *Saccharin Corporation* to the monopoly of the article appears to be still *sub judice*. Buyers will do well to see that they get the right article, and from a reliable source.

Saffron—Remains firm at 35s. to 42s. 6d. for *Valencia* and 25s. to 26s. for *Alicante*.

Salicine.—Makers' price is unchanged at 10s. 6d. per lb.

Senna.—*Tinnevelly*: The demand is very active, and a good business has been done this week from second hands in all qualities, more especially in those ranging in values between 3d. and 4d. per lb. *Pods* have been dealt in at 2d. to 2¼d. per lb.

Shellac.—There is rather more inquiry on the spot, and some small business has been done in *Second Orange* at fully steady prices, including middling to good bright *TN* at 62s. to 64s. per cwt., and blocky at 61s. per cwt., cash terms. The arrival market is quiet, with sales of *TN*, April to June steamer, at 59s. per cwt., *c.i.f.*, with further sellers at same price. The speculative market is fairly steady but quiet.

Soda Compounds.—*Crystals*, on ex-ship terms, are still quoted 60s. per ton. *Bicarbonate*: For the commercial quality, 98 per cent., £7 5s. per ton remains the quotation, and 18s. per cwt. is asked for the pure and fully-bicarbonated article. *Hyposulphite* is in good demand at 5s. 6d. to 8s. per cwt. according to brand. *Iodide* steady at 11s. 7d. per lb. *Bromide*: 2s. 2d. per lb. *Nitrate*: Refined £7 15s. to £8 5s. per ton. *Sulphite*: 17s. 6d. to 22s. 6d. per cwt. according to brand. *Caustic*: £7 15s. per ton for the 70 per cent. and 20s. per ton less for the 60 per cent.

Spices (Various).—*Black Pepper*: Lampong bought in at 3¾d., 26 bags Mangalore extra bold clean heavy sold at 7¾d. to 8d. *White Pepper*: Only 84 bags Penang, chiefly damaged, sold without reserve at 6¼d. *Capsicums*: 17 bales Bombay bought in, ordinary brownish round 32s. 6d., bold dull 50s. *Chillies*: Zanzibar bought in at 35s. to 42s. 6d., and Japan good to fine bright at 50s. to 52s.; 10 bags fine clean red African sold at 44s. *Cassia lignea*: 200 boxes bought in at 52s., also 449 bales broken at 35s. to 38s. *Cinnamon chips*: 100 bags coarse Ceylon sold at 3d. *Mace*: 8 cases Penang sold, without reserve, partly wormy, at 1s. 7d. to 1s. 8d.; 31 packages West India sold, low to good, 1s. 4d. to 1s. 9d. *Nutmegs* are dull at about previous rates. *Pimento* chiefly bought in at 4½d. to 4¾d., only 16 bags being sold at 4⅜d.

Sugar of Milk.—Very finest quality is obtainable at 57s. 6d. per cwt. for *powder* in 2-cwt. cases for quantity.

Sulphate of Copper.—A fair business passing at firm rates. Quotations unchanged at £16 5s. to £17 per ton, according to brand.

Sulphonal.—One of the two principal makers is still accepting orders for limited quantities at 7s. 3d. per lb. It is believed, however, that an important advance in price of the article is not improbable in the near future.

Turmeric—Continues dull and quiet, with but few sales. *Bengal* is quoted 14s. 6d. per cwt., good *Madras* finger, 19s.; and fair *Cochin* split bulbs at 8s. 6d. per cwt.

NEWCASTLE CHEMICAL REPORT.

March 23, 1898.

This chemical market is very quiet, without any change in values. Bleaching Powder, according to market, £6 5s. to £6 10s. Caustic Soda, 70 per cent. basis, £7 10s. Soda Crystals, basis, 45s. to 57s. 6d. Soda Ash, 52 per cent., £4 5s. Alkali, 52 per cent., £5 5s. Sulphur, £4 15s. to £5 per ton.

MANCHESTER CHEMICAL REPORT.

March 23, 1898.

A better feeling prevails in the trade locally, and inquiries for spring shipments are said to be fairly good. Soda Crystals are about 2s. 6d. a ton higher, and Caustic Soda, especially high strength, is firm, but Bleaching Powder continues to rule rather dull. Sulphate of Copper is a shade lower, being quoted £16 10s. to £17 per ton, best brands, delivered Manchester. In face of the advance in the metal, this is rather unusual, and it would appear that there are good stocks of the material, both in first and second hands. Brown Acetate is still scarce, but without change in last week's prices. Yellow Prussiate is fairly firm at 6¾d. to 7d. per lb., best local makes, and Green Copperas is a shade easier, but without change in price. Benzols and Naphthas are steady. Alum continues dull and is quoted £4 17s. 6d. to £5 for loose lump. Recovered Sulphur is rather higher, £4 17s. 6d. to £5 in bags on rails.

LIVERPOOL REPORT.

March 23, 1898.

Quotations generally have not changed to any great extent since last report. Potashes have dropped 9d. per cwt. and so has spirit of turpentine; slightly easier prices also ruling in linseed and linseed oils.

Ammonium Salts.—*Sulphate* is lower in price, being now quoted at £9 5s. per ton, others unchanged.

BEESWAX.—5 blocks of Sierra Leone found buyers at £6 8s. 9d. per cwt.

BLEACHING POWDER. — £5 12s. 6d. to £6 5s. per ton.

CARARYSEED—Is neglected at the present moment, so that the price, 26s. to 27s. per 464 lbs. for Turkish is only nominal.

CARNAUBA WAX.—Further sales of yellow have been effected at the slightly lower price of 70s. per cwt.

CHILLIES.—30 bags good Sierra Leone fruit sold at 44s. per cwt.

KOLA NUTS.—Small sales of fresh took place at 2½d. per lb.

LINSEED—Is a little steadier in tone. 20 tons River Plate were bought up ex-store at 34s. 9d. per 416 lb. Calcutta is offering on the spot at 36s. 6d., forward at 35s.

RIVER PLATE—Offers at 34s. 6d., forward 33s.

OILS (FIXED) AND SPIRITS.—*Castor Oils* are just now quiet, and though Calcutta is quoted at 3¼d. to 3$\frac{5}{16}$d. per lb., and French 1st pressure 3¼d., lots off the quay could be bought at a lower figure, inquiry being small. *Olive Oils*—Spanish have sold to about 40 tons, and are quoted at £33 to £33 10s. for Malaga and Seville. *Linseed Oil* is offering at 17s. to 17s. 6d. per cwt. *Cottonseed Oil* is unchanged at 15s. 3d. to 15s. 9d. per cwt. *Spirits of Turpentine* is in buyers' favour at 9d. per cwt. less, viz., 25s.

POTASH SALTS.—*Cream of Tartar* is still at 77s. to 78s. per cwt., but inquiries are few. *Potashes* are dull at the reduced rate of 20s. 9d. per cwt. *Pearlash* is only nominal at 37s. 6d. to 40s. per cwt.

SODA SALTS.—*Bicarbonate* firm at £6 15s. per ton. *Borax* quiet at 13s. 10d. per cwt. *Caustic*: 76 per cent. to 77 per cent £8 15s. per ton; 70 per cent. £7 5s.; 60 per cent. £6 5s. *Crystals* dearer £3 per ton.

SULPHUR.—Roll, £6 5s. per ton. Flowers, £7 12s. 6d.

SULPHATES.—*Copper* quiet at £16 7s. 6d. to £16 10s. per ton. *Iron* firm at 36s. per ton for Welsh, and 38s. for Lancashire.

MARRIAGES.

BLOMFIELD—POLL.—On March 16, at the Lewisham Congregational Church, by the Rev. J. Morlais Jones, Francis H. Blomfield, chemist, of Erith, to Louisa E. Poll, only daughter of the late Isaac Poll, of Sydenham.

Football.

PHARMACEUTICAL FOOTBALL CLUB V. BLOOMSBURY.—This match was played on Saturday last at Acton, and resulted in a win for the Pharmaceutical by 3 goals to 1.

PHARMACEUTICAL TEAM.—Prescott, goal; Jones and Metcalfe, backs; Payne, Nelson, and Evans, half-backs; Shelton, Day, Owen (centre), Warren, and Wild, forwards.

NEW BOOKS AND NEW EDITIONS.

"Animated Photography: The A.B.C. of the Cinématograph." By Cecil M. Hepworth. 1s. London: Hazell, Watson, & Viney.

"The Food Plants of Scale Insects (Coccidæ)." By T. D. A. Cockerell. Pp. 60. 8vo., sewed. 3s. London: Wesley.

"A Text-Book of General Botany." By C. C. Curtis. Pp. 360. 4to., cloth. 12s. net. London: Longmans.

"Agricultural Chemistry." By Adie and T. C. Wood. 2 vols. Pp. 6+280 and 7+229. Small cr. 8vo., cloth. 7s. net. London: K. Paul.

"Rust, Smut, Mildew, and Mould." By M. C. Cooke. Being an introduction to the study of microscopic fungi. Sixth edition. Revised and enlarged. Illustrated. Pp. 270. Cr. 8vo. 6s. London: W. H. Allen.

"North American Lemnaceæ." By C. H. Thompson. Illustrated. Pp. 22. 8vo., sewed. 1s. 6d. net. London: Wesley.

"A Plain and Easy Account of British Fungi." By M. C. Cooke. With especial reference to the esculent and economic species. Sixth edition, revised. Illustrated. Cr. 8vo. 6s. London: W. H. Allen.

EXCHANGE.

OFFERED.

Shop Fittings.

Entire Fittings of Chemist's Shop to be sold in one lot or parts, or shop may be rented as fitted. Best offer accepted.—149, Barking Road, Canning Town, E.

Miscellaneous.

Block-tin Still, complete, new, price 14s.; 4 Hypodermic Syringes, in cases complete, price 2s. 6d. each; Female Rubber Urinal, Maw's, condition new, price 8s. 6d.; No. 3 Kodak, ready charged, A1 condition, price £5 10s.—"Chemist," Milton Road, West Cliff, Southend.

Werner's Pill-massing Machine, 6 lbs. size, nearly new, price £5, cost £8 10s., *vide* 'C. and D. Diary,' 1897 and 1898.—Holden, Chemist, Barnsley.

Magic Lanterns, second-hand; triples and biunials; oxyhydrogen microscope; marvellous pamphengos oil; lantern gives 14-ft. picture; 60,000 slides and effects; 4-in. 4-wick lanterns, 18s. 6d. each, bargains; illustrated list post free, 2d. Animated photographs: A splendid machine for £9 9s.—Hughes, Brewster House, 82, Mortimer Road, Kingsland, N.

Twelve Pound Tins finest English honey, six shillings each, free on rail.—Abraham, Wainfleet St. Mary.

Loze & Co.'s No. 1A soda-water machine, for filling syphons and corked bottles, complete; indispensable to chemists; self-working by chemical action; original cost, £41; cash price, £22; including about 3 cwt. soda for generating gas; reason for sale, purchasing larger plant.—T. Marris, Mineral-water Manufacturer, Worksop.

Six well-tried and effectual formulæ, viz., eczema mixture, 1s. 6d.; neuralgia mixture, 1s. 6d.; influenza mixture, 1s.; erysipelas mixture, 1s.; epilepsy mixture, 2s. 6d.; tonic bitters, 1s.; with matter for labels and circulars, 1s. extra.—Prescriber, 6, Norfolk Street, Sunderland.

WANTED.

Wanted.—*Pharmaceutical Journal*, July 13, August 3, 1895. Full price will be paid for clean and complete copies by the Publishers, 5, Serle Street, London, W.C.

Wanted, old electric lamps and scrap platinum, or old platinum utensils; utmost value promptly remitted by—P. Rowsell, 14, Walcot Square, Lambeth, London, S.E. (Please mention this paper).

Wanted, Maisch's 'Materia Medica,' Proctor's 'Pharmacy,' fairly recent editions.—Davis, 7, Sidney Terrace, Weston-super-Mare.

Wanted, Southall's 'Materia Medica Cabinet,' either C or D collection. Send particulars to Mallinson, c/o Reynolds, Chemist, Harrogate.

DIARY FOR THE WEEK.

SATURDAY, MARCH 26.

PHARMACEUTICAL FOOTBALL CLUB V. PAST AND PRESENT, at Wormholt Farm, Shepherd's Bush. Kick off at 3.45. A smoking concert will be held at the Bush Hotel after the match.

MONDAY, MARCH 28.

ABERDEEN PHARMACEUTICAL ASSOCIATION, at 11 a.m. Special meeting in the rooms, 21, Bridge Street.

BRADFORD AND DISTRICT CHEMISTS' ASSOCIATION, at 8 p.m.
"Chats on Trade Topics," by E. Mackay.

ROYAL GEOGRAPHICAL SOCIETY, at 8.30 p.m.
"Exploration On and Around Mount Aconcagua," by Edward A. Fitzgerald.

TUESDAY, MARCH 29.

LEICESTER CHEMISTS' SOCIAL UNION, at 8.30 p.m. Annual Dinner. (Wyvern Hotel.)

ROYAL INSTITUTION, at 3 p.m.
"The Simplest Living Things" (Lecture XI.), by Professor E. Ray Lankester.

WEDNESDAY, MARCH 30.

NEWCASTLE-ON-TYNE AND DISTRICT CHEMISTS' ASSOCIATION, at 8 p.m.
Annual Dinner. Also Presentation of Testimonial to Mr. Barnard S. Proctor. (Metropole Hotel.)

THURSDAY, MARCH 31.

BRIGHTON JUNIOR ASSOCIATION OF PHARMACY. Conversazione.

CHEMICAL SOCIETY, at 3 p.m.
Annual General Meeting.

CHEMISTS' ASSISTANTS' ASSOCIATION, at 9 p.m.
"Alternation of Generations," by Harold Matthews.

ROYAL INSTITUTION, at 3 p.m.
"Recent Researches in Magnetism and Diamagnetism" (Lecture V.), by Professor J. A. Fleming.

FRIDAY, APRIL 1.

ROYAL INSTITUTION, at 9 p.m.
"Liquid Air as an Analytic Agent," by Professor Dewar.

PARTNERSHIPS DISSOLVED.

(From the London Gazette.)

Frederick M. Miller and J. W. MacVine, Surgeons, Northolme, Upper Clapton, and 284, Amhurst Road, Stoke Newington. Debts will be received and paid by Frederick M. Miller.

G. Lacy Barritt and Wm. L. Byham, Physicians and Surgeons, Spalding, Lincs. Debts will be received and paid by G. Lacy Barritt, Robert Rees and Geo. Latham, Physicians and Surgeons, West Bromwich.

Ernest Watson and Edward Boustead (trading as the Valnera Co.), Patent Medicine Manufacturers, 10, St. George's Crescent, Liverpool. Debts will be received and paid by Edward Boustead.

W. J. Shone and F. J. F. Culhane, Surgeons, Great Marlow, Bucks.

RECEIVING ORDERS IN BANKRUPTCY.

(From the London Gazette.)

Chas. Edward Davies (lately trading as P. H. Schroder & Co., also formerly as C. E. Davies & Co., and now as Parker, Davies, & Co.), 34, Mincing Lane, E.C., and residing at Mountford Lodge, Kent Road, Gravesend.

John A. Parkins, Dentist, 29, Church Road, Lower Broughton (lately residing at 38, Talbot Road, Old Trafford, and 267, Chapel Street, Salford, and lately carrying on business at 8, King Street, Manchester).

NEWS & TRADE NOTES

MENE TOWELS

These towels are made in three sizes, retailing at 6d., 1s., and 1s. 6d. per dozen respectively, and they are worthy of special attention on account of their wonderful capacity for absorption of fluid. A single towel will take up 32 C.c. of fluid, and the waterproof wool backing prevents any of it passing through. The outer covering is absorbent gauze, then comes a layer of absorbent cotton, whilst the bulk of the towel consists of cellulose wadding, which possesses marvellous diffusive properties. The whole is rendered sterile by being treated with 1 in 2000 sublimate solution.

PROFITABLE PERFUMERY.

Messrs. Ayrton & Saunders, of Liverpool, are offering excellent value in perfumes put up in fancy glass bottles. The 6d. sizes are supplied at 48s. per gross, the 1s. lines at 96s. per gross, the 1s. 6d. sizes at 12s. per dozen, and a special 1s. 8d. size at 14s. per dozen. The last-mentioned is a 2-oz. bottle of best triple extract perfume, and chemists may have their own name and address printed free on the labels with orders of not less than six dozen. Similar advantages are offered with the other sizes, and chemists who are anxious to push specialties of their own would do well to write for samples.

VI-COCOA.

The cocoas on the market are many and various, but amongst them Dr. Tibble's Vi-Cocoa continues to hold its own. The preparation, as is well known, contains a certain proportion of kola and extract of malt, and its flavour commends it to many who object to that of unmixed cocoa. The retail prices of the preparation are protected, the minimum for each size being but slightly below the face prices, and anyone cutting below the minimum will be refused supplies by the makers.

MESSRS. BARCLAY & CO., LIMITED.

The second annual ordinary general meeting of this Company will be held at the Memorial Hall, Farringdon Street, E.C., on Wednesday, April 6, at 2.30 p.m., to receive the Director's report and statement of accounts to December 31, 1897; to elect a director and auditor; to declare dividends; and to transact the business of an ordinary general meeting. The report shows a profit balance of £1761 0s. 6d., being an increase of £454 1s. 6d. over 1896. The Directors recommend a dividend on the ordinary shares of 5 per cent., leaving a balance of £802 9s. 6d., which it is proposed to carry to the reserve funds and to write off the capital account.

RECEIVING ORDER IN BANKRUPTCY.

(From the London Gazette.)

Samuel Addingley, Glass Bottle Manufacturers, Lyndhurst, Tansheef, Pontefract, and carrying on business at Hope Glass Works, Knottingley, Yorks.

NEWS IN BRIEF

Mr. George R. Durrant, chemist and druggist, of Hertford, has taken into partnership his son, George Stuart Durrant, and the name of the firm in future will be George Durrant and Son.

The Students and Ex-Students of the North of England School of Chemistry and Pharmacy, Newcastle-on-Tyne, held their annual re-union in the Grand Assembly Rooms on Wednesday, March 16. Mr. James Whittle, Morpeth, presided over a very large company of ladies and gentlemen. Mr. N. D. Pringle, an "Old Boy," in the name of the present and past students, presented Mr. Merson, who until lately was Principal of the School, with a splendid illuminated address. Coupled with Mrs. Merson's name he also presented a magnificent onyx marble drawing-room timepiece and side ornaments suitably inscribed. Mr. Merson replied briefly, stating how much he appreciated the good feeling which had prompted this mark of esteem from his old pupils. Mr. F. R. Dudderidge, Principal of the School, proposed a vote of thanks to the Chairman and Presentation Committee, and this was seconded by Mr. T. Maltby Clague, Local Secretary of the Pharmaceutical Society. Immediately on the termination of this pleasant ceremony the company proceeded to the ballroom, where dancing was engaged in with zest till after 2 a.m.

A Photographic Exhibition is to be held in the City Art Gallery, Manchester, during April, all the Photographic Societies within eighty miles of Manchester taking part.

Sir George King has retired from the superintendence of the Royal Botanic Gardens, Calcutta, and has been succeeded by Surgeon-Major David Prain.

Mr. W. Prebble has opened a shop at 14, Newmarket Street, Blackburn. The whole of the fittings, including cabinet ware, show jars, bottles, show cases, counters, etc., being carried out by Messrs. Ayrton & Saunders.

Leicester Chemists' Social Union.—The annual dinner and concert was held in the Wyvern Hotel on March 29. About forty persons sat down to a splendid repast, which was followed by several excellent speeches from the President, Mr. T. Howard Lloyd, and other gentlemen.—An encouraging report of the year's work was read by Mr. F. W. Goodess, Hon. Sec., and a report from Mr. Hearnshaw, Hon. Treasurer.—The Committee and officers were then unanimously re-elected.—Afterwards a good musical programme was gone through, which contributed much to the success of the evening.

Mr. L. Tierney, chemist, Marple, has passed the Intermediate Examination for the degree of M.B.Ch.B. of the Victoria University.

Chemists' Assistants' Association.—The third and last Cinderella of the season was held at the Portman Rooms on Thursday, March 24. In spite of the extreme inclemency of the weather, a large number of members and their friends assembled and spent a thoroughly enjoyable evening. The arrangements were again in the experienced hands of Messrs. Robins and Cooper, and were admirably carried through.

PARTNERSHIPS DISSOLVED.

(From the London Gazette.)

J. Hervey Jones & W. C. Grosvenor, Physicians and Surgeons, Chorlton Lodge, Stretford Road, Manchester, and 82, Alexandra Road, Moss Side, Manchester. Debts will be received and paid by W. C. Grosvenor, who will continue the practice.

Barnard S. Proctor & T. M. Clague (trading as Proctor, Son & Clague), Chemists and Druggists, Newcastle-on-Tyne. Debts will be received and paid by T. M. Clague, who will continue the business under the old style.

Edward Wavell, 144, Victoria Street, S.W., and R. D. Littlefield, 4, Victoria Terrace, Hove, Chemists and Druggists. Debts will be received and paid by R. D. Littlefield.

LIVERPOOL REPORT.

March 30, 1898.

Ammonium Salts.—*Carbonate*: 3d. per lb. *Sal ammoniac* firm at 35s. and 33s. per cwt. *Sulphate* is very dull, £8 17s. 6d. per ton.

Beeswax.—Sales of Chilian are reported at £7 to £7 2s. 6d. per cwt.

Bleaching Powder—Is quiet at £5 12s. 6d. to £6 5s. per ton.

Canaryseed.—Turkish continues nominal at 26s. to 27s. per 464 lbs.

Copperas—Is very firm at 38s. per ton for Lancashire and 36s. for Welsh.

Copper Sulphate—Is quiet at £16 5s. to £16 7s. 6d. per ton.

Hempseed.—84 bags of Syrian were sold ex quay on private terms.

Kola Nuts.—30 packages of dried found buyers at 1½d. per lb.

Linseed—Is firm, but business is not plentiful, small quantities of Calcutta have sold ex quay at 36s. per 416 lbs., and River Plate at 34s. 6d. 100 bags Turkish feeding seed went for 38s. 6d. for 416 lbs.

Oils (Fixed) and Spirits.—*Castor* is slow of demand, through holders expecting late rates. Calcutta good seconds 3¼d. to 3$\frac{15}{16}$d. per lb., and French first pressure at 3¼d. per lb. *Olive*: Spanish origin are still quoted at £32 to £33 10s. per ton, with a moderate inquiry and fair business passing. *Linseed* of Liverpool make is firm at 17s. to 17s. 6d. per cwt. *Cottonseed* is steady at 15s. 3d. to 15s. 9d. per cwt.

Spirits of Turpentine—Is firm at the improved price of 25s. 3d. to 25s. 6d. per cwt.

Phosphorus.—Wedges, 2s. per lb.; sticks, 2s. 1d.; amorpuous, 2s. 8 d. per lb.

Potash Salts.—*Bichromate*: 3¾d. per lb. *Chlorate*: 3¼d. to 3½d. *Potashes* very dull at 20s. 9d. per cwt. *Pearlashes* nominal at 37s. 6d. to 40s. per cwt. *Prussiate*: 6¾d. per lb. *Saltpetre*: 21s. 6d. per cwt.

Sulphur. — Roll, £6 5s. Flowers, £7 12s. 6d. per ton.

MARKET REPORT and Prices Current

Specially compiled for the Pharmaceutical Journal

The quotations here given are in all cases the lowest cash prices for bulk quantities, and often the articles quoted have to be sorted in order to suit the requirements of the retail pharmacist. The cost of freightage from the chemical and drug works to the various distributing centres must also be considered. It is important that these conditions should be borne in mind in making any comparison between the prices quoted and those of the wholesale drug trade.

LONDON REPORT.

MARCH 31, 1898.

Business has again been restricted during the past week, the threatening aspect of the political horizon having by no means tended to improve matters. The chief feature has been the weakness of Quinine, the advent of the Java-made article on the European markets having discouraged holders; the actual changes in prices have been otherwise slight. Cocaine is steady. Phenacetine quiet. Sulphonal without change. Bromine and Bromides, Iodine and Iodides, Quicksilver and Mercurials steady at unchanged prices. Cream of Tartar. Tartaric Acid and Citric Acid firm. Acid Boracic and Borax fairly steady. Permanganate of Potash quiet. Acid Carbolic dull. Sulphate of Ammonia weak. Senna in good demand. Orris Root firmer. Shellac dull and weak. Glycerine quiet. Cod-liver Oil dearer for the new oil. Acetanilide quiet. Camphor steady. The following are actual prices of articles of chief interest:—

ACETANILIDE—Is quiet at 1s. 2d. to 1s. 3d. per lb.

ACID BORACIC—Fairly firm with moderate inquiry, *crystals* 23s. per cwt., *powder* 25s. per cwt.

ACID CARBOLIC—Is quiet at 6½d. to 6⅝d. per lb. for the 35° to 36° C. *ice crystal* in large packing, other qualities and packing in proportion. *Crude*, 60° F., 2s. 1d. per gallon; 75° F., 2s. 7d.; *liquid*, 95 per cent., of pale straw colour, 1s. 2d. per gallon in quantity and in 40-gallon casks.

ACID CITRIC—Frm at 12¾d. to 1s. 1d. per lb.

ACID OXALIC—Firm at 3⅝d. to 3¾d. per lb., according to quantity.

ACID TARTARIC—Is firm at 12¾d. per lb. for *foreign* and 1s. 1d. per lb. for *English* crystals.

AMMONIA COMPOUNDS.—*Sulphate* remains very dull, but prices are unchanged since last week at £9 for gray, prompt, 24 per cent., London. *Bromide* firm at 2s. 1d. to 2s. 2d. per lb. as to quantity. *Iodide* steady at 13s. 4d. per lb. *Sulpho-cyanide* firm at 1s. 2d. per lb. *Oxalate*: 6¼d. to 6½d. per lb. *Sal ammoniac*: Firsts, sublimed, 35s. per cwt.; seconds, 33s. per cwt. *Chloride*: 26s. to 32s. 6d. per cwt. as to quality.

ASAFŒTIDA—Is in better inquiry for the United States, and a few parcels have been sold at private rates.

BLEACHING POWDER.—Quiet but unchanged at £7 5s. per ton for quantity.

BORAX—Unchanged at 14s. to 14s. 6d. per cwt. for *crystals* and 14s. 6d. to 15s. per cwt. for *powder*.

BROMINE AND BROMIDES—Unchanged, *Pot. Bromide* being in good demand at 1s. 9d. per lb. in half-ton lots.

CAMPHOR.—*Crude*: Quotations are steady, but very little business is doing. *China* is quoted 89s. per cwt., *c.i.f.*, and *Japan* 94s. per cwt., *c.i.f.*

CLOVES.—Privately *Zanzibar* are steady though quiet. Sales include June-August delivery at 3 2/3 3/3d. to 3 1/16d. At auction only 55 balcs *Zanzibar* offered, of which 30 bales fine bright sold at 4d. 25 cases *Penang* all bought in.

COAL TAR DISTILLATION PRODUCTS.—*Toluol*: 1s. 9d. per gallon. *Benzole*: 50 per cent., 1s. 6½d. per gallon; 90 per cent., 1s. 4d. *Crude Naphtha*: 30 per cent. at 160° C., 8½d. *Solvent Naphtha*: 95 per cent. at 160° C., 1s. 10½d. per gallon.

COCAINE.—Best brands are held for 10s. to 10s. 6d. per oz. according to quantity, this being makers' price, while from second hand it would be possible to shade these figures.

CODEIA—Steady at 11s. 3d. to 11s. 6d. per oz.

COD-LIVER OIL.—Owing to the stormy weather and consequent unsatisfactory yield of the fishery so far, price for new *Norwegian* oil has advanced appreciably, quotations now ranging from 80s. to 95s, *c.i.f.*, according to brand, while the possibility of even higher prices is freely discussed. This advance in price of new oil has naturally also improved the demand for old oil, which is also stated not to be in such large supply as had been generally believed. The official report of the production of cod-liver oil in Lofoden to March 26, 1898, 6510 hectolitres, against 11,000 in 1897, 6240 in 1896, 10,700 in 1895, 8160 in 1894, and 17,045 in 1893. Market in Norway very excited, and prices rapidly advancing.

CREAM OF TARTAR—Is very firmly held on the other side, but business here is not very active. First white *crystals* on the spot are held for 76s. 6d. per cwt., and *powder*, 78s. 6d. to 79s. 6d. per cwt., same position.

DANDELION ROOT—Is very scarce, for thin *German* root 42s. 6d. per cwt. is asked, whilst for prime 45s. to 47s. 6d. per cwt. would have to be paid. There seems to be no *English* root available.

ESERINE (*Physostigmine*).—It is proposed to fix a new scale of prices for this article, based on 1s. 6d. per gramme for quantities of less than 25 grammes.

GINGER.—*Cochin* continues flat, and of the light supply of 578 bags rough, only 127 bags sold without reserve. Medium and small wormy washed at 17s. 6d. Of cut kinds, 35 cases sold at easier rates; old B cut at 67s. 6d.; new bold cut *Calicut* at 78s. 6d. to 83s. 100 bags limed *Japan* bought in at 19s.; also 130 bags *African* at 23s. *Jamaica* is firm, and higher qualities realised better prices; about 270 barrels sold, very common, lean and dark Rhatoon, 65s.; good common small and brown, 70s. to 75s.; low middling small and dull, scraped and washed, 76s. to 81s.; middling dull, 82s. 6d. to 83s.

GLYCERIN—Quiet at 52s. 6d. to 57s. 6d., according to quantity and brand, for *German* double-distilled, chemically pure white 1·260 quality in tins and cases, price of *English* being slightly below these figures.

GUM TRAGACANTH.—Demand has been fairly active, resulting in business for export to United States, as well as some small lots for the home trade. Firsts are quoted £13 10s. per cwt., seconds, £12 5s.; thirds, £11; fourths, £9 10s., and lower qualities in proportion.

IODINE AND IODIDES—Unchanged at 7½d. per oz. for the former, 9s. 9d. for *Pot Iodide*, and 13s. 4d. for *Iodoform* in large bulk quantity.

JAPAN WAX—Quiet at 35s. 6d. per cwt. on the spot.

MENTHOL—Steady at 7s. 3d. to 7s. 6d. per lb. for fine white *crystals* on the spot.

TURMERIC—Remains dull with small private sales of *Bengal* at 13s. 9d. per cwt., and *Madras* fair bright finger at 19s. cwt.

MERCURIALS—Unchanged at 2s. 2d. per lb. for *Corrosive Sublimate*, and 2s. 6d. for *Calomel* in 5 cwt. lots.

MORPHIA.—Price is nominally still at 4s. 3d. per oz. for the *Hydrochlorate* powder, demand for the article remaining very quiet.

NITRATE OF SODA—Steady at £7 15s. to £8 per ton for *refined*, according to quantity and packing.

OILS (ESSENTIAL).—*Peppermint*: American *H.G.H.* steady with an improved inquiry, on the spot 5s. 9d. per lb. is quoted, whilst for arrival prices are rather firmer. *Japanese*: Dementholised 3s. per lb., and 40 per cent. 4s. 3d. per lb., both *c.i.f.* terms. *Star Aniseed* is rather easier at 6s. 6d. to 6s. 9d. per lb. on the spot, the quotation for arrival remaining at 6s. 6d. *c.i.f.* *Cassia* slightly firmer, 75 to 80 per cent. being quoted 4s. 7½d., and 80 to 85 per cent. 5s. per bottle *c.i.f.* terms. *Citronelle* steady with small sales at 1s. 2d. per lb. for tins, and 1s. 1½d. for drums. *Lemongrass* fairly steady at 5d. per oz.

OILS (FIXED) AND SPIRITS.—*Linseed*: An improvement has taken place in this market; on the spot pipes £15 12s. 6d., barrels £16 5s. *Rape* firm at the late reduction; ordinary brown on the spot £22, refined £23 10s. *Cotton*: Dearer, closing firm; London crude spot £13 2s. 6d., refined £14 10s. to £15, according to make. *Olive*: Spanish and Levant unchanged at £33. *Coconut*: Ceylon on the spot unchanged at £23, but Cochin same position is lower at £27 10s. *Palm* lower at £23 on the spot. *Turpentine*: Rather firmer and closing steady at 24s. per cwt. for American on the spot. *Petroleum Oil* is dull but unchanged at 4⅛d. per gallon for Russian on the spot, and 4½d. per gallon for American; Water-white 5¾d. per gallon. *Petroleum Spirit*: American 5½d. per gallon, deodorised 5¾d. per gallon.

OPIUM.—Very quiet at unchanged prices. In Smyrna a few cases have changed hands at 8s. 2d. to 8s. 4d. per lb.

ORRIS ROOT.—A good export business to the United States is reported from Leghorn, and stocks, both of Florentine and Verona, in first hands are said to be small. *Florentine* is quoted from 35s. to 50s. per cwt., *c.i.f.*, according to quality.

Permanganate—Quiet but steady at 60s. and 65s. per cwt. respectively for small and large *crystals* in ton lots.

Phenacetin—Is rather firmer at 3s. 9d. to 4s. per lb., according to quantity for the best brands.

Pilocarpine.—Price remains unchanged at 28s. per oz. for both the *Muriate* and the *Nitrate* in 1-oz. lots. It is expected, however, that prices will advance considerably ere long in consequence of the dearth of *Jaborandi Leaves* of suitable quality for the manufacture of the alkaloid.

Potash Compounds.—*Chlorate* is very dull and spot quotation is unchanged at 3½d. per lb. *Bromide* firm at 1s. 10lb. *Iodide* unchanged at 9s. 9d. to 10s. 3d. per lb., according to quantity. *Prussiate*: Yellow, 6¾d. per lb.; red. 1s. 2d. per lb. *Bichromate*, 4d. per lb. *Oxalate* steady at 5d. per lb. for the neutral. *Permanganate* quiet and unchanged at 60s. per cwt. for small, and 65s. per cwt. for large crystals. *Cyanide* firm at 1s. 3d. for 98 per cent. cake. Makers are still unable to overtake deliveries. *Bicarbonate* unchanged at 30s. per cwt. for crystal or powder.

Quicksilver—Is dull with but small business doing. First hands still ask £7 2s. 6d. per bottle, whilst second hands are 6d. to 9d. less, according to quantity.

Quinine.—Market is very dull, the advent of the Java made quinine having frightened holders. Makers' price remains unchanged at 11d. for best *German* brands, but from second hand there are sellers of limited quantity at 10d. per oz., and possibly even below this figure.

Senna.—It is said that over 100 bales *Tinnevelly* have changed hands this week by private sale at very full prices from 2½d. to 4½d. per lb. for fair small to medium bold greenish leaf. *Alexandrian*: The principal demand is for finest picked leaves, of which there are none in London in first hands. A few bales broken leaf have been sold at about 4½d. per lb.

Shellac.—The sales on Tuesday marked a further decline. Supplies were moderate, but the bidding opened very slowly, improved however, as the sale progressed, and about one-third found buyers at a decline of about 1s. to 2s. per cwt. on good *second Orange*. A total of 943 cases was offered, and 312 cases sold. *Second Orange*: Of 684 cases 294 sold; fair bright, very slightly matted, at 60s.; sickly palish flat at 59s. to 60s.; fair bright curly cakey, little broken, at 59s. to 60s.; fair bright reddish cakey at 59s. to 60s.; strong curly cakey, 59s.; curly red cakey to blocky at 58s.; fair bright shivered at 58s.; ordinary reddish livery at 57s. to 58s. *Garnet*: 59 cases offered and bought in; fair flat ruby *PBG* at 66s., and blocky *OCC* at 67s. *Button*: Of 200 cases 28 sold, chiefly without reserve; weak glassy 2nds, of good colour, at 66s.; common dark 2nds at 62s. The market, since the auctions, has shown more firmness, with improved demand. Prices in Calcutta are also higher.

Soda Compounds.—*Crystals* unchanged at 60s. per ton, ex ship terms. *Bromide* unchanged at 2s. 2d. per lb. *Iodide* steady at 11s. 7d. per lb. *Hyposulphite* firm at 5s. 6d. to 8s. per cwt., according to brand. *Bicarbonate* is firm at £7 5s. per ton for the commercial 98 per cent., and for the fully bicarbonated quality 18s. 6d. per cwt. remains the quotation. *Sulphite* steady at 17s. 6d. to 22s. 6d. per cwt., according to brand. *Nitrate*: Refined, £7 15s. to £8 5s. per ton. *Caustic*: £7 15s. per ton for the 70 per cent., and 20s. per ton less for the 60 per cent.

Spices (Various).—*Black pepper*: Only 40 bags Aleppy offered and bought in at 4d. *White pepper*: 119 bags Penang sold, chiefly without reserve at 6⅞d. to 6¼d.; 40 bags Singapore sold, mainly fine at 8½d., one lot 7½d. *Chillies*: 54 cases good and fine bright Japan sold at 40s. 6d. to 42s. *Capsicums*: Only very small lots offered and bought in. *Cinnamon Chips*: 160 bags Ceylon bought in at 3d. to 3½d. *Mace*: 10 boxes *Singapore* bought in at 1s. 10d.; 19 packages *West India* sold at 1s. 5d. to 1s. 8d.; low, 1s. 4d. *Nutmegs* dull; 80 packages *West India* sold, 65's at 2s. 2d., 71's to 74's, 1s. 11d. to 1s. 9d.; 80's to 87's, 1s. 8d. to 1s. 7d.; 92's to 94's, 1s. 5d.; 94's to 99's, 1s. 4d.; 102's to 107's, 1s. 3d.; 106's to 111's, 1s. 2½d. to 1s. 2d.; 120's to 124's, 1s. 1½d. to 1s. 0½d.; 135's at 11d. *Pimento*: Only 49 bags were offered, and bought in at 4½d. to 4⅝d.

Sulphate of Copper—Steady on the spot at £16 10s. to £17 10s. per ton, according to brand.

Sulphonal.—The position of this article remains unchanged, outside makers appear to be sold out, and quote fancy prices. One of the two recognised makers is declining orders, the other states his willingness to still supply regular and favoured customers with limited quantities at 7s. 3d. per lb.

To-day's drug auctions passed off somewhat quietly, with, however, rather more animation than might have been anticipated in view of the actual condition of the drug and chemical trade, owing possibly to the fact that the next sales will take place four weeks hence.

Aconite Root.—11 bags fair *Japan* sold at 27s. 6d. per cwt.

Aloes.—*Curacoa*: A large parcel (1009 small gourds) imported in 1893, which have been held in anticipation of higher values in consequence of the non-shipment now in this form were offered to-day, the first lot selling at 20s. per cwt. for fair livery. No acceptable bid could be got for further lots, so the rest were bulked in one lot, consisting of fair livery down to capey, and these sold at 13s. 6d. per cwt., a very cheap price. *Socotrine*: Good kegs held for 80s. per cwt. *Cape* sold at about 1s. dearer prices, at 23s. 6d. for medium hard bright, down to 19s. per cwt. for rather drossy.

Ambergris.—1 tin part fossilised and chalky coat good flavour sold at 51s. per oz.

Annatto Seeds.—23 bags were held for 6d. per lb.

Areca Nuts.—1 bag rather wormy sold at 22s. 6d. per cwt.

Balsam Capivi.—2 casks part sold prior to auction, remainder being bought in at 1s. 11d. per lb.

Balsam Peru.—3 cases good quality held for 8s. per lb.

Balsam Tolu.—29 cases of good fair softish are held for 1s. 8d. per lb., but this was thought to be too high in the face of the *c.i.f.* quotation of 1s. 5d. per lb.

Buchu Leaves.—51 bales round leaves sold at cheaper rates, 4d. to 4¼d. per lb. for good green, and 3½d. to 3¾d. per lb. for pale green.

Cardamoms—Were in good supply, 410 cases in all being offered. At the opening prices were about 2d. lower than last sale, but later on, when it was announced that no sales would be held for four weeks owing to the Easter holidays, competition became very active, and prices closed dearer. For fine pale *Mangalore* 4s. 1d. to 4s. 4d. per lb. were paid. *Mysore*: Good medium to bold pale realised 3s. 9d. to 4s. 4d. per lb., small 3s. 1d. to 3s. 5d. per lb. Decorticated of good quality 3s. to 3s. 2d. per lb.

Cascarilla Bark.—28 bales and 5 barrels held for 35s. per cwt. for thin twiggy and 25s. for siftings.

Cassia Fistula.—10 bags very wormy thin *Bombay* could not be disposed of at 5s. per cwt.

Castoreum.—1 box of only medium quality realised 20s. per lb.

Castor Oil.—17 cases good *East Indian* firsts held for 4¼d. per lb.

Civet.—3 horns of fair commercial quality were taken out at 13s. per oz.

Colombo Root.—18 bags bold washed taken out at 50s. to 75s. per cwt.

Cowhage.—1 case very dark and mixed beans offered but no offer could be got.

Croton Seeds.—8 bags good fair sold at 61s., per cwt., which is again dearer.

Crude Antimony.—29 cases *Japan* were taken out at £21 per ton.

Cubebs.—138 bags of fair quality were bought in at 37s. 6d. per cwt.

Cus Cus Root.—3 bales good cleaned held for 30s. per cwt.

Cuttlefish.—36 mats fair pale but broken held for 3½d. per lb.

Dragon's Blood—Is scarce and only 6 cases in all were offered. 3 cases of fair bright saucers were sold without reserve at £5 per cwt., a cheap price; and 3 cases fair bright reeds, but packing rather broken, are held for £8 10s. per cwt.

Ergot.—Fair small *Russian* mixed with corn sold at 3¾d. per lb., a further 10 bags good sound held for 9d. per lb.; 6 cases *Spanish* very weevily sold at 5d. to 5¼d. per lb.

Essential Oils.—16 cases *Cajeputa* of good quality were taken out at 3s. 10d. per bottle.

Fœnugreek Seed.—Twenty bags fair quality sold at 11s. 6d. per cwt.

Grass Tree Gum.—20 bags were bought in at 12s. per cwt.

Guaza.—20 bales dusty tops held for 5d. per lb.

Guarana.—This article is exceedingly dull, 10 cases offered in auction were taken out at 1s. 7d. per lb.

Gum Benjamin.—16 cases rather common *Penang* sold without reserve at 59s. per cwt., fine *Siam* was bought in at £19 down to £6 15s. for lower quality, fine second *Sumatra* taken out at £11 per cwt., part selling subject to approval at £9 17s. 6d., medium seconds ditto bought in at £6 10s. *Palembang* at 35s. per cwt.

Gum Elemi.—13 cases of good pale sold cheaply at 25s. per cwt.

Gum Guaiacum.—4 cases were offered without reserve, fair to medium glassy block, part drossy and part frec tears, sold

at 6d. to 7¾d. per lb. 1 case very drossy and dusty at 3½d. per lb.

GUM KINO.—3 tins good genuine were taken out at 15s. per lb., a bid of 13s. being declined.

GUM MYRRH.—4 barrels good sorts were held for 70s. per cwt.

HONEY.—Fair *Jamaica* sold at 21s. 6d. to 27s. 6d. according to quality. Fair *Queensland* bought in at 22s. per cwt.

IPECACUANHA.—The stocks of all kinds are said to have fallen to 179 bales, but this did not seem to cause any competition, for with the exception of 2 bales damaged *Rio*, which sold at 7s. 9d. per lb., the whole was bought in at 8s. 2d. per lb. *Carthagena* also was exceedingly dull, and no bids were made. This quality was withdrawn at 6s. per lb.

JALAP. — 10 bales small wormy were offered, and bids of 4d. per lb. invited, but without result.

KOLA NUTS.—1 barrel *Jamaica*, of rather low quality, sold at 2½d. per lb.

MATICO LEAVES.—7 bales of this scarce article, but of broken leaf, were taken out at 1s. per lb.

MUSK.—5 tins old-fashioned *Tonquin*, small to medium, well trimmed, rather damp, held for 58s. per oz.

NUX VOMICA.—41 bags of good Cochin held for 11s. 6d. per cwt., which marks higher expectations.

ORANGE PEEL.—Good new thin cut taken out at 8d. per lb.

ORRIS ROOT.—22 bags fair *Florentine* taken out at 40s. per cwt.

REFINED CAMPHOR. — 9 cases *Japan* bought in at 1s. 3d. for slabs up to 1s. 6d. for small tablets.

RHUBARB.—Bold flat high dried ¾ good ¼ dark held for 1s. 2d. per lb., good small ditto for 1s. 2d., rough flat part small *Canton*, good colour, for 1s. 5d., bold rough round *Shensi* for 1s. 9d., ditto good round trimming root for 3s. 2d., round pickings selling at 1s. 3d. per lb.

SARSAPARILLA—Was in large supply, the bulk being of the *Lima* description, but no sales were made, and the whole was withdrawn at 1s. 2d. to 1s. 3d. per lb. *Guayaquil*: 1 bale sold at 1s. per lb. *Native Jamaica*: 3 bales were offered, but a bid of 10d. per lb. was refused. 19 bales *Honduras* were held for 1s. 6d. per lb. *Jamaica*: 3 bales held for 1s. 10d. per lb.

SENNA.—250 bales of *Tinnevelly* were offered to-day, the bulk being in first hands. Quality again was very poor, but the competition was exceedingly brisk, and very extreme prices were given, 2¼d. to 2½d. being paid for small spotty leaves, and up to 4½d. per lb. for medium leaf of good colour. There are no news of further shipments, so that even higher prices may be anticipated before the new crop comes in.

STROPHANTHUS SEED.—4 bags fair *Kombé* bought in at 3s. 2d. per lb.

SULPHATE OF QUININE.—10,000 ozs. of the Java-made article met with no buyers, there being no bid made; 9d. per oz. was understood to be the price, and the broker intimated that there was a prospect of regular shipments, which, we trust, will meet with a more favourable reception than was accorded to the first arrival. Dr. Paul's analysis and certificate was distinctly favourable as to quality, but the question of appearance will have to be taken into consideration if the article is to come into regular use here.

TAMARINDS.—20 barrels good *West Indian* sold at 10s. per cwt.

TURMERIC.—13 bags mixed finger and bulbs sold without reserve at 12s. per cwt.

VANILLOES.—Only 60 tins of all qualities were offered, and these realised good prices. *Seychelles* fetched 17s. 6d. to 20s. per lb. according to length and condition. *Madagascar* were mostly bought in as were *Tahiti*.

WAX.—Fair *Zanzibar* part sold at £6 5s. per cwt. Fair *Madagascar* held for £6 10s. per cwt. Good *Jamaica* sold at £7 2s. 6d. 50 cases *Japan* vegetable bought in at 36s. per cwt.

NEWCASTLE CHEMICAL REPORT.

MARCH 30, 1898.

Now that the Baltic steamers have commenced to load for the upper ports more activity is shown in business for heavy goods. Prices, however, remain unaltered, and are quoted as follow:—Bleaching Powder, £6 5s. to £6 10s. Soda Crystals, 42s. 6d. to 57s. 6d. Caustic Soda, 70 per cent, £4 5s. Soda Ash, 52 per cent., £4 5s. Alkali, 52 per cent., £5 5s. Sulphur, £5 per ton.

MANCHESTER CHEMICAL REPORT.

MARCH 30, 1898.

There is nothing new to report in heavy chemicals except that forward prospects for spring shipment appear fairly good. The prices for export are, however, comparatively remunerative, and the continued imposition of hostile tariffs, notably in Russia and the United States is giving the utmost anxiety to the manufacturers not only in this district but elsewhere. Turning to miscellaneous articles, Sulphate of Copper for best brands is about 10s. per ton higher, owing to the advance in the metal, but resale lots can still be bought at late rates. Brown Acetate of Lime is about £5 15s. for Welsh, and there is little American offering. Coal Tar products are dull, although Pitch is a little better—18s. per ton *f.a.s.* Manchester Ship Canal. Yellow Prussiate maintains its position, and is steady at 6¾d. to 7d.

DIARY FOR THE WEEK.

MONDAY, APRIL 4.

SOCIETY OF CHEMICAL INDUSTRY, at 8 p.m.
Election of Officers and Five Members to the Local Committee.
"The Bacterial Treatment of Sewage Containing Manufacturing Refuse," by W. J. Dibden.

TUESDAY, APRIL 5.

BRADFORD AND DISTRICT CHEMISTS' ASSOCIATION.
First Annual Dinner. (Great Northern Victoria Hotel.)

GLASGOW AND WEST OF SCOTLAND PHARMACEUTICAL ASSOCIATION.
Annual Business Meeting.

WEDNESDAY, APRIL 6.

BRIGHTON JUNIOR ASSOCIATION OF PHARMACY.
General Meeting for Election of Officers and other business.

PHARMACEUTICAL SOCIETY OF GREAT BRITAIN.
Meeting of Council.

EXCHANGE.

Prepaid Notices not exceeding thirty words, including name and address, are inserted at a fee of Sixpence each, if they do not partake of the nature of ordinary advertisements. For every twelve words (or less) extra, the charge is Sixpence. A price, or two initials, will count as one word. The fee for use of the Serle Street address, including re-direction of replies, is Sixpence. The right is reserved to omit any notice if considered necessary. All communications should be addressed "PHARMACEUTICAL JOURNAL," 5, Serle Street, Lincoln's Inn, London, W.C., where notices can be received until 10 a.m. on Thursdays.

OFFERED.

Miscellaneous.

Werner's Pill-massing Machine, 6 lbs. size, nearly new, price £5, cost £8 10s., *vide* 'C. and D. Diary,' 1897 and 1898.—Holden, Chemist, Barnsley.

Magic Lanterns, second-hand; triples and biunials; oxyhydrogen microscope; marvellous pamphengos oil; lantern gives 14-ft. picture; 60,000 slides and effects; 4-in. 4-wick lanterns, 18s. 6d. each, bargains; illustrated list post free, 2d. Animated photographs: A splendid machine for £9 9s.—Hughes, Brewster House, 82, Mortimer Road, Kingsland, N.

Fifty ozs. finest French Carmine (guaranteed), 1s. 3d. oz., 12 ozs., 1s. 2¼d.; 1 gross 6d. tins Andrew's Liver Salt (quite new), 25s., both carriage paid.—J. G., 35, Granby Street, Liverpool.

Books.

Copies of the 'Pharmaceutical Journal' for 1893 and 1894.—Address, Miss Thompson, 66, Gough Road, Edgbaston.

Lewkowitch's 'Oils, Fats, and Waxes,' 14s. (21s. net.); 'Chemistry Applied to Manufactures and Arts,' 8 vols., 21s. (£4); Liebig's 'Rare Handbook of Organic Analysis,' 7s. 6d.—Johnson, 155, Lea Road, Wolverhampton.

Bernthsen's 'Organic Chemistry,' 1896, new offered in exchange for Perkin and Kipping's, latest edition, complete.—Sam. Hogg, Pharmacist, York Street, Belfast.

Attfield, 1889; Bentley's 'Manual,' 1887; Pereira, 1890; B.P., 1885; Wills' (various); C. and D. Diaries, new; Thorpe; 'Pharmacy Laws,' Newth, Bowers; Bentley's 'Systematic,' all modern, state requirements.—Gower, Publisher, Waterloo, Liverpool.

Shop Fittings.

Three Handsome Show Specie Jars, height 24 in., gilt cover; 2 Window Carboys, 6 galls., height 30 in., cut-glass stoppers. What offer?—Apply, Andrews, 36, Pevensey Road, Eastbourne.

WANTED.

Wanted, old electric lamps and scrap platinum, or old platinum utensils; utmost value promptly remitted by—P. Rowsell, 14, Walcot Square, Lambeth, London, S.E. (Please mention this paper).

Wanted.—*Pharmaceutical Journal*, August 31, Sept. 14, 1895; May 2, 1896; July 3, 1897. Full price will be paid for clean and complete copies by the Publishers, 5, Serle Street, London, W.C.

Wanted.—'Inorganic Chemistry; (Newth's); Green's 'Botany'; Kipping's 'Inorganic.'—Pill, 20, St. Margaret's Road, Plumstead.

Advertisement.

(Received too late for Classification).

JUNIOR ASSISTANT wanted at once, for inland watering place. Excellent opportunity for energetic young gentleman just out of pupilage to obtain experience in best-class dispensing. Apply, with full particulars, enclosing carte and stating salary required, to PHARMACIST, care of Barron, Harvey's, 6, Giltspur St., London, E.C.

1. Spinal Cord (Cat) Cervico-medullary region × 6. Dallmeyer 1·75 inch. F/16.

2. Medulla (Cat) × 7. Dallmeyer 1·75 inch. F/16.

3. Male Spider (Garden) × 2. Zeiss 75 mm. "Planar." F/16.

4. Male Spider (Garden) × 9. Zeiss 75 mm. "Planar." F/16.

5. Tortoise-shell Butterfly × 1¼. 3 inch Photo-Portrait Petzval. F/16.

6. Ureter × 12. Ordinary micro-objective, showing unequal illumination and falling off peripheral definition.

7. Œsophagus (injected) × 6. Dallmeyer 1·75 inch. F/16.

Blocks by A. E. Dent & Co.

EXAMPLES OF LOW POWER PHOTO-MICROGRAPHY.

E. & H. Spitta, Photos.

Photographic Supplement

TO THE

PHARMACEUTICAL JOURNAL

LONDON: SATURDAY, APRIL 2, 1898.

Contents.

Index to Advertisements.

Special Notice.—The Editor has the advice and aid of leading experts in all matters connected with photography, and will always be glad to afford assistance to readers who submit wants or difficulties experienced by themselves or their customers.

Notes and News.

The Photographic Supplement has already been the means of bringing the Editor into much closer touch with a very large section of his readers than would probably have been possible by any other means, and he is hopeful that it may yet prove even more helpful in that direction. Meanwhile, heartiest thanks are cordially tendered to all who have assisted by suggestions or contributions in making this novel venture a success.

Regarding Dark Rooms, the particulars that have poured in from hundreds of correspondents during the past fortnight have proved altogether too voluminous to cope with entirely within the comparatively narrow limits of a single issue of the Journal. Nevertheless, an endeavour will be made to deal with everything that has been sent in and before the photographic season has advanced too far.

The "Amateur Photographer" is urged by one correspondent, for his own sake, to use the strange dark-room for changing purposes only. Working in strange places, with strange developers, in a different position to what he has been accustomed to, it is not to be wondered at, observes this writer, that the amateur makes "a strange mess of the job," whilst when he is done he cannot take away his negatives until they are dry, and who, he asks, is to be responsible for them in the meantime.

Radiography is recommended by another correspondent as a profitable extra for chemists in towns of sufficient size. He also suggests that there is "money in developing and printing for amateurs." The local hospital engages him for X-ray work about twice a month on an average, and for that he gets good fees. Cinematographe business is found to be less profitable on the whole, but this correspondent finds it worth doing if done thoroughly. Thus, he is not only prepared to take special subjects for the Cinematographe, but he will develop other people's exposures and print positives. Readers who require work of this nature done should not fail to consult the list on page 18 of this Supplement.

Two Photographic Exhibitions in London are now announced for the same week—the one announced to open at the Portman Rooms on April 22, and that of the Royal Photographic Society, at the Crystal Palace, commencing April 27. In connection with the former, the Thornton-Pickard Manufacturing Company, which intends to exhibit largely, sends particulars of a competition in which £200 will be offered in prizes, ranging from £50 downwards, for photographs taken with the Thornton-Pickard Camera and Shutter. At the Crystal Palace, the exhibition will be divided into eight sections:—(1) the history of photography; (2) pictorial photography; (3) portraiture and general technical photography; (4) apparatus and material; (5) photo-mechanical processes; (6) scientific applications of photography; (7) photography in colours; and (8) photography as a science. All who can most certainly ought to attend.

PHOTOGRAPHY FOR CHEMISTS.

The prominent position taken by the photographic art among the pleasures and pastimes of our day renders it highly necessary that the pharmacist should keep abreast of the times and prepare himself for a trade which has grown by leaps and bounds within a few years, and of which he is eminently suited to secure a share.

It is not enough that he should retail plates and papers over the counter—for in this there is the least profit—but the chemist, by means of his own practical knowledge, should make for himself a reputation as being the proprietor of reliable and efficient preparations, by the use of which the photographic worker may depend upon good and certain results. Considerable time and trouble must be expended with what appears to be doubtful prospect of adequate remuneration, but time will prove that these are not wasted energies; for the amateur, realising that he can obtain sound practical advice from his chemist dealer, and also that his many difficulties, trifling though they may be, receive a kind and sympathetic attention, will always be a sure customer for everything he requires in the pursuit of his hobby, and thus compensate to some degree for the information which has been imparted to him. It is therefore strongly urged here that every chemist who contemplates building up a photographic connection should make himself thoroughly acquainted, both in theory and practice, with the details of every process and operation with which the art is so inseparably associated, for by so doing he will gain the confidence and patronage of both amateur and professional. He should also be in a position to advise beginners in the choice of apparatus, and the manipulation of all classes of cameras and accessories.

Then again, the pharmacist has exceptional opportunities for becoming himself a proficient and skilful worker, for with his knowledge of chemistry, together with his natural manipulative skill, the processes which to the general amateur present difficulties at every turn, to him become at once easily mastered and of little importance. Photography is a delightful pastime under all conditions, and when once enthusiasm has been awakened, the commercial side of the question will receive consideration as a matter of course.

In discussing the subject of photography as a money-making business adjunct, the first thing that naturally presents itself is the question of a dark room. It is obviously unwise to advertise a dark room unless a really comfortable apartment is available. While for one's personal use a small makeshift place answers fairly well, it is a bad policy for business purposes to make a dark room of any unventilated corner, or a small closet hardly large enough to admit the body of one person, let alone of allowing sufficient space in which to work. For a moderate outlay a space may be partitioned off, or a spare room brought into use, and the requisite fittings, such as gas, water, sink, and working bench supplied, proving not only a credit to the dealer but a pleasure for the amateur to use. In such cases, where a specially-designed dark room has been erected a small charge should be made for its use, or regular customers may be allowed its use free of charge for changing plates; but in all instances where developing is done a charge should be made, including a supply of solutions and dishes. Having provided the dark room a notification of its existence should be sent to every journal and publication which issues a list, it being distinctly stated whether the room be free or not. The annuals published by the leading journals of photography should always be reminded in this way, while some of them also state the brands of plates and papers kept in stock. Dark rooms are thus brought publicly into notice, while on the other hand amateurs in holiday times are always anxious to know of their existence.

A neatly-printed price-list, of a size suited to the requirements of the chemist's particular trade, is suggested as a valuable aid to business. It may with great advantage be illustrated with photographs of places of local interest, with a statement as to the apparatus with which they were taken; while the manufacturers of photographic requisites are generally willing to loan blocks and electros free of charge, which greatly enhance the attractiveness of the list. The wholesale dealers also send out separate lists of seasonable goods, such as special hand-camera lists, Christmas and New Year's mounts, etc., of which the chemist may have a supply for the asking. As these lists do not contain the name of the house by which they are issued, the chemist may attach his own name and address, thus rendering them more exclusive.

As regards the quantity and quality of apparatus to be kept in stock, much care and tact must be exercised, a great deal depending upon the class of customers frequenting the pharmacy and the photographic tendencies of the people in the neighbourhood. Some districts abound in amateur photographers, in which cases a good business can generally be done in all kinds of apparatus, and it behoves the pharmacist not to lose any chance of benefiting himself in this direction. While not advocating the purchase of a large amount of expensive instruments, it is advisable to have one or two cameras on view, and also to push a special hand-camera at an easy price for amateurs. The variety of apparatus upon the market at the present time makes it a matter of impossibility to stock even a proportion of it, but the office should be replete with the wholesale lists published by every manufacturer of note, which should always be ready for reference at a moment's notice, in order that a quotation may be given when required. It often happens also that the chemist has opportunities of effecting the sale of second-hand apparatus among his customers, when a handsome commission is generally secured.

Concerning the stock of materials, the three important items are of course plates, papers, and mounts, and in all these a liberal and varied supply should be always ready to hand. As regards the first named there should be a good assortment of the different brands of instantaneous quarter plates for hand-camera workers. These would include the Ilford "Empress" and "Special Rapid," Cadett "Lightning," Imperial "Flashlight" and Barnet "Rocket." The Ilford plates should be stocked in all sizes and rapidities up to whole plate, for there is no gainsaying the fact that they are exceedingly popular among all classes of photographers. Isochromatic or colour-sensitive plates are in considerably less demand as a rule, and it is therefore preferable to feel one's way with them, as it is indeed with all plates, for it must not be forgotten that the sensitive salts of silver are so extremely sensitive, not only to light, but to so many vapours and emanations, that great circumspection should be exercised in stocking large quantities and in storing them; and it is extremely easy for the plates to be fogged, although the boxes have never been opened. It is usual to allow professionals a small discount upon plates in quantity, but as a rule they pay full prices for single packets or small assorted quantities.

The popular printing paper for the amateur is P.O.P., and there should be no stinting of stock here. The principal varieties in general demand are the Ilford, in all cut sizes and tubes, Eastman's "Solio," and the Paget Prize P.O.P. Albumenized paper still sells well to professionals, and they prefer the pale pink tint as a rule.

Bromide papers sell more slowly, but there ought to be a fair demand for Ilford, Barnet, and Eastman's in all sizes up to whole

plate. Some dealers sell single sheets of the larger sizes of bromide paper, but this is attended with great risk, and usually results in more loss than gain. The papers of the Platinotype Company should not be stocked unless there is a regular demand for them, as damp completely spoils the paper, and the fresher it is the better it works.

The selection of mounts should receive particular attention—not so much as regards quantity as variety; amateurs being generally very fastidious in their choice, and preferring something new. Besides the ordinary kinds, there should be an assortment of "slip" and fancy mounts for snapshots and small prints.

But the chemist should above everything, make a specialty of all solutions for the successful treatment of the materials he supplies. Good reliable formulæ should be selected which will suit the majority of plates and papers upon the market. Developers should be systematically kept in large quantities in Winchester quarts, carefully labelled with the formula and retail price. The accelerating solutions, generally named No. 2, for the different developers, together with the hydrokinone solution No. 1, may be kept in this way; but pyro solution should always be made as required, and so sent out absolutely colourless and fresh. There are so many formulæ for reliable developers issued by the various firms of plate makers that it is next to impossible to err in selection. The pyro-soda developer given here will work well with practically any make of plate and is easily prepared :—

No. 1.	Pyrogallic Acid	120 grains.
	Nitric Acid	30 minims.
	Distilled Water to	20 ounces.
No. 2.	Sodium Carbonate (crystal)	8 ounces.
	Sodium Sulphite	8 ounces.
	Potassium Bromide	80 grains.
	Water to	80 ounces.

The pyro. solution should be made fresh as required, but the soda solution may be kept any length of time. It is well to have a standard hydrokinone developer ready for sale, in which case both solutions keep fresh for a considerable time. A "Universal" developer suitable for plates, papers, and lantern slides goes well, and is convenient for the amateur's use, the label clearly stating the proportions for use in each instance. An easy method of working out the prices of developers is to charge a halfpenny per ounce all through, with extra for bottles, which simplifies matters greatly.

This is not the place to discuss the merits and demerits of the combined toning and fixing bath, but whether its use be recommended or not the fact remains that the amateur will have it, and the following formula works as successfully as any :—

No. 1.	Sodium Hyposulphite	20 ounces.
	Alum	5 ounces.
	Sodium Sulphate	10 ounces.
	Potassium Sulphate	2 ounces.
	Water	160 ounces.
No. 2.	Gold Chloride	15 grains.
	Lead Acetate	64 grains.
	Water	8 ounces.

For use take 8 ounces of No. 1 and 1 ounce of No. 2. The price would be 4*d.* and 6*d.* respectively, bottles excluded. This bath is very popular, as it saves much time, and provided that too many prints be not toned to the weakening of its strength in gold, the results are most pleasing and certain.

It is impossible in the space at disposal to enter into all the details of the formulæ which the chemist is able to prepare for sale, but enough has been said here to show that the scope is ample, and by meeting the wants of photographers as they occur from time to time a substantial business may always be expected, and one, too, which is profitable in every department.

CHEMISTS' DARK ROOMS.

BY A CUSTOMER.

It has been my lot to travel far and wide in England with a camera, and naturally I have made use of many dark rooms which are placed at the disposal of their customers by chemists, and really the experiences I have gone through have in many cases been extraordinary, sometimes laughable, but in others decidedly lachrymose.

In the first place, the receptions I have met with have differed considerably; sometimes courteousness, with a pleasing interest in my work and useful hints as to what could and could not be done in the neighbourhood, and I have left feeling that I had almost made a friend. On the other hand, however, I have been met with a sort of cold what-a-nuisance-you-are reception, and I have come away feeling that, all the time, although I paid for the privilege of using the dark room, I was a trespasser, and that never no more would I go into any man's dark room, but carry my own with me.

Now let me say that, like most careful workers, I always carry my stock of plates with me, for alack and alas, too often the country dealer's stock is old, and whilst I may say with Goldsmith, "I love everything that's old: old friends, old times, old manners, old books, old wine," I must really except old dry plates. Not that an old dry plate is not as good as a new one when it is properly kept, for whilst they may not like old wine improve by keeping, they do not take much harm as a rule.

The researches of Dr. W. J. Russell, which formed the subject of the Bakerian lecture before the Royal Society recently are a proof, if one were needed, how extremely careful the dealer should be. He has found that if dry plates are kept in a cupboard with mercury, magnesium, cadmium, zinc, nickel, aluminium, pewter, lead, bismuth, tin and cobalt, fog will be caused, that is a developable impression similar to that given by light.

In the face of this statement, will anyone be surprised that the careful worker prefers to obtain his plates fresh from the maker rather than trust to a local dealer? How often, too, have I seen a dealer's stock of plates kept "because it was nice and dry" at the top of the shop—about the worst place, where all vapours must go and where the change in temperature must be at times from zero to boiling-point almost.

If—and I know many hundreds of amateur tourists who always take their plates with them—the amateur carries his plates to his holiday haunt, where is the local dealer to sell his plates, and what shall it profit him to state, "Dark room free to customers for changing plates?" Personally, I much prefer to pay a small fee; there is then no obligation. It is a business transaction, and, having paid my fee, I have a right to grumble if I find I am landed in a miserable little stuffy hole, of which the door will not fit light-tight, if there is a bit of candle guttering in a small lamp, the glass of which I know to be utterly unsafe for my plates, and the only place to place the dark slide is either a wooden sink saturated with hypo and pyro spillings, or else a shelf made out of a bit of cube sugar-box or some other packing-case, and littered with empty boxes and bits of papers.

If a chemist advertises that he has a dark room, then at least he should see that it is a *dark* room and not with ill-fitting door and windows and with a bad lamp. It is not necessary for the dark room to be a palace, but it should, however small, be provided with some safe light, either an oil lamp, which will not die a miserable death as regards its light just when the customer may be in the middle of changing, and whether it be a lamp or a window, at least two extra orange or ruby screens should be provided, so that when extra or colour sensitive are being used the light may be deepened. The best ruby glass is that made by Putzler Gebrüder, of Pensig, it is expensive but it is a pot and not a flash glass. The wholesale agent for this, is I believe, David Allan, 157, Whitfield Street, Tottenham Court Road, London, W.C. If this is fitted either to the window or lamp, the light will be safe for nearly all plates, but as extra screens may be so easily made with a piece of ruby or orange fabric and stout millboard, one or two of these should be provided also.

Above all things let there be a shelf fairly wide of a convenient height, and let it be kept free from all chemicals, papers, and empty boxes. If the shelf or bench is planed, there will be no difficulty in keeping it free from dust, but if it is merely rough wood then a piece of oil-cloth should be nailed onto it.

In every dark room there must be a catch or lock inside the door, so that it can be made quite secure against accidental opening, and above all things do not lock your customer in. I had a pleasant experience some years ago at an East Anglian watering place. Wishing to change plates, I was led by the chemist up a long yard littered with emply boxes, cases, and an evil-looking dog that eyed my trousers longingly, and was shown into a wooden hutch, not over-clean, smelling very strongly of rank tobacco, and carefully locked in, "as there is no catch inside. I'll come back in about five minutes and let you out." I changed my plates, filled my pipe and lit it, and waited, and finally, after hammering at the door and being bombarded by the evil cur with furious barking, I was let out in about a quarter of an hour decidedly savage in temper and nearly asphyxiated, for of ventilation there was none.

I have gone down through trap-doors behind the counter where it required all one's ingenuity to carry the camera case and plates and at the same time save one's head from the ceiling. I have been into excellently fitted-up rooms where, however, my arrival had to be carefully announced, and the family hustled out of the way on the road, with a little querulousness on both sides of the family. This sort of thing makes one feel unhappy.

If a dark room is to be fitted up for changing alone, it may be small, but if development is to be permitted, then it should be of convenient size, well lit, well ventilated, provided with water supply, sink, measures from minim up to 4 oz. and one 10 oz. A Winchester quart full of clean hypo. solution, strength 25 per cent., some carbonate of soda solution, also potassium bromide, both 10 per cent., some 20 per cent. sodium sulphite solution, also alum solution, 5 per cent. The bottles should be plainly labelled, the strength of the contents clearly indicated, and the bottles dusted and the stoppers not wedged in like a rock.

As regards developers it is an open question whether it is worth while to keep any ready-made in the dark room, for if they are put up for sale there will always be some in the shop, and it is impossible with one developer to cater for all fads and fancies.

The question as to charging for the use of the dark room is one upon which there can be no doubt from the dealer's point of view. Everyone should be charged, but if plates or anything else be bought, then the fee should be remitted when changing of plates alone is done, but there should always be a charge for development. Amateurs are not always the cleanest and tidiest of workers, nor are they always sparing in material.

I have never yet come across a dealer who has made the use of the dark room a special feature, nor who has utilised it to its fullest extent, and I feel sure that a great deal more might be done by the issue of weekly tickets to admit at any time, whilst the shop was open, at 2*s.* 6*d.* for changing, and 5*s.* for developing. If that were done, and the tickets made a source of information, by giving the best places and time of day to take the most prominent objects of interest in the neighbourhood, more business might be done.

Photographic Tourists' Guide.

THE following list of photographic dark-rooms and dealers in photographic materials has been compiled and corrected up to date, in the hope that it may prove useful to chemists who may be consulted by amateur photographers proceeding on a holiday tour. The plan on which the list has been devised is that, in the case of towns where registered chemists stock photographic materials and have dark-rooms, no address other than that of a chemist is given; where, however, the name of the town is preceded by an asterisk (*), that mark indicates inability to find that any chemist in the place does a photographic trade, and for the sake of completeness, addresses other than those of chemists are given in such cases. Where there is a dark-room, the fact is indicated by a capital "D" following the name and address, and except where the dark-room is at an hotel, it may mostly be taken for granted that plates and other photographic materials are stocked. The dark-rooms can, in some cases, be used for developing as well as changing, and even where there is not a dark-room, it is usually possible to get plates changed.

SPECIAL NOTICE.—Additions to this list, and corrections, will be welcomed by the Editor, who will also be glad to receive further brief notes concerning points of interest in the respective districts, such as are here given. It is proposed, on the completion of the list, to reprint it in a handy form for the pocket, so that it may serve as a useful and compact guide for amateur photographers on tour in the United Kingdom. The book may either be sold at a nominal price to cover cost, or distributed free to customers. A specimen copy of the 'Guide' will be sent free to any registered chemist who fills up and returns the coupon at p. 9, together with a stamp to cover postage. Quotations will also be sent, if desired, for one hundred or more copies of the book.

*Aberdare (Glamorgan).

Berry & Co., 47, Commercial St. D.
Alfred Lea, 18, Commercial St.

Aberdare is situated on the River Dâr, four miles from Merthyr Tydfil.

Aberdeen (Aberdeen).

G. E. Broomhead, 44, Union St.
J. Clark, 397, Union St. D.
A. F. Dugan, 4, South Mount St. D.
W. Reid, 100, Holburn St. D.
R. Urquhart, 65, St. Nicholas St. D.
W. Watson, 43, Castle St. D.

Aberdeen is the starting point for the Deeside Highlands, and within one hour's ride of the Queen's Highland home and some of the grandest mountain scenery in Scotland. The immediate neighbourhood presents sea and cliff scenery in great variety.

Aberdovey (Merioneth).

I. T. Lloyd, The Dovey Pharmacy. D.

Aberdovey is within walking distance of the Happy Valley and other well-known spots. Romantic and picturesque marine scenery.

Aberystwith (Cardigan).

J. P. Thomas, 60, Terrace Rd. D.

Aberystwith Castle, the University College, the view from Constitution Hill, and a view of the hill from the beach are noteworthy. Llanbadarn Church, the Devil's Bridge, and Tallylynn Lake deserve a visit.

*Abingdon (Berks).

W. J. Vasey, 12, Broad St. D.

Abingdon is on the Thames, seven miles from Oxford. It contains the ruins of a noted abbey.

Accrington (Lancs).

T. Stanley, 2, Whalley Rd. D.

Accrington is near Whalley Abbey and the valleys and junction of the Ribble, Hodder, and Calder.

Alcester (Warwick).

I. D. Adcock & Son, High St.

Alcester is reputed to be the site of a Roman station on the Icknield Street.

*Alderley Edge (Cheshire).

Thomas Gregson. D.

Alderley Edge is about four miles from Macclesfield. Several good pictures may be obtained on the Edge, which commands an extensive view of that part of Cheshire, the boundary hills of Staffordshire and Derbyshire being plainly visible.

Aldershot (Hants).

E. H. Orange, 25, High St. D.
J. Williams, Victoria Rd.

Aldershot is rendered picturesque by the prevalence of the military element. The camp is the chief place of interest, and, amongst others, there is the mausoleum at Farnborough.

Alloa (Clackmannan).

J. Cummings, 21, Mill St. D.

Alloa is the best centre for the famous glens of the Ochils. Alloa Tower (600 years old), Clackmannan Tower, Rumbling Bridge, Caldron Linn, and Castle Campbell are amongst the chief places of interest.

Alnwick (Northumberland).

Davison & Patten, 22, Bondgate. D.

Alnwick is a very interesting place. The quaint old town, the Castle, which is the seat of the Duke of Northumberland, and the neighbouring Hulne Abbey and Birsley Towers will well repay the expenditure of plates.

Alresford (Hants).

J. H. Richardson, Broad St.

Alresford has a fine sheet of water, covering 200 acres, called Alresford Pond, through which runs the River Itchen. Alresford House is the seat of the Rodney family.

Alston (Cumberland).

T. Storey. D.

Alston is situated in a valley near the confluence of the Nent and the South Tyne. Several adjacent eminences command beautiful views of Hartside, the lake of Ullswater, and Solway Firth.

*Alton (Hants).

G. Frost, Market St. D.

Alton has a very ancient church (St. Lawrence) in good preservation. The country around is very pretty.

*Altrincham (Cheshire).

Thornton-Pickard Mfg. Co. D.

Altrincham has a healthy climate and pleasant situation. It is about eight miles south of Manchester.

Alyth (Perth).

A. A. Adam, Commercial St.

Alyth Burn contains some lovely scenery. At Reekie Lime there is a fine waterfall on the Isla.

Ambleside (Westmoreland).

Thomas Bell, Lake Rd. D.

Ambleside is one mile north of Lake Windermere, noted for its picturesque scenery. Good pictures may be obtained in all parts of the neighbourhood.

*Anstruther (Fife).

D. Gibson, Commercial Hotel. D.

Anstruther, Easter and Wester, are two contiguous royal burghs, nine miles south of St. Andrews.

Arbroath (Forfar).

James Jack, 102, High St. D.
J. S. Whyte, 57, Guthrie Port. D.

Arbroath is noted for its Abbey, magnificent red sandstone cliffs, and plenty of good landscapes.

*Ashby-de-la-Zouch (Leicest'r)

C. Matthews, 63, Market Street. D.

Ashby-de-la-Zouch is near Charnwood Forest and in a most charming district. The Castle ruins form an object of interest.

Ashford (Kent).

F. W. Stedman, 76, High St. D.

Ashford is a good centre to work from, though presenting nothing of interest itself.

Ashton-in-Makerfield (Lancs)

Aspinall & Co., Gerard St. D.

Ashton-in-Makerfield is between Newton and Wigan.

Ashton-under-Lyne (Lancs).

S. Sharp, 241, Stamford St. D.

Ashton-under-Lyne has an origin of great antiquity. Its old parish church is a fine structure.

Aylesbury (Bucks).

John Wood, 35, High St. D.
A. G. Wright, 16, Market Sq. D.

Aylesbury contains ancient and historic buildings, including a fine old church The rural scenery is also attractive.

Ayr (Ayr).

W. Burns, 109, High St. D.

Ayr is in the "Land of Burns," and the roads in the vicinity are excellent for cycling and driving. It is also favourably situated on the West Coast, and pleasant steamboat excursions are of daily occurrence.

*Bakewell (Derby).

Castle Hotel. D.
Commercial Hotel. D.

Bakewell is in the neighbourhood of Haddon Hall, Chatsworth and the Lathkill Valley. There is a Saxon cross in the churchyard, and the town itself contains good material for the photographer.

Ballina (Mayo).

Adamson & Co., The Pharmacy.

Ballina is a seaport on the tidal river Moy in Ireland. It is a great resort for anglers.

*Ballycastle (Antrim).

Antrim Arms Hotel. D.

Ballycastle is a small seaport on an open bay opposite Rathlin Isle.

*Ballymena (Antrim).

T. C. Erwin, 76, Church St. D

Ballymena is twenty-two miles north-west by north from Belfast. It is one of the greatest linen and flax markets in Ireland.

Banbury (Oxon).

T. R. Goodman, 5, High St. D.

Banbury, famous for cakes and ale, is on the Cherwell, twenty-two miles north of Oxford.

Banff (Banff).

W. Alexander, Low St. D.

Banff is interesting by reason of its picturesque rocks and cliffs, fishing villages, and the fine scenery on the River Deveron.

Bangor (Carnarvon).

Roberts & Co., High St.

Bangor is an ancient cathedral city, with many objects of interest, including harbour and shipping.

Barmouth (Merioneth).

D. E. James, 1, St. Ann's Sq. D.

Barmouth lies within easy distance of unrivalled and unsurpassed scenery, the district being aptly termed "The Switzerland of Wales."

***Barnet** (Herts).

E. A. Maxwell, 39, High St. D.

Barnet is about eleven miles north of London., in a district possessing historic interest.

Barnsley (Yorks).

A. R. Tomlin, 13, Church St. D.
J. Wood, 15, Peel St.

Barnsley is two miles from Stainborough Castle, possesses a fine public park, and is surrounded by beautiful scenery.

Barnstaple (Devon).

J. J. Tremeer, 65, Boutport St. D.

Barnstaple is within a few miles of some of the finest scenery in Devon, the bays and inlets forming splendid marine scenery.

Barrow-in-Furness (Lancs).

S. Taylor, 178, Dalton Rd. D.

Barrow-in-Furness is on one of the routes to the Isle of Man, and is within a short distance of picturesque sea and lake scenery and of the ruins of Furness Abbey.

Basingstoke (Hants).

E. C. Perry, Wote St. D.

Basingstoke has in its vicinity, on an eminence, an ancient encampment of an elliptical form, 1100 yards in circumference, called Aubrey Camp. Basing House is also in the neighbourhood.

Bath (Somerset).

B. G. K. Clarke, 8, Broad St. D.

Bath is one of the most picturesque towns in the West of England, places of special interest being the Roman Baths, Abbey, The Priory and Priory Park, Victoria Park, Longleat (the seat of Lord Bath), Corsham Court (the seat of Lord Methuen), Bowood (the seat of Lord Lansdowne), Lacock Abbey, and several other places where good views may be obtained.

Batley (Yorks).

R. Broadhead, 38, Commercial St.

Batley has an old parish church, Perpendicular in style. The ruins of Howley Hall are of some interest.

Bawtry (Yorks).

F. Jackson & Sons, High St.
T. W. Nettleship, Market Pl. D.

Bawtry is eight miles from the fine ruin of Roche Abbey. Austerfield and Scrooby Churches and the Manor Houses are of interest, also the birthplaces of Bradford and Brewster, the founders of the Pilgrim Fathers.

Battersea (Surrey).

G. F. H. Bartlett, 38, Battersea Park Rd. and 143, High St. D.

Battersea is three and three-quarter miles from Waterloo Station. Its chief attractions are Battersea Park, a fashionable resort of lady cyclists, a fine old church, and the River Thames.

***Beaconsfield** (Bucks).

White Hart Hotel. D.

Beaconsfield was, before the opening of the railways, a busy place, a seat of ribbon manufacture. Edmund Burke and the poet Waller are buried within the precincts of the old parish church, a handsome structure, in the Norman style, of stone and flint, with tower and spire.

Beaumaris (Anglesey).

E. R. Thomas, 40, Castle St. D.

Beaumaris is the chief town in the Isle of Anglesey. There is, in addition to an old historic castle, splendid scenery within easy distance providing abundant material for landscape and marine work.

Beckenham (Kent).

E. W. Routley, 60, High St. D.

Beckenham is surrounded by very pretty country.

Bedale (Yorks).

J. Swinbank, Market Pl.

Bedale is situated in a valley, on the stream called Bedale-beck. The St. Gregory's Church, erected in the reign of Edward III., is in the early English style. Snape Castle is in the district, which provides some lovely views.

Bedford (Befordshire).

Anthony & Son. High St. D.

Bedford is the birthplace of John Bunyan, his cottage and statue being objects of interest, as also is Elstow Church.

***Beith** (Ayr).

James Wylie, 33, Main St. and Garnock View. D.

Beith is a small town, the chief building being the Speir School, resembling the old college at Glasgow.

***Belbroughton** (Worcester).

J. Bate.

Belbroughton is about five miles from Bromsgrove, and has a great manufacture of hay-knives and scythes.

Belfast (Antrim).

J. Hogg, York St.
J. Lizars, 73, Victoria St. D.
Rodman and Co. D.
Nicholl's Medical Hall, 25, High St.

Belfast has some fine buildings. The Queen's College is in the Tudor style of architecture, and will be the habitation of the British Pharmaceutical Conference, 1898; Belfast Castle, on the slopes of Cave Hill; Albert Memorial, Belfast. On the River Lagan are very choice bits of scenery. Convenient but outside the city are several places of interest, including Carrickfergus Castle, Shane's Castle, and Dunluce Castle. At Antrim may be found the most perfect "round tower" in Ireland. Grey Abbey, on the shores of Strangford Lough, and Bangor Bay, are well worth attention.

Belper (Derbyshirc).

W. T. Burkinshaw, Church St. D.

Belper is surrounded by beautiful scenery, and is close to Haddon Hall, Chatsworth, Wingfield Manor, and other places of interest.

***Berkhampstead** (Hants).

J. T. Newman, 176, High St. D.

Berkhampstead is on the small river Bulburn, and is surrounded by hills. It was a royal residence under the Mercian kings, and again in the time of Henry II.

***Berwick** (Northumberland).

W. Green, 9, Castlegate. D.

Berwick-on-Tweed is near to many interesting historical subjects, and fine scenery on the Tweed.

Bettws-y-Coed (Carnarvon).

R. Parry, Pendyffryn. D.

Bettws-y-Coed is noted for its wild and beautiful scenery, and stands unrivalled in its wealth of varied subjects, including rivers, bridges, woods, crags, and mountains.

Beverley (Yorks).

J. Morley, Toll Gavel. D.

Beverley is within easy distance of fine coast scenery and pretty little country bits. Then there is the splendid Minster, St. Mary's Church, North Bar Gateway, Old Friary, and other objects of interest to the photographer and tourist.

Bexhill (Sussex).

G. Brisley, Red Cross Pharmacy, Station Rd. D.

Bexhill is chiefly interesting for its old-world bits and corners of a smuggling village and some pretty inland scenery.

***Bideford** (Devon).

Tardrew & Sons.

Bideford is situated on the slopes of two hills which rise from the banks of the Torridge. Some of the houses are built with bricks and wooden framework.

***Biggleswade** (Beds).

Geo. Wagg. D.

Biggleswade is noted for its cornmarket.

Birkdale (Lancs).

B. Wyles, 10c, Liverpool Rd. D.

Birkdale is a suburb of Southport.

Birkenhead (Cheshire).

J. Walker, 21, Grange Mount. D.

Birkenhead has for subjects the park, the docks, the training ships, street-arab tumblers near halfpenny bridge; mudlarks, at low tide, near Woodside Ferry; Hoylake for sunsets, etc.

Birmingham (Warwick).

W. Asten, High St., Erdington. D.
C. S. Baynton, New St. D.
J. Davis, 39, Summer Lane. D.
C. F. Jarvis, Villa Rd., Handsworth. D.
Morris, Banks & Co., 2, High St. D
Southall Bros. & Barclay, 1, Broad St. D.
C. Thompson, 159, Stratford Rd., Sparkbrook. D.
J. Thorpe, 29, Congreve St. D.

Birmingham is in close proximity to Warwick, Kenilworth, Stratford, and Sutton Park, with its luxurious wealth of botanical and geological interest. In Birmingham itself there are several ancient and charitable institutions—orphanages, hospitals, Roman Catholic College, Aston Hall. The Slum districts are especially worth attention, as they provide many interesting pictures.

***Bishop Auckland** (Durham).

T. Robinson, 25, Newgate St.

Bishop Auckland stands on an eminence 140 feet above the confluent Wear and Gaunless. The Bishop's palace and the Town Hall are noteworthy.

Bishop's Stortford (Herts).

G. T. Ecclestone, North St.

Bishop's Stortford was in Saxon times the property of the Bishops of London, and, as its name implies, is on the river Stort.

Blackburn (Lancs).

A. Garland, 80, King William St. D.
J. McNeill, 40, Preston New Rd. D.

Blackburn is a good centre for tourists wishing to view the fine scenery of the Ribble Valley, Stonyhurst College, Whalley Abbey and Church, and other interesting place.

Blackpool (Lancs).

J. Jackson, 61, Talbot Rd., and 87, Dixon Rd. D.

Blackpool is popularly known as "the Brighton of the North," and in the season there is a constant panorama of changing living pictures for snap-shot work.

Blaenavon (Monmouth).

H. M. Davies, 74, Broad St. D.

Blacnavon is five miles from Abergavenny, and is situated in a mountainous district.

Blairgowrie (Perth).

J. D. Petrie, 7, High St. D.

Blairgowrie and district form one of the best centres in Scotland for the photographer, there being in the vicinity, river, mountain, and loch scenery.

Blyth (Northumberland).

J. Keith, 16, Blagdon St.

Blyth is interesting chiefly by reason of its coast scenery.

***Bodmin** (Cornwall).

A. J. F. Bond, 85, Forc St. D.
A. Jane, Mountfolly Sq. D.

Bodmin contains the county hall of Cornwall. The church, rebuilt in 1472, has been restored since 1879.

***Bognor** (Sussex).

E. Wood, Royal Library. D.

Bognor is a favourite watering-place on the South Coast.

Bolton (Lancs).

T. H. Heyes, 150, Deansgate. D.
H. B. Pare, 12, Deansgate, and 1, Crown St. D.
J. Taylor, 210, St. Georges Rd. D.

Bolton possesses several old Elizabethan residences of historic interest. Hall i' th Wood, where S. Crompton invented the spinning mule, can be taken from the road, but before photographs can be taken of Smithill's Hall, an old Saxon dwelling, one of the oldest houses in Lancashire, and Turton Towor, permission must be written for. Wardley Hall and Dean Mills, a deserted village, are worth attention.

***Boot** (Cumberland).

J. Vicars, Gilbank. D.

Boot is in Eskdale, near the Solway Firth, and is in the midst of the picturesque border scenery.

Bootle (Lancs).

W. T. Warhurst, 311, Stanley Rd. D.

Bootle-cum-Linacre includes a large portion of the Liverpool docks.

Boscombe (Hants).

Tame & Co., opposite Salisbury Hotel and Royal Arcade. D.
S. P. Yates, opposite Post Office. D.

Boscombe is near to Bournemouth, and has many places of interest, including Christchurch Priory, the sea, coast, cliffs, and the River Stour, providing many fine bits of scenery.

Boston (Lincolnshire).

F. Thomas, 7, Market Place. D.

Boston is of interest chiefly for its marsh scenes, shipping, and the "Stump."

***Bourne** (Lincolnshire).

W. H. Redshaw, North St. D.

Bourne lies at the foot of a range of hills. Its church is a large ancient structure, with two towers at the western end.

Bournemouth (Hants).

F. E. Bilson, 1, Lansdowne Cres. D.
S. Hardwick, Carlton House, Commercial Rd. D.
W. Jones, 254, Old Christchurch Rd. D.
J. A. Toone, 50, Old Christchurch Rd. D.

Bournemouth is full of photographically interesting places and objects, the beauties of the town and shore being well known, in addition to which the New Forest is within easy distance.

Bowness (Westmoreland).

C. Birkett, Main St. D.
T. M. Holmes. D.

Bowness-on-Windermere is right in the heart of the Lake District, and is surrounded by some of the finest scenery in the United Kingdom.

Bradford (Yorks).

Harrison Parkinson & Co., Sunbridge Rd. D.

Bradford has buildings worth taking. At Horton, Bawling, Peel, Manningham, and Wibsey Parks there are good views. Saltaire should also be visited for views obtainable in Shipley Glen.

***Brading** (Isle of Wight).

T. Gardner, Red Lion

Brading has a bull-ring, one of the few left. The old church contains interesting tombs.

Braintree (Essex).

F. Row & Son, 47, High St. D.

Braintree Parish Church is a fine Gothic edifice of early date.

Bramley (Yorks).

W. S. Baxter, 200, Upper Town St

Bramley has extensive factories of woollen cloth, and near it are quarries of excellent building stone.

Brampton (Cumberland).

W. E. Younger, Market Place D.

Brampton is a very ancient town. Two miles to the east stands Lanercost Abbey, founded in 1169.

Brechin (Forfar).

G. Mackie, 51, High St. D.

Brechin is in the midst of a lovely country, the chief places of interest being Brechin Cathedral and "Round Tower," Brechin Castle, Kinnaird Castle, Edzell Village, Garmochy Bridge, over N. Esk, and the beautiful Elen of the Esk.

Brecon (Brecknock).

R. E. Charles, High St. D.

Brecon is within walking distance of picturesque old churches, castles, and mountain and river scenery.

Bridgwater (Somerset).

L. H. Llewellyn, Cattle Market. D.

Bridgwater, on the River Parret, is in a well-wooded country. St. Mary's Church has a graceful spire and contains a fine altar-piece. The Parret is subject to a bore 6 or 8 feet high.

Bridlington (Yorks).

H. J. Jackson, 11, Prince St. D.
J. V. Mainprize, 9, King St. D.

Bridlington is a well-known resort of cyclist tourists, and has some fine rural scenery and splendid marine views. There is also a magnificent church.

***Brigg** (Lincoln).

Jackson & Son, Booksellers, etc.

Brigg was formerly called Glandford-Brigg, and is situated on a branch of the Aucholme.

Brighouse (Yorks).

S. Cardwell & Son. D.

Brighouse is near to Kirklees Hall and the burying-place of Robin Hood. Permission is required to view them.

Brighton (Sussex).

H. Churchill & Co., 57, East St. D.
S. Hardcastle & Co., 71, EastSt. D.
H. Moon, 92, Trafalgar St.
E. F. Salmon & Son, 30, Western Rd., Hove. D.
J. Williamson, 144, Church Rd., Hove. D.

Brighton is interesting not only for its fine sea and landscapes, churches, castles, statues, and Dyke, but also on account of the numerous opportunities for snapshots on the parade and elsewhere, especially during "the season."

Bristol (Gloucester).

H. Hodder & Co., Broad St. D.

Bristol Cathedral, west front, is good. St. Mary Redcliff Church has a magnificent reredos. Good work may be done in the shipping. Many other good places are to be found, as Leigh Woods, Coombe Dingle, etc.

Brixham (Devon).

G. F. Newman, 1A, Fore St. D.

Brixham is an irregular place, sprinkled over three valleys and four hillsides, picturesque, and fishy to a degree. At Berry Head is a Roman camp.

Brockley Road (L'don, S.E.).

Leo Atkinson & Co., 285, Brockley Rd. D.

Brockley Road is within easy walking distance of London Bridge.

Bromley (Kent).

Shillcock & Son, 122, High St. D.

Bromley is near to Hayes and Keston Commons and the pretty district of Chislehurst.

Brompton (Kent).

W. E. Stokes, 46, High St. D.

Brompton is a suburb of Chatham, and is noted for the great naval and military establishments.

***Brough** (Yorks).

Buck, Castle Hotel. D.

Brough is in the East Riding, on the bank of the Humber, and not far from Hull.

Burnham (Somerset).

A. Pumphrey, Ph. Chemist. D.

Burnham produces charming sunset effects. There are good views of the town and pier to be obtained from the sea-wall.

Burnley (Lancs).

B. Cowgill, 48, Manchester Rd.
J. W. Wright, 141, St. James's St D.

Burnley is within a few miles of several ancient ruins and pretty scenery.

***Burslem** (Staffs).

T. Blackshaw, 35, Market Pl. D.

Burslem is the "Mother of the Potteries." It has a fine town hall, renaissance in style, with a lofty clock tower.

***Burton-on-Trent** (Staffs).

F. Hallam, 22, High St. D.

Burton-on-Trent is noted mainly for its enormous ale breweries.

Bury (Lancs).

W. Heywood & Co., 41, Princess St. D.

Bury is situated on a rising ground backed by hills on the north and east, between the Irwell and the Roche. There are large factories and foundries.

Bury St. Edmunds (Suffolk).

J. Floyd & Co., 2, Cornhill. D.

Bury St. Edmunds is noted for its Abbey, churches, the Norman Tower and Abbot's Bridge, Abbey Gate, and ruins.

Buxton (Derby).

H. W. Baker, 69, Spring Gdns. D.
W. Pilkington, 11, Market Pl. D.

Buxton is the centre of the Peak District, and is fed by the Midland and London and North-Western Railways being a health resort of high altitude. There is fine scenery in abundance for miles around, hills, dales, caves, rocks, and moorland, to suit the climber, pedestrian, cyclist, camerist, angler, and other classes of tourist.

Bushey New Town (Herts).

R. R. Gant, Villiers Rd. D.

Bushey New Town is the scene of Professor Herkomer's Art Colony, the fact of its being situated there being a sufficient criterion for artistic scenery and studies.

Callander (Perth).

A. Scott, Main St. D.

Callander is situated amidst the most beautiful scenery in Scotland, and is probably the best centre for the Trossachs, Loch Katrine, etc.

Camberwell (London, S.E.).

Prosser Roberts Co., 13, Church St. D.

Camberwell, photographically, is not an interesting district. It is about four stations beyond Ludgate Hill on the L.C. & D.R.

Camborne (Cornwall).

H. R. Beringer, Commercial St. D.

Camborne is favoured with good coast scenery.

Cambridge (Cambridge).

C. S. Addison, 6, Market Hill. D.
Beall & Son, 25, Sidney St. D.
E. Field, Hills Road. D.
J. H. Leech, 36, Trinity St., D.
G. Peck & Son, 30, Trumpington St. D.
R. Sturton, Fitzroy St.

Cambridge is noted for its colleges, University, and other public buildings, the Fitzwilliam Museum, Church of the Holy Sepulchre, and river scenery.

***Campbeltown** (Argyll).

J. E. Purves, Pier Studio. D.

Campbeltown is a seaport town. In the centre of its main street is a sculptured granite cross of the twelfth century, supposed to have been brought from Iona or Oronsay.

Canterbury (Kent).

E. Bing & Son, 41, St. George's St. D.

Canterbury possesses numerous fine ancient and historic buildings, including the Cathedral, St. Martin's Church, the Westgate, etc., etc.

Cardiff (Glamorgan).

Williams & Co., Park Hall Bldgs. D.

Cardiff is within walking distance of Llandaff Cathedral, Caerphilly Castle, and Castle Goch. The docks and shipping also afford many snapshots.

Cardigan (Wales).

E. C. Evans, 11, High St. D.

Cardigan is on the right bank of the Teifi. The remains of a castle crown a low cliff on the river, and are reputed to date from 1160.

Carlisle (Cumberland).

T. Ridley, 9, English St. D.
J. Robson, 26, Scotch St. D.
W. R. Scott, 139, Denton St.

Carlisle is a good centre for photography, the places within the city being the Castle and Cathedral; in addition, there is good local and historical scenery.

Carmarthen (Wales).

C. E. Davies, 48, King St. D.

Carmarthen forms a good headquarters for photographers, the coracle fishing, cockle gathering, yachting, and Castle ruins affording many interesting "bits," and the mountain and river scenery is very fine.

Carnarvon (Carnarvon).

G. C. R. Owen, 27, High St. D.

Carnarvon has a castle which is one of the noblest ruins in the kingdom, and half a mile from the town are the remains of the Roman station, Segontium or Caer Seiont. There is a Roman fort on the left bank of the Seiont, and from the Twt Hill (190 feet) there is a fine view of Snowdon and of the island of Anglesey.

Carnforth (Lancs).

A. W. Hankinson. D.
F. T. Patman, Seascale. D.

Carnforth provides good mountain scenery, and is very near to the Cumberland Lakes.

Carshalton (Surrey).

F. Carter, High St. D.

Carshalton has many pretty little bits worth taking, as well as the river scenery on the Wandle, Beddington Church and Park, and the Carshalton Ponds.

Castle Douglas (Kirkcudbright).

F. Walker, 40, King St. D.

Castle Douglas is in the land of Crockett and Burns, and with its rivers, lakes, hills, valleys, old castles and abbeys, finds plenty of material for the camerist.

Chapel-en-le-Frith (Derby).

J. T. Gray. D.

Chapel-en-le-Frith is within a short distance of the Ebbing and Flowing Well, a remarkable phenomenon, the Blue John Cavern, the Speedwell Mine and underground rivers, and Peak Cavern (750 feet high). The district has been aptly termed the "Switzerland of England."

Chatham (Kent).

A. W. Morgan, Railway St.
W. E. Stokes, 22, High St., Brompton. D.
W. G. Turtle, 260, High St. D.
H. Watts, 68, High St.

Chatham, with its barracks and dockyard, affords many opportunities for snapshot work; then there is the Gordon Memorial, Rochester Cathedral and Castle, and other places of interest.

***Cheddar** (Somerset).

Cliff Hotel. D.

Cheddar lies at the entrance of a wonderful deep rocky gorge, nearly a mile long, the high cliffs of which contain fantastic stalactites and stalagmites.

Chelmsford (Essex).

W. Metcalfe, High St.
J. Tomlinson, Tindal Sq.

Chelmsford is situated at the confluence of the Chelmer and the Cam. Its chief buildings are the Corn Exchange, Shire Hall, Grammar School (1551), and parish church.

***Chelsea** (Middlesex).

Hoole & Co., 40, Queen's Rd. D.

Chelsea is noted for its Hospital, Royal Military Asylum, barracks, Botanic Garden, water-works, river-pier, embankment, and bridges across the Thames.

Cheltenham (Gloucester).

Thomas Brothers, College Pharmacy and Spa Pharmacy. D.

Cheltenham is situated in a pretty country, and is close to Gloucester Cathedral and Tewkesbury Abbey.

Chepstow (Monmouth).

H. A. Williams, 1, Beaufort Sq. D.

Chepstow lies between bold cliffs, on a slope rising from the river Wye, in the midst of fine scenery. It contains the ruins of a castle, and in the vicinity are the Wyndcliffe and Tintern Abbey.

(To be continued.)

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USEFUL PHOTOGRAPHIC FORMULÆ.

Every one of the following formulæ has been tested in practice, and they may be relied upon to satisfy even the most *exigeant* of customers :—

FERROUS OXALATE DEVELOPER.

For negative and transparency work, and bromide papers.

A.	Potassium Oxalate (neutral)	200 gr.
	Distilled water	800 C.c.
B.	Ferrous Sulphate	100 gr.
	Citric Acid	1 gr.
	Distilled water	300 C.c.
C.	Potassium Bromide	10 gr.
	Distilled water	100 gr.

For use mix 100 parts of A, 25 parts of B, and 1 part of C in this order. For negative work the devcloper should be heated to 65° F.

The potassium bromide or restrainer may be added to A, thus enabling the developer to be put up in two bottles, but obviously only 8 g. must be used. As a rule two 8-ounce bottles are sold for a shilling.

THE PYRO DEVELOPER.

Although there are innumerable formulæ for pyro developers, the best plan is to make up 10 per cent. solutions, and state plainly on the labels the quantities to be used.

Pyro is very readily oxidised, and therefore it is used with a preservative, which may be either sodium sulphite, potassium metabisulphite, or an acid, and the last is the least satisfactory. Metabisulphite ($K_2S_2O_5$) has the disadvantage of becoming decidedly acid, so that whilst it acts as a splendid preservative, it not only neutralises some of the alkali, but seems to act in some unexplained way on the reducing agents, and destroys their developing properties.

10 per cent. solution of pyro.

Sodium Sulphite	25 g.
Pyrogallol	10 g.
Distilled Water to	100 C.c.

The sulphite should be first dissolved and then poured on to the pyro, and the volume made up to 100 C.c., and the solution immediately bottled without filtering. The sulphite may be replaced by one-fourth (6·25 g.) of metabisulphite.

ACCELERATORS.

These may be either sodium carbonate, potassium carbonate, sodium or potassium hydrate (though it is not advisable to use these last), and liq. ammoniæ fort ·880. It is unnecessary to give directions for making these with 10 per cent. solutions.

A normal developer would be :—

Pyro	·5 g.
Sodium Sulphite	4·0 g.
Sodium Carbonate	1·5 g.
Potassium Bromide	·25 g.
Water to	100 C.c.

It is obvious that the only thing to do is to multiply the dry ingredients by 10, when we have the correct number of C.c. of the 10 per cent. solution to make any developer.

Still, as there may be some who would prefer to put up developers and not 10 per cent. solutions, the following formulæ are given :—

Pyro Solution No. 1.

Sodium Sulphite	100 g.
Sulphurous Acid	1 C.c.
Pyro	14 g.
Distilled Water to	500 C.c.

Soda Accelerator No. 2.

Sodium Carbonate	50 g.
Potassium Bromide	10 g.
Distilled Water to	500 g.

For use mix equal parts of No. 1, No. 2, and water.

Pyro Potash Developer No. 1.

Sodium Sulphite	125 g.
Sulphurous Acid	1 g.
Pyrogallol	50 g.
Distilled water to	500 C.c.

Potash Solution No. 2.

Potassium Carbonate	90 g.
Sodium Sulphite	25 g.
Distilled water to	200 C.c.
Potassium Bromide	9 g.

For usc, mix 3 parts of No. 1 and No. 2, and add 100 parts of water.

BEACH'S POTASH DEVELOPER.

This was for a long time a favourite, and still holds its own with many amateurs, because it gives beautifully clean black and white negatives, and the solutions will keep for a long time.

No. 1

Sodium Sulphite	500 g.
Warm Distilled Water	500 C.c.

Dissolve and when cold add

Sulphurous Acid	440 C.c.
Pyrogallol	125 g.

No. 2.

(*a*)	Potassium Carbonate	375 g.
	Distilled Water	500 C.c.
(*b*)	Sodium Sulphite	250 g.
	Distilled Water	500 C.c.

Dissolve each separately and then mix.

For use take No. 1, 4 parts ; No. 2, 1 part ; and sufficient water to make 64 parts.

Pyro-Ammonia Developer.

No. 1.

Potassium Metabisulphite	100 g.
Ammonium Bromide	50 g.
Pyrogallol	100 g.
Distilled Water to make	1000 C.c.

No. 2.

Liq. Ammoniæ Fort	100 C.c.
Distilled Water	900 C.c.

For use mix 15 parts of No. 1, 35 parts No. 2, and water to 500 parts.

HYDROQUINONE DEVELOPERS.

This reducing agent has been gradually superseded or used in conjunction with some of the newer developers.

Hydroquinone Soda Developer.

No. 1.

Hydroquinone	12·5 g.
Sodium Sulphite	50 g.
Distilled Water to	500 C.c.

No. 2.

Sodium Carbonate	62·5 g.
Distilled Water to	500 C.c.

For use mix in equal parts.

Hydroquinone Potash.

No. 1.

As above.

No. 2.

Potassium Carbonate	20 g.
Distilled Water to	200 C.c.

For use mix 2 parts of No. 1 with 1 part No. 2.

One Solution Hydroquinone Developer.

Sodium Sulphite	75 g.
Distilled Water	750 C.c.

Heat to 70° C. and add

Hydroquinone	10 g.
Sodium Carbonate	150 g.
Water to make	1000 C.c.

This will keep for a long time, and may be used over and over again. Is suitable for transparencies and bromide papers.

With hydroquinone the best restrainer is glacial acetic acid, from 10 to 20 drops to every 500 C.c. of developer, acting energetically.

Hydroquinone cannot be made into a 10 per cent. aqueous solution, but the following will keep well :—

Hydroquinone	100 g.
Sulphurous Acid	200 C.c.
Absolute Alcohol to	1000 C.c.

EIKONOGEN DEVELOPERS.

This is not much used at the present time as it is not very soluble in water and rapidly deteriorates, and it has really been replaced by the newer developers.

No. 1.

Eikonogen	9 g.
Sodium Sulphite	36 g.
Distilled Water to	500 C.c.

No. 2.

Sodium Carbonate	75 g.
Distilled Water to	500 C.c.

For use mix 3 parts of No. 1 with 1 part of No. 2.

(Continued on page 12.)

Useful Photographic Formulæ—continued.

Eiko cum Hydro Developer.

This formula is due to Mr. J. T. Chapman, of Manchester, and is an excellent developer for negatives, lantern slides and bromide paper :—

No. 1.

Hydroquinone	4 g.
Eikonogen	12 g.
Sodium Sulphite	48 g.
Citric Acid	2 g.
Distilled Water	to make 1000 C.c.

No. 2.

Potassium Bromide	0·5 g.
Sodium Carbonate	6 g.
,, Hydrate	3 g.
Distilled Water	to make 1000 C.c.

Mix 1 part of each and add 2 parts of water.

Amidol.

This reducing agent is diamido-phenol, $C_6H_3NH_2NH_2OH$. It cannot be made up into a stock developer, as it readily loses its developing power. The peculiarity of it is that it requires no alkali, and it should be added dry just before developing. A good formula is—

Amidol	2·5 g.
Sodium Sulphite	15 g.
Water	to 500 C.c.

Paramidophenol.

Generally met with commercially as a one-solution developer called "rodinal"—not in very great demand. The hydrochloride, $C_6H_4{\cdot}OH{\cdot}NH_2{\cdot}HCl$, is usually employed; a solution somewhat similar to rodinal may be made as follows :—

Paramidophenol Hydrochlorate	2·5 g.
Sodium Sulphite	4·5 g.
Sodium Carbonate	4·5 g.
Distilled Water	to 500 C.c.

For use take 50 parts of above potassium bromide, 1 part water to 500 parts.

Metol.

This is methyl-para-amido-meta-cresol, $C_6H_4{\cdot}CH_3{\cdot}NHCH_3{\cdot}O$; by itself it is not a satisfactory developer for negatives, but for bromide paper it is unsurpassed, and is useful with other reducing agents. With many people metol causes considerable skin trouble.

No. 1.

Metol	10 g.
Sodium Sulphite	125 g.
Potassium Bromide	2 g.
Distilled Water	to 1000 C.c.

No. 2.

Sodium Carbonate	100 g.
Distilled Water	to 1000 C.c.

For use mix in equal parts.

Metol-Pyro Developer.

No. 1.

Metol	4·5 g.
Pyro	5·5 g.
Potassium Metabisulphite	12 g.
Distilled Water	to 1000 C.c.

No. 2.

Sodium Carbonate	100 g.
Distilled Water	to 1000 C.c.

For use mix in equal parts.

Metol-Hydro Developer.

No. 1.

Metol	4·0 g.
Hydroquinone	5·0 g.
Sodium Sulphite	48 g.
Potassium Bromide	1·5 g.
Distilled Water	to 1000 C.c.

No. 2.

Potassium Hydrate	18 g.
Distilled Water	to 1000 C.c.

For use mix in equal parts.

One-Solution Developer.

Metol	5 g.
Hydroquinone	4 g.
Sodium Sulphite	100 g.
Potassium Bromide	2·5 g.
Sodium Carbonate	50 g.
Distilled Water	to 1000 g.

This is useful alike for negative and positive work.

(To be continued.)

TRADE MARK **'TABLOID'** BRAND

PHOTOGRAPHIC CHEMICALS

THEIR ADVANTAGES.

THEY ENABLE THE CHEMIST TO SUPPLY ALL NECESSARY PHOTOGRAPHIC CHEMICALS.

THEY ENTAIL PRACTICALLY NO SACRIFICE OF SHOP SPACE, AND, UNLIKE BULK CHEMICALS, YIELD A FAIR PROFIT.

THEY DO NOT DETERIORATE LIKE SOLUTIONS, AND GIVE BETTER AND MORE UNIFORM RESULTS.

THEY SIMPLIFY DEVELOPING, TONING, ETC., TO AN EXTENT IMPOSSIBLE BY ANY OTHER MEANS.

ONE 'TABLOID' DEVELOPER AND ONE 'TABLOID' ACCELERATOR IN ONE OUNCE OF WATER MAKE THE NORMAL DEVELOPING SOLUTION IN ONE MINUTE. ANY MODIFICATION IS EASILY OBTAINED TO SUIT UNDER OR OVER EXPOSURE.

DEVELOPING.

'Tabloid' Amidol Developer—
'Tabloid' Amidol ... ... gr. 2
'Tabloid' Amidol Accelerator ... ...

'Tabloid' Eikonogen Developer—
'Tabloid' Eikonogen ... ... gr. 2
'Tabloid' Eikonogen Accelerator... ...

'Tabloid' Hydroquinone Developer—
'Tabloid' Hydroquinone (Quinol) gr. 2
'Tabloid' Hydroquinone Accelerator ...

'Tabloid' Metol Developer—
'Tabloid' Metol ... ... gr. 1½
'Tabloid' Metol Accelerator ... ...

'Tabloid' Paramidophenol Developer—
'Tabloid' Paramidophenol ... gr. 2
'Tabloid' Paramidophenol Accelerator ...

'Tabloid' Pyro Developer—
'Tabloid' Pyrogallic Acid... ... gr. 2
'Tabloid' Pyro Accelerator ... ...

'Tabloid' Restrainers—
'Tabloid' Potassium Bromide ... gr. 1
'Tabloid' Ammonium Bromide ... gr. 1
'Tabloid' Sodium Citrate ... ... gr. 1

'Tabloid' Preservative—
'Tabloid' Sodium Sulphite, Dried gr. 5

FIXING.

'Tabloid' Sodium Thiosulphate ('Hypo') [gr. 20

TONING.

Gold—
A.—'Tabloid' Gold Sodium Chloride gr. 1
Any one of the following reagents is to be used with A according to the tone required—
B1.—*Blue.*—'Tabloid' Borax ... gr. 15
B2.—*Brown.*—'Tabloid' Sodium [Bicarbonate gr. 15
B3.—*Purple.*—'Tabloid' Sodium [Phosphate gr. 15
B4.—*Purple-Black.*—'Tabloid' So- [dium Tungstate gr. 15

Platinum—
'Tabloid' Platinum Compound.

Pamphlet with full instructions and particulars post free on application.

BURROUGHS WELLCOME and Co.,

SNOW HILL BUILDINGS, LONDON.
London Telephone Number—"601, HOLBORN."

108, PITT STREET, SYDNEY, N.S.W.
London Cable and Telegraphic Address—"BURCOME, LONDON."

PHOTOGRAPHIC NOTES.

BY A FELLOW OF THE ROYAL PHOTOGRAPHIC SOCIETY.

The following notes are submitted for the perusal of those pharmacists who add a photographic department to their businesses. We are on the threshold of that season of the year when activity in photographic matters once more asserts itself. Observation shows me that the amateur photographer, in contradistinction to his professional "brother," is the patron upon whose support the chemist chiefly relies in the sale of photographic apparatus and material; and my suggestions are therefore made to the end that they may be serviceable in enabling the retailer to meet the needs of that class of client. I may perhaps be permitted to say that to a lack of a practical knowledge of photography the chemist only too often adds a great misapprehension of the requirements of photographers, although it is fair to add that this ignorance is now by no means so general as it once was.

"Hypo" in Solution.

I was once present at a meeting of photographers, and in the course of the evening a laugh was raised at the expense of one of them, who confessed that he always filtered his "hypo" solution for fixing purposes. In reality the laugh was with and not against the careful worker, who took a useful precaution which is almost universally neglected by photographers. All sorts of impurities are allowed access to the cask or barrel of sodium thiosulphate, which in many photographic establishments is kept in a dirty outhouse or other unsuitable place. Contaminated fixing baths are responsible for many spoilt negatives and prints. Proper care of the salt and filtration of the solution will always repay the little extra trouble involved by the minimisation of those mysterious spots on plates and paper which are the despair of the photographic expert to account for. Amateurs are not less gulity than their professional brethren in the careless handling of their hypo. I have observed in the dark rooms or "dens" of numerous photographic friends that the salt is kept under the most unfavourable conditions; it is allowed to get dry, to cake, and to attract dust and other impurities, and is generally used in that state, the formula only too often being "a handful to a pint of water." This brings me to the suggestion that if "hypo." were always available at chemists and photographic dealers in solution it would be to the convenience of very many small workers. Usually it is sold in the crystal, with the results above indicated, but I believe that those retailers who laid themselves out to supply it in solution, clean, filtered, and of a definite strength, would earn the grateful patronage of very many photographers. It is surprising how much the busy worker appreciates conveniences designed to smooth his path to success.

Celluloid Films.

One of the problems that have not been solved by the photographic chemist is the preparation of a celluloid film which does not react with a layer of sensitive silver salt in gelatin. The chemical inertness of a glass plate has long been aimed at, but it is far from having been reached in the present makes of celluloid. Paper is the greatest rival to glass in this respect, but the granularity and degradation of the fine detail of an image which are inseparable from the use of that support only assure for it a limited degree of popularity. The camphor or nitrous acid of the celluloid have been alleged to be the active agents in fogging the sensitive film, although the evidence under those heads is somewhat obscure. Be that as it may, it is undeniably risky to keep celluloid films for more than a very few months, in the expectation that they will then be perfectly fresh, and it is beyond all doubt that they are peculiarly susceptible to alterations of temperature. A glass plate may be relied upon to stand a journey to the tropics and back without undergoing deterioration either before or after exposure, but the same immunity can hardly be assigned to celluloid with certainty. If, therefore, any of your readers are carrying over a stock of celluloid film from last season they would do well to bear in mind that in selling them now they are running a serious risk of the customer not finding them quite free of fogging propensities. It would be well for them to act on this hint throughout the season.

The Metric System, etc.

In photographic circles during the last fifteen years various attempts have been made to acclimatise the metrical system of weights and measures in the compounding of formulæ, but so far absolutely no success is to be recorded. The photographer is usually a most conservative person whom it is difficult to convert from haphazard and unscientific methods of working to better

ways. In various directions the chemist has the opportunity of becoming a valuable agent in helping this much-to-be-desired reform. Let him, wherever practicable, express his photographic formulæ in grammes and C.c.'s, and "push" the weights and graduated measures, which will enable the photographer to put the system to practical use in his work. With the powerful help of chemists in this direction the recognised photographic authorities may yet succeed in doing something towards hastening the approach of a better state of things.

Contents of Bottles and Packages.

Reference to weights and measures reminds me that I have a little grievance to ventilate against the retailers of photographic chemicals, a reference to which may help your readers to profit by the omission I have to complain of. It is simply this, that very few photographic dealers in sending out bottles of solutions and packages of chemicals take the trouble to indicate besides the nature of the contents the quantity thereof. Theoretically, I suppose, although this information were invariably given, it should not be taken for granted. But speaking for myself, as a busy man, I would highly appreciate those particulars, for intermittent work plays havoc with the memory, and one is not always in a position to use one's chemicals straightaway. Again, it would be a considerable convenience if the makers of bottles always indicated their capacity upon them. A glance along my shelves informs me that, especially in the cheaper varieties, this is not by any means invariably done.

Photographic Apparatus.

Among photographers for many years the absurd and unreasonable craze for excessive lightness and portability in their apparatus has led to the introduction of many things, which experience very soon shows sacrifice, efficiency, and stability to less important considerations. The landscape camera is particularly a case in point. The conical bellows form of this instrument, which is now unfortunately so prevalent has been one of the most unfortunate introductions to the photographic market. A taper bellows, it is true, enables a lot of weight to be dispensed with in the construction of the camera and conduces to portability, but there its advantages end. With it you sometimes sacrifice the convenience of a sliding front; the opportunity of using your camera for stereoscopic photography; frequently the employment of very short focus lenses; and the maximum rise and fall of the objective; while the "sagging" of the bellows when the lens is lifted or depressed cuts off a portion of your pictures. All these disadvantages are obviated by the "square form" camera, as it is called, and where a chemist is selling a camera to a customer, this would be the kind of instrument I would urge him to give preference to. A beginner is notoriously unable to exercise any discrimination in this respect, but given the square form of instrument, so soon as he is proficient, his appreciation of it would be not untinged by some feeling of gratitude towards the retailer who gave him such wise counsel.

A Hint on Lenses.

In the last seven or eight years the photographic lens has been the object of what we might term an optical revolution Nowadays a modern 5-inch anastigmat will in most cases perfectly cover a plate one or two sizes larger than that for which it is intended. Formerly a lens of that focus would have been counted a very good one if it fairly well covered a quarter plate. Modern lenses, too, have the errors of curvature of field and astigmatism reduced to the minimum, and progress is being made in the total elimination of spherical aberration at the same time. To the outside photographic public, however, the optical properties of a lens are difficult of comprehension. The average amateur is not in a position to appreciate from mere descriptions the essential differences between a symmetrical doublet made on the Steinteil formula and a Goerz or a Zeiss anastigmat. It is a simple matter, however, to illustrate those differences graphically and by means of photography. Where the chemist makes a specialty of selling the new lenses as against the old, I would certainly advise him to take negatives by both kinds, and print them. Nothing is more striking even to the eye of the non-expert than the vast difference in the character of the two images; with the old lens the definition falls off near the centre of the field, and the corners are "foggy," and in some cases dark. With the new lens the image is sharply and uniformly defined right up to the extremities of the plate. Of course I am assuming that the lenses are tested focus for focus and aperture for aperture. If that be done the superiority of the newer forms of objectives is easily established to the satisfaction of the would-be purchasers.

Printing Papers.

The battle of the printing papers proceeds as merrily as it has done any time during the last few years. Modern workers can hardly realise the improvement which has taken place in the qualitative character of the popular bromide printing process. Thirteen years ago, when it was introduced, the cold dead blacks of the shadows and the hard whites of the lights were its principal characteristics. All that has been changed. Platinomatte (there is no platinum in the paper by the way), Velox, and Royal bromide give you delicacy of gradation, richness of deposit, softness, and the best effects of well-executed engravings. But to bring home the advantages in this respect to a photographer nothing is so effective and cogent as comparative examples, and I would certainly advise the chemist who makes a point of retailing photographic printing papers to have on view specimen prints by the various processes, ancient and modern. Let there be an opportunity for the photographer to compare a good bromide print of to-day with one of ten years ago, gelatin prints with albumin, collodion with both, and platinum with carbon. Thus the eye and the taste of the photographer are educated and brought up to date, and the photographic chemist acquires the useful reputation of knowing his business. I mention this matter of specimen prints for the reason that it is capable of being made much more of in the direction I have pointed at than is the case.

Hand Cameras.

Experienced men have come to the conclusion that the maximum of convenience and success in one's work is attained by the use of hand cameras taking double dark slides. I have been, unfortunately, a user of hand cameras for the last eleven years. My present favourite yields me a greater percentage of good negatives than any camera I have previously used, and the cause I trace to the fact that I work dark slides, and not a charging back or bag. Six of the slides I use take 12 plates, and are easily stowed away in a jacket pocket without attracting notice. I might enlarge on this subject to a considerable extent, but it is not necessary, as I am simply recording the outcome of experience. I would certainly counsel chemists to recommend hand cameras carrying dark slides if for no other reason than that, from the business point of view, they are more satisfactory to handle than others. To paraphrase the celebrated remark of the author of the "Pickwick Papers," "Volumes cannot say more."

PHOTOGRAPHIC CHEMICALS.

The following, whilst not a complete list of photographic chemicals, will be found sufficiently comprehensive for all the demands of an ordinary trade :—

Acetone
Acid Hydrofluoric
Acid Pyrogallic
Alum Chrome
Ammonium Sulphocyanide
Amidol
Asphaltum
Calcium Chloride (anhydrous)
Caramel
Dextrine
Diphenal
Eikonogen
Ferric Chloride (dry)
Gelatin, Nelson's soft
,, ,, hard
Glycin
Gold Chloride
Hydroquinone
Indiarubber (pure masticated)
Metol
Ortol
Potassium Bichromate
,, Chloroplatinite
,, Ferric Oxalate
,, Hydrate
,, Metabisulphite
,, Oxalate (neutral)
,, Sulphocyanide
Pyroxylin (high temperature)
Rodinal
Silver Nitrate
Sodium Carbonate
,, Hydrate
,, Hyposulphite
,, Sulphite
,, Sulphantimoniate (Schlippe's salt)
Thiocarbamide
Uranium Nitrate

From the above table have been omitted those which are likely to be in the ordinary stock—one or two inserted because of the following notes :—

Pyro should always be obtained in 1-oz. bottles. Asphaltum : Preferably in powder; not in great demand. Caramel : Liq. sacch. ust. is an extremely unsatisfactory form. The best is the dry powder, "crystal caramel," to be obtained from Lichtenstein and Co., Silvertown Chemical Works, London, E. Dextrine : White dextrine should always be supplied. Pyroxyline : Hopkins and Williams' high temperature, or else Schering's celloidin, is the best. Sodium hyposulphite : The small white recrystallised hypo. should always be supplied. It keeps better, is much cleaner, and gives greater satisfaction, and will always fetch a higher price.

With regard to the prices of photographic chemicals, it must be understood that they are considerably lower than would be charged in the ordinary way. The best thing to do is to obtain a price-list from some large London dealers and note the prices there charged.

Frequently it happens that some out of the way thing, such as an aniline dye, is wanted, and whilst these may sometimes be obtained from the wholesale house, they sometimes may not, and it is necessary to wait while it is obtained for you. As a rule, however, there is not much difficulty beyond a little delay, for the average amateur wants few ; it is only the expert faddist who wants out of the way dyes.

Frequently there arises a sudden demand for some new or rather little known chemical. If this is the case you may be quite sure that someone has been writing about it in the weekly photographic papers. It is as well, therefore, for the dealer to scan these, so as not to be quite ignorant of what is meant.

Above all things, be careful to supply what is asked for. Carbonate of soda is not the bicarbonate, neither is sulphite the sulphate, both of which have before now been obtained in mistake. Mercuric chloride is not calomel, nor is oxalate of potash the binoxalate.

Frequently a formula is brought with a request that it should be made up. In such cases the man whose custom is worth having will never object to an extra charge over cost of materials, though he will probably grumble if prescription rates are charged.

ACETONE AS A DEVELOPER.

A. and L. Lumière and Seyewetz report that the alkalies of alkaline developers can be replaced by acetone. In conjunction with pyrogallol, acetone forms an excellent developer. The authors use for the preparation of a normal developer 100 C.c. water, 5 grammes anhydrous sodium sulphite, 10 grammes of acetone and 1 gramme of pyrogallol. To obtain good negatives from plates which have been over-exposed, the developer is first used without acetone and the latter added gradually. Acetone is said not to colour the film yellow or affect it in any way, and to exercise a favourable influence on the colour of the silver and the development of the diapositive.—*Pharm. Centr.* xxxviii., 856, through *Chem. Zeit.*, 1897, Rep. 304.

Chemists' Photographic Specialties.

MANY chemists offer photographic appliances or materials, specially devised by themselves, and others undertake the development of films, printing, etc. A list of such is herewith given, and particulars of the articles offered—many of which are well worthy of attention—will be sent by the proprietors on application. The full addresses in all cases will be found in the 'Photographic Tourists' Guide,' p. 6, *et seq.*

Cabinets.

W. Martin, Redruth

Cinematograph Films.

J. Williamson, Hove, Brighton

Cloud Negatives.

W. Green, Berwick
B. Wyles, Birkdale
B. Wyles, Birkdale and Southport

Collodion.

J. W. Moore, Hanley

Complete Outfits.

H. R. Dorning, Chorley (½-plate)
L. Atkinson & Co., Greenwich, and 285, Brockley Rd., S E. (½-plate)
J. H. Hopper, Forest Gate, E.
G. Woodhouse, Ludlow (¼-plate)
H. E. Cocker, Luton
G. R Lawrence, Rhyl
Winstanley & Fairhurst, Wigan (½-plate)

Cylinder Washers.

J. R. Cave, Southport

Dark Slides.

A. Upson, Maidenhead

Developers.

E. H. Orange, Aldershot
J. J. Tremeer, Barnstaple
R. Broadhead, Batley
Tame & Co., Boscombe
Shillcock & Son, Bromley
R. R. Gant, Bushey New Town
C. A. Jago, Chertsey
E. Thorp, Chichester
J. H. Hart, Clevedon
J. L. Laing, Crewe
W. C. Phillips, Croydon
Dunhill & Stiles, Doncaster.
A. Turner, Dumfries.
H. R. Browne, Eastbourne.
J. Gibbs & Son, Eastbourne.
G. A. Harmer, Eastbourne.
J. Blenkiron, Edinburgh.
G. Whyte, Elgin.
W. Oldham, Eton.
J. W. Bodger, Peterborough.
J. W. Moore, Hanley
W. I. Bethune, Inverness.
Wiggin & Son, Ipswich.
H. Hitchman & Son, Kettering.
R. M. Stewart, Kingsbridge.
W. Brewster, Kingston-on-Thames.
W. Briggs, Lancaster
W. Wyatt & Co , Lancaster
F. W. Goodess, Leicester
J. Young, Leicester
L. Atkinson & Co., Greenwich, and 285, Brockley Rd., S.E.
J. H. Hopper, Forest Gate, E.
J. J. Ferguson, Leytonstone, N.E.
W. Sharman, Hackney, N.E.
G. J. Thomas & Co., Hackney, N.E.
J. E. Jewell, Upper Norwood, S.E.
T. H. Powell, Denmark Hill, S.E.
F. T. Bowen, Merton, S.W.
C. W. Brummell, 118, Holland Park Avenue, W.
J. S. Hepworth, Loughborough
Smith & Elkington, Louth
A. Bushby, Manchester
W. Maskew, Manchester
Agar Brothers, Mansfield
W. T. Harvey, Margate
R. W. Brownlow, Melton Mowbray (Concentrated)
J. H. Smith, Newark
J. W. Bodger, Peterboro

Developers (Continued).

H. E. Noble, Peterboro
E. Baily, Ramsgate
T. Padwick, Redhill
Walton & Co., Richmond (Yorks)
J. Dutton & Son, Rock Ferry
A. Smith, Sale
J. R Cave, Southport
B. Williamson & Co., South Shields
D. James, Stalybridge
F. W. Biggs, Stourbridge
A. D. Purse, Sunderland
C. Lowe & Co., Surbiton
Green & Son, Swindon
H. R. Beckett, Tonbridge
W. Bathe & Co., Torquay
F. March, Torquay
H. S. Pearmund, Tunbridge Wells
Rayner & Son, Uxbridge
W. H. Littlefield, Ventnor (I. of W.)
Hill & Co., Warrington
E. J. Eaton, Woodbridge
A. B. Cortis, Worthing

Developing Dishes.

J. Wain, Ripley
A. D. Purse, Sunderland

Development and Printing.

E. H. Orange, Aldershot
R. R. Gant, Bushey New Town
Gibson & Son, Hexham.
J. Williamson, Hove
J. Cowper, Penrith
F. W. Knowles, Warrington
J. Carew, Waterford

Draining Racks.

Sturton & Sons, Peterboro'
A. D. Purse, Sunderland

Dry Plates.

W. Oldham, Eton.
J. J. Laws, Streatham, S.W.

Enlargements.

B. Wyles, Birkdale
R. P. Gant, Bushey New Town
Ellwood & Son, Leominster
F. W. Knowles, Warrington

Exposure Tables, etc.

F. W. Biggs, Stourbridge
C. J. Caldecott, Wrexham

Funnel Rings.

E. J. Green, Rochester

Hand and Stand Cameras.

Reid, Aberdeen
T. Stanley, Accrington
Adamson & Co., Ltd., Ballina
J. Morley, Beverley
H. B. Pare, Bolton
J. W Wright & Co., Burnley
W. Pilkington, Buxton
H. Glover, Coventry
Dunhill & Stiles, Doncaster.
J. Blenkiron, Edinburgh.
J. H. Hopper, Forest Gate, E
A. Upson, Maidenhead
J. T. Chapman, Manchester
W. Maskew, Oxford Rd., M'chester
W. T. Dawson, Norwich
J. A. R. Burbank, Oxford
C. Clayton, Oxford
W. Bathe & Co., Torquay

Lamps.

Reynolds & Branson, Leeds
J. Preston, Sheffield

Lantern Slides for Lectures.

J. Walker, Edinburgh.
W. Oldham, Eton.
W. F. Piggott, Leighton Buzzard
F. Goldby, Enfield Town, N.
J. S. Hepworth, Loughborough

Mounts.

E. Peck, East Dereham

Mountants.

R. Broadhead, Batley
H. Moon, Brighton
G. Kemp, Chester
E. Thorp, Chichester
H. R. Dorning, Chorley
J. L. Laing, Crewe
L. Atkinson & Co., Greenwich, and 285, Brockley Rd., S.E.
J. H. Hopper, Forest Gate, E.
A. Bushby, Manchester
E. Baily, Ramsgate
Winstanley & Fairhurst, Wigan
Gatward & Wright, Yeovil

Negative Varnishes.

J. Jackson, Blackpool
C. A. Jago, Chertsey
W. Walwin, Gloucester
J. H. Hopper, Forest Gate, E.
S. Lawrence, Oban

Plate Backing.

H. Pickering, Leicester
J. Young, Leicester
J. Brown, Walker-on-Tyne

Prints.

B. Wyles, Birkdale
A. E. Beken, Cowes (Yacht Racing Studies)
W. J. Crowther, Mayfield
C. Crooke, Mirfield (Studio Portraiture)

Print Cutters.

Sturton & Sons, Peterboro'

Ready-made Solutions.

J. J. Tremeer, Barnstaple
J. Williams & Co., Cardiff
G. W. Evans, 239, Hammersmith Rd., W.
Gibson & Son, Hexham.
W. I. Bethune, Inverness.
A. Bushby, Manchester
S. Lawrence, Oban
J. G. Isaac, Swansea
F. March, Torquay

Reducers.

L. Atkinson & Co., Greenwich, and 285, Brockley Rd., S.E.

Retouching Medium.

S. Daniel, Swindon

Stereoscopic Slides.

B. Wyles, Birkdale
T. Taylor, Rawtenstall

Toning and Fixing Solutions.

T. Stanley, Accrington
E. H. Orange, Aldershot
Adamson & Co., Ltd., Ballina
G. Brisley, Bexhill
W. Asten, Erdington (B'ham)
H. B. Pare, Bolton
R. R Gant, Bushey New Town
C. S. Addison, Cambridge
E. Bing & Son, Canterbury
W. E. Stokes, Chatham
W. C. Phillips, Croydon
Horrell & Goff, Dartford.
F. W. Doubleday, Dorking.
H. R. Browne, Eastbourne.
J. Gibbs & Son, Eastbourne.
G. A. Harmer, Eastbourne.
A. H. Toone, Exmouth.
J. C. C. Payne, Holywood.

Toning and Fixing Solutions (Continued).

W. Wyatt & Co., Lancaster
F. W. Goodess, Leicester
J. H. Hopper, Forest Gate, E.
W. G. Blackham, Holloway Rd., N.
J. J. Ferguson, Leytonstone, N.E.
W. Sharman, Hackney, N.E.
G. J. Thomas & Co., Hackney, N.E.
T. H. Powell, Denmark Hill, S.E.
Smith & Elkington, Louth
Wand & Burrow, Malvern
A. Bushby, Manchester
Woolley, Sons & Co., Ltd., M'chester
W. T. Harvey, Margate
R. W. Brownlow, Melton Mowbray
J. C. Robson, Middlesboro
F. Park, Newcastle-on-Tyne
W. T. Dawson, Norwich
S. Lawrence, Oban
C. Clayton, Oxford
J. W. Bodger, Peterboro'
T. J. Calcutt, Peterboro'
G. Sharples, Preston
E. Baily, Ramsgate
R. Blanchford, Richmond
J. Dutton & Son, Rock Ferry
W. B. Jamieson, Rothesay
T. Smith, Ryde (I.W.)
A. Smith, Sale
Atkins & Son, Salisbury
E. Parker, Scarboro'
J. Preston, Sheffield
E. R. Dawson, Southend-on-Sea
W. Bates & Co., Southampton
H. A. Carter, Southampton
J. R. Cave, Southport
B. Williamson & Co., South Shields
W. Clarke, Stockton-on-Tees
F. W. Biggs, Stourbridge
A. D. Purse, Sunderland
C. Lowe & Co., Surbiton
Green & Son, Swindon
A. Enoch, Tewkesbury
L. L. Stroud, Tewkesbury
H. S. Pearmund, Tunbridge Wells
W. H. Littlefield, Ventnor (I of W.)
H. Holme, Wallingford
Mason, West Norwood
H. Hunter, Whitehaven
E. J. Eaton, Woodbridge
C. J. Caldecott, Wrexham

Various Specialties.

J. Williams, Aldershot
C. Matthews, Ashby-de-la-Zouch
S. Sharp, Ashton-under-Lyne
Adamson & Co., Ltd., Ballina
S. Taylor, Barrow-in-Furness
E. C. Perry, Basingstoke
A. P. Garland, Blackburn
W. Jones, Bournemouth
R. Schooles, Brecon
Churchill & Co., Brighton
Beall & Son, Cambridge
T. Ridley, Carlisle
J. Blair & Son, Cork
Brearey & Son, Douglas (I. of M.).
Oakes & Gardiner, Ely.
J. H. Lake, Exeter.
D. Gardiner, Haddington.
Wilson & Son, Harrogate.
C. B. Southwell, Knaresbrough.
Smith & Son, Leamington
Johnson & Sons, Leek
H. Pickering, Leicester
F. Goldby, Enfield Town, N
M. Howell & Son, Peckham, S.E
Prosser Roberts Co., Camberwell
G. Evans, 239, Hammersmith Rd., S.W.
J. S. Hepworth, Loughborough
H. E. Cocker, Luton

'X' Ray Apparatus.

J. Williamson, Hove, Brighton
Reynolds & Branson, Leeds
F. H. Glew, 15, Clapham Rd., S.W (Reviver Tube)

PHOTOGRAPHIC LITERATURE.

The amateur photographer is a somewhat voracious reader, and it is as well, therefore, to cater for his tastes in this way. It will be found that the best way to obtain both the ephemeral literature and books is to enter into communication with Messrs. Dawbarn and Co., 6, Farringdon Avenue, E.C. They make a specialty of supplying photographic dealers with literature.

The weekly journals are :—

British Journal of Photography. Weekly. Friday—9 a.m. 2d. Greenwood & Co., 24, Wellington Street, Strand, W.C. The *Times* of photography, very substantial and very good.

Photographic News. Weekly. Thursday—4 p.m. 1d. 9, Cecil Court, Charing Cross Road, W.C. The oldest weekly photographic newspaper, and the best of its kind for amateurs and chemists.

Amateur Photographer. Weekly. Thursday—9 a.m., for Friday. 2d. Illustrated. Hazell, Watson & Viney, Ltd., 1, Creed Lane, Ludgate Hill, E.C.

Photography. Weekly. Thursday—9 a.m. 1d. Iliffe & Son, 3, St. Bride Street, E.C.

The monthly journals are :—

Photogram. Monthly. 3d. Photogram, Ltd., 6, Farringdon Avenue, E.C. A finely and artistically illustrated paper.

Process Photogram. Monthly. 6d. Photogram, Ltd., 6, Farringdon Avenue, E.C. Fully illustrated.

Practical Photographer. Monthly—25th. 6d. Illustrated. Percy, Lund & Co., Amen Corner, Paternoster Row, E.C.

Junior Photographer. Monthly—25th. 3d. Illustrated. Percy, Lund & Co., Amen Corner, Paternoster Row, E.C.

The chief annuals are :—

British Journal Photographic Almanac. Yearly. December. 1s. Illustrated. Cloth, 1s. 6d. Greenwood & Co., 24, Wellington Street, Strand, W.C.

Year-Book of Photography. Yearly. April. 1s. Illustrated. 9, Cecil Court, Charing Cross Road, W.C.

Photography Annual. Yearly. July. 2s. 6d. Illustrated. Iliffe & Son, 3, St. Bride Street, E.C.

As these may be obtained from the above-named firm on sale or return, and show-cards will be supplied, a trial might be made for a month or two.

The most likely books are the following :—

Photography in a Nutshell. By F. Kernel. 1s.
The Imperial Text-book of Photography. By E. J. Wall. 1s.
Platinotype. By Horsley Hinton. 1s.
The Ilford Manual of Photography. By C. H. Bothamley. 1s.
Modern Photography. By W. K. Burton. 1s.
Elementary Photography. By John A. Hodges. 1s.
Everyone's Guide to Photography. By E. J. Wall. 6d.
Photographic Enlargements. By Geo. Wheeler. 1s.
Development. By Lyonel Clark. 1s.
The Art of Retouching. By J. Hubert. 1s.
Optics for Photographers. By W. K. Burton. 1s.
The Stereoscopic Manual. By W. I. Chadwick. 1s.
Wet Collodion Photography. By C. W. Gamble. 1s.
Carbon Printing. By E. J. Wall. 1s.
The Lantern, and How to Use It. By C. Goodwin Norton. 1s.
Modern Magic Lanterns. By R. Child Bayley. 1s.
Photographic Chemistry. By F. C. Townshend. 1s.

The above are practically the most reliable books. For advanced workers the following should be supplied :—

Instruction in Photography. By Capt. Abney. 3s. 6d.
Practical Guide to Photography. By Marion & Co. 2s. 6d.
Science and Practice of Photography. By C. Jones. 2s. 6d.
Photography with Emulsions. By Capt. Abney. 3s. 6d.
Action of Light in Photography. 3s. 6d.
Photo-Micrography. By J. H. Jennings. 3s.
Picture Making by Photography. By H. P. Robinson. 2s. 6d.
Photogravure. By H. Denison. 4s. 6d.
Photo-Lithography. By Georg Fritz. 3s. 6d.

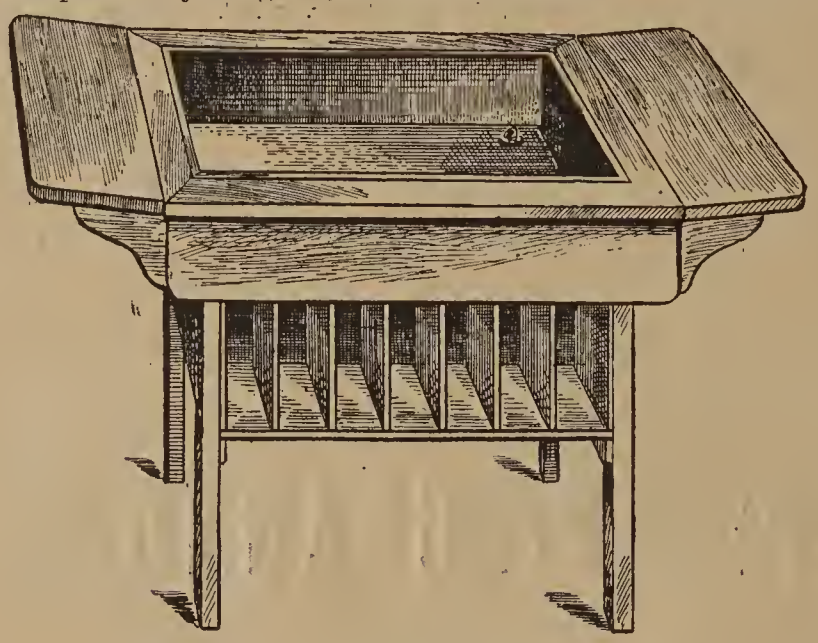
The following reference works are also useful :—

Dictionary of Photography. By E. J. Wall. 7s. 6d.
Encyclopædia of Photography. By W. E. Woodbury. 7s. 6d.
Photographic Reference Book. By W. A. Watts. 6s.
Materia Photographica. By C. Leaper. 5s.

NEW IDEAS AND TRADE NOTES

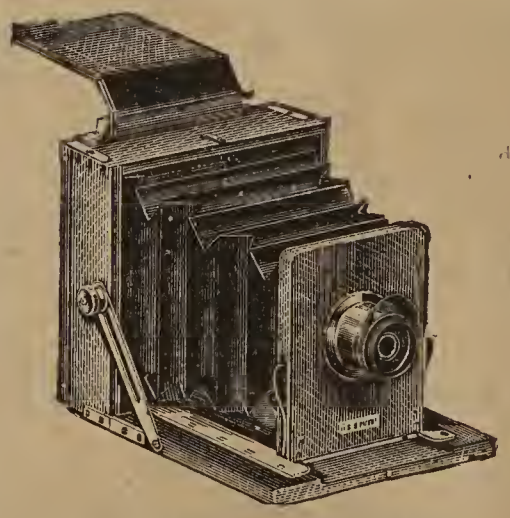
BARCLAY & SONS, LTD.

Messrs. BARCLAY & SONS, LIMITED, of 95, Farringdon Street, London, E.C., have a department specially devoted to photographic materials and requisites under the special charge of Mr. G. R. Barclay, an amateur photographer of many years' standing, who for a long period has taken a great interest in this engrossing pursuit, in fact, long before it became so much the vogue as at present. We have been shown advance sheets of this firm's NEW PHOTO PRICE-LIST to be issued at Easter. It is alphabetically arranged, retail prices only are given, so it can be shown to or distributed



THE FARRINGDON SINK AND DISH RACK.

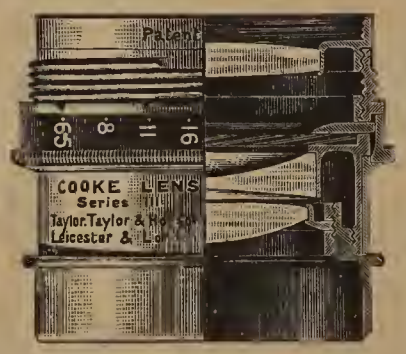
amongst customers. Chemists can be supplied with one hundred copies of the list with their own advertisement printed on the front cover at a very modcrate charge. The trade discounts are indicated by letters. The chemicals are quoted not only by the old-fashioned weights, but the metric equivalents are given. Graduated measures are also supplied, with the metric measures indicated. Plates by all the leading makers are kept in stock and the prices enumerated in this list. One of Messrs. Barclay's novelties this season is the FARRINGDON GUINEA SET, which includes a compact, well-made quarter-plate polished mahogany camera, one double dark slide, the lens is fitted with revolving diaphragm, and the tripod is light, strong, and rigid. By an ingenious arrangement the camera can be put to any focus by pressing two small arms, and the screw arrangement common to so many cameras is done away with. A half-plate size can be had to retail at 32s. 6d. The FARRINGDON SINK AND DISH RACK is a substantially made and well-finished piece of dark-room furniture specially designed by Mr. G. R. Barclay, and retailing at 70s. The sink is 24 by 15½ by 6 inches, and the waste can be connected with existing fittings or allowed to flow into a pail, the side flaps are hinged, and when in position are sloped to allow of drainage into the sink. A SUPPLY CISTERN of galvanised iron, holding ten gallons, can also be had to use with the sink. The price, including tap and lid, is 16s. Messrs. Barclay make a special feature of SCALES AND WEIGHTS for photographers. The scales can be had in polished oak box, with drawer, brass beam, weight scale and chains, folded brass crank, and movable glass pan, English weights, brass (two drachms to half scruple), metric weights, brass (10 grammes downwards), at 17s. 6d., or, in a cheaper form, with polished mahogany box, etc., at 13s. 6d. A useful article is the "GRIP" PASTE, which can be recommended for mounting photographs. For other novelties and particulars we must refer our readers to the new price-list previously alluded to, which will be sent on application, and will well repay perusal.



THE FARRINGDON SET.

THE COOKE LENSES.

Within the last few years the science of photographic optics has advanced by leaps and bounds, and one of the most satisfactory productions has been the series of lenses produced by Messrs. TAYLOR TAYLOR & HOBSON (see p. 15) from the calculations of Mr. H. Taylor, of Messrs. Cooke, of York. The particular features of this series of lenses is that they consist of single, not achromatised lenses, and differ from the ordinary type of rectilinear lenses in that they are composed of three lenses—a central negative element between two positive elements—each single and yet so perfectly adjusted by means of a screw adjustment that perfect definition is obtained with the full aperture over the given sized plates for which the lens is designed. The lenses are rectilinear and free from spherical and chromatic aberration, both for axial and oblique pencils—an important improvement—whilst the errors of astigmatism and curvature of the field are totally eliminated at all angles up to 25° to 30° from the axis. Experts would naturally suspect that, from the form of the lenses, that is the central negative lens there would be considerable flare or ghost, but from the peculiar forms and relative distances of the surfaces these are totally absent. There is one other point which is a great advantage in these lenses, and that is their perfect correction as regards the absolute coincidence of the size of the red, green, and violet images—an important matter now that three-colour photography is so much to the fore.



NELSON, DALE AND CO.

Considering that it is generally believed that the whole question of the great sensitiveness of the dry plates of the present day has to depend in considerable measure on the quality of the gelatin, and that the keeping properties of the plates and printing-out papers are also dependent on good gelatin, it is not to be wondered at the great name that Nelson's gelatin has attained in the photographic world. Address: 14, Dowgate Hill, E.C.

W. BUTCHER AND SON.

This firm submits a copy of the new photographic catalogue for the present season. It includes a large number of new things in almost every branch of the trade, and chemists would do well to write to Messrs. Butcher, Blackheath, S.E., for a copy.

HARRINGTON BROS.

This firm make a specialty of pure photographic chemicals, and their granulated hypo, which may be obtained in 1 lb. boxes, is well worth attention, as it thus obviously saves any trouble on the part of the dealer or customer. Other important items are the aniline colours for trichromatic and other photography, the chemicals for process work, and negative and enamel collodions and varnishes. These may be obtained either in bulk or bottles, and being of constant and well-proven composition are obviously of great advantage to the dealer. Address, Harrington Bros., 4, Oliver's Yard, City Road, E.C.

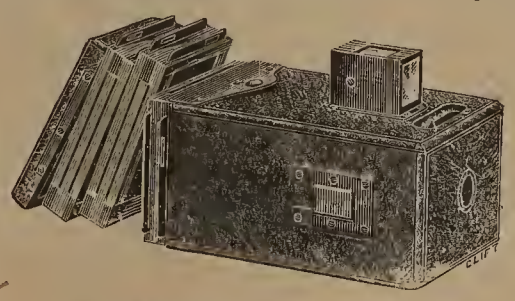
GEO. HOUGHTON AND SON.

Messrs. Geo. Houghton & Son, 88, High Holborn, W.C., make a specialty of the wholesale trade, and are prepared to supply, on favourable terms, everything that the photographic dealer requires in the course of his business. One of their novelties is the "Holborn Guinea" hand camera, fitted with two view finders, an ever-set

The Holborn Hand Camera.

shutter giving time and instantaneous exposures, a single achromatic lens, and covered with black leather. It takes six quarter plates, which are stored in sheaths at the back of the camera, and are released by pressing a knob on the top of the camera, whence they fall down into a reservoir at the bottom. The camera only weighs $2\frac{1}{4}$ lbs. when charged, and measures $7\frac{1}{4}$ by $6\frac{1}{4}$ by 4 ins.

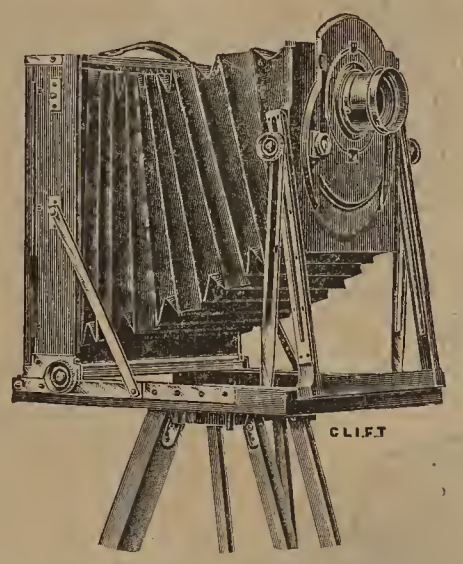
Another series of useful cameras which will appeal to many are the Expert, which are fitted with dark slides. It is made in two sizes—a quarter plate, fitted with three double dark slides, which are carried inside the camera, though there is room for another three slides, which are very compact and light. The larger camera is covered with Morocco leather with oxidised fittings, and two brilliant view finders, a handle for carrying, and tripod



The Expert Pocket Camera.

attachments. The lens is of the landscape pattern and fitted with rotating stops, which are manipulated from the outside of the camera, the lens and a time and instantaneous shutter, adjustable to various speeds, are fitted to a special front, which can be removed so that the lens may be easily cleaned. The price of this complete with three double dark slides is 30s. The smaller size of this camera is made for plates $2\frac{1}{8}$ by $1\frac{5}{8}$ ($\frac{1}{4}$ quarter plate), and is identical with the above with the exception of finders, of which only one of the brilliant pattern, which slips on to the top of the camera, is supplied. The price of this complete with three double dark slides is 17s. 6d.

As regards the Sanderson Camera, it may be noted that for many years camera construction has been practically at a standstill, and this particular form is noticeable in that it really is the most important advance in stand cameras for many years. To the old worker the principles of this camera will seem almost revolutionary, as the swing back has been entirely done away with, but by means of special side struts and a front swinging on the same



The Sanderson Patent Camera.

an amount of rise and fall can be obtained with this camera that is practically impossible with any other pattern. All that is necessary to do with this camera is to see that it is level, and then, with the head under the focussing cloth, to adjust the image on the ground glass by movements of the front. It is capable of all that an ordinary camera will do and a great deal more with infinitely less trouble. It is not increased in size, weight, or price.

"TABLOID" PHOTOGRAPHIC CHEMICALS.

The compactness of these preparations so obviously adapts them to the needs of the amateur that the necessity of keeping them in line with modern developments is easily understood. Messrs. Burroughs, Wellcome & Co. are evidently fully alive to the requirements of the case, and have recently so added to their list (see p. 13) that the amateur has every fully established developing agent at his command in a most convenient and compact form. Developing or toning by means of "Tabloid" Photographic Chemicals is simplicity itself. One "tabloid" developer, one "tabloid" accelerator dissolved in 1 oz. of water, and in a minute or less the normal developer is ready for use. It is even quicker than diluting concentrated solutions. The space saved is considerable, the freshness and activity of the developer is secured, there is no weighing out so many grains of this and so many grains of that, and yet with all these conveniences there is no loss of power in altering the constitution of the developer as under or over exposure may require. Toning is just as simple as developing. Many chemists do not cultivate the trade in photographic chemicals because the profit on them is too small to pay for the trouble they give or the shop space they occupy. But the majority of people may be expected to purchase their medicines, toilet requisites, etc., where they can also get the chemicals that they need for their hobby, and with the ever-increasing competition in trade and the continually growing number of amateur photographers that is a point the chemist may well bear in mind. It would certainly seem that tabloid photographic chemicals enable the pharmacist to cater for the photographer with the sacrifico of a minimum amount of space and time and with the certainty of a fair profit. A full list of the photographic chemicals now issued under the "Tabloid" brand, and a pamphlet giving complete working instructions will be sent by the firm to any applicant mentioning this paper. It will be noticed that each developer has its specially-adapted accelerator, and that in the case of the toning agents a great range of colour is made possible by separating the gold from the other ingredients of the bath. It is claimed that the keeping properties of "Tabloid" photographic chemicals have been amply proved by the experience of travellers in various parts of the world. One well-known traveller, Lionel Decele, for instance, speaking very favourably of them after using them to develop 4000 plates in equatorial Africa. The latest additions to Messrs.

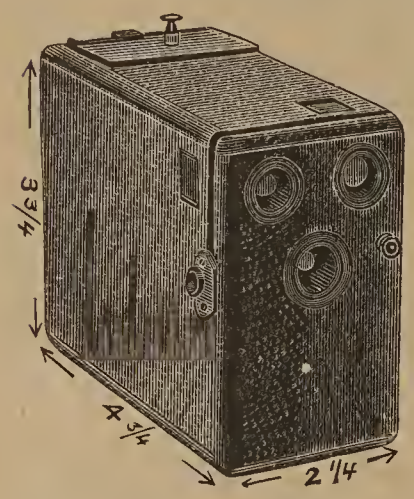
Burroughs, Wellcome's list include 2 gr. hydrokinone, eikonogen, 2 gr. pyro, 2 gr. amidol, and 1½ gr. metol with the requisite accelerators. They are readily soluble in water and give satisfactory developers with the minimum amount of trouble.

MYERS AND FROST.

The chemist who successfully cultivates the photographic trade will soon find that there comes a time when his customers want enlargements from small negatives made. If he undertakes this himself, he will probably find by the time he has learnt how to successfully turn out a good enlargement at first shot from every negative that all his profits have been swallowed up. Enlarging is a business in itself, and it is as well, therefore, to place such work in the hands of a competent firm, as the above, who give special terms to dealers. Address: 46a, Market St., Manchester.

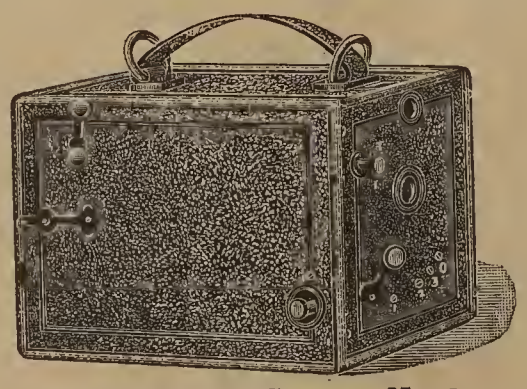
THE DIAMOND CAMERA AND PLATES.

Mr. J. G. Lockyer, of 87, Evelyn Street, Deptford, S.E., has placed on the market an extremely neat little camera called the "Diamond," which retails at a guinea and caters for the present rage for small pocket cameras. It takes six plates, 2⅛ by 1⅝ (a ¼ of a quarter plate), and these are stored in sheaths at the back of the camera and are released in turn by pressing the small knob seen on the top, and fall into a reservoir at the bottom. The lens is a landscape lens of fixed focus, giving good definition. Two view finders are fitted and an everset time and instantane ous shutter, which is altered from time to instantaneous and *vice versâ*. Mr. Lockyer also sells a special brand of plates, the "Diamond," in boxes of two dozen at 1*s*., and further supplies a guide and cutter for those who wish to cut their own plates. He particularly recommends his hydroquinone developer for these plates, which are of the same speed as the Special Rapid of other makers, but they work well with all ordinary developers. Mr. Lockyer has made a specialty of putting up standard developers, toning, reducing, intensifying, and other solutions, and a liberal trade discount is allowed.



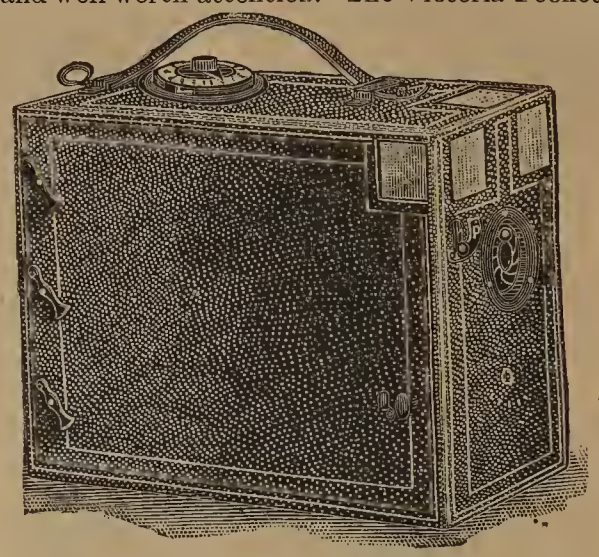
JAS. WOOLLEY AND SONS, LTD.

Messrs. Woolley & Sons, of Manchester, were amongst the first wholesale firms to recognise the possibilities in the photographic trade, and for the last ten years they have catered for the wholesale trade by supplying reliable apparatus at a liberal discount. They now issue a complete price list with the retail prices in it, so that it may be shown to a customer by the retail chemist; fifty of these catalogues are supplied to every customer who sends a £10 order, whilst literature and show-cards are also issued. A large show-room at the firm's premises is devoted entirely to photographic goods. One of their specialties is the Victoria Outfit, which consists of camera, one double dark slide, a good lens (either landscape or rectilinear), and tripod stand; other sets are completed by a roller-blind shutter and case. These outfits vary in price from 21s. to 67s. 6d. for the quarter plate, and 42s. to 126s. for the half plate, the price varying according to the lens, shutter, case,



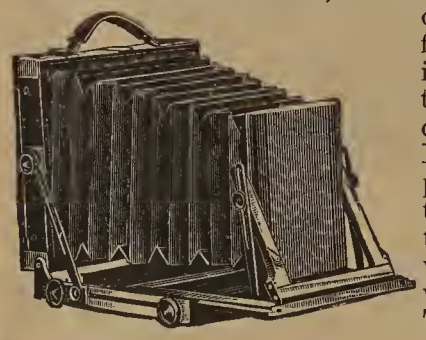
The Excelsior Camera, No. 1.

etc. Another improved camera is the "Standard," which has every movement that may possibly be desired, and is issued with three double backs and turn-table fitted to the camera, for 70s for quarter plate, 100s. for half plate. These are of very fine workmanship, and well worth attention. The Victoria Pocket Camera is



The Victoria Hand Camera.

another excellent little novelty which is very compact and portable and takes a spool of films for twelve exposures. It is also fitted with a brilliant finder, an achromatic lens and instantaneous shutter for various speeds. Price, 17s. 6d. Of the ordinary hand cameras for plates and films with magazines there are two kinds—first the Excelsior, for lantern-sized plates, 3¼ inches square, or for ¼-plate size. Both sizes are fitted with achromatic lenses and instantaneous shutters adjustable to various speeds, and they are covered with leather. The Victoria Hand Camera is of improved pattern and a more superior article than the last; it is fitted with two brilliant finders, single lens with iris diaphragm, and shutter with improved speed regulator. The price-list of all the accessories and apparatus is wonderfully complete, well illustrated and printed, and we can do no more than commend it to dealers' notice, as well as the series of washable backgrounds, which are always flat and never crease, and may be easily rolled up. These backgrounds are issued in four colours; they are wonderfully cheap and of excellent quality.



The Standard Camera.

CADETT PLATES.

Messrs. Cadett & Neall, of Ashtead, Surrey, make a specialty of dry plates of great rapidity, although they also make plates of ordinary speed, lantern plates and photo-mechanical or process plates. All their plates are accurately tested for speed by the now almost universally acknowledged best system of speed testing, namely, that worked out by the late Dr. Ferdinand Hunter and V. Driffield. Their spectrum plate is also the only really true orthochromatic plate in the market, but its great slowness and the demand for a more rapid plate has induced them to shortly place on the market a more rapid plate, but not of such perfect colour-sensitive qualities, the deficiency being in the blue-green.

JONATHAN FALLOWFIELD.

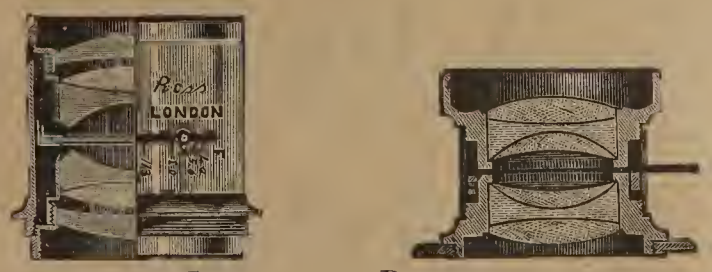
Mr. J. Fallowfield was probably better known as a photographic chemist and dealer than anyone else about 25 to 30 years ago, when his premises were in Lower Marsh, Lambeth; and with the advance of time and the great increase in photography he has found it necessary to migrate to 146, Charing Cross Road, W.C. Here there is to be found a complete stock of every requisite in photography, and that we do not notice his specialties is simply due to the fact that the description of them fills a bulky octavo volume of nearly 800 pages. It is obvious, therefore, that to commence on such a bewildering mass of material would appal the stoutest, but it also proves that his warehouse may be justly termed the Whiteley's of photography.

ROSS, LTD.

Since the introduction of the Jena glass with which Messrs. Zeiss have been so intimately connected, their photographic lenses have taken very high rank, and the anastigmats have found considerable favour amongst photographers of all classes. Probably the most useful of this series is Series VII.*a*, the convertible ana-

Convertible Anastigmats.

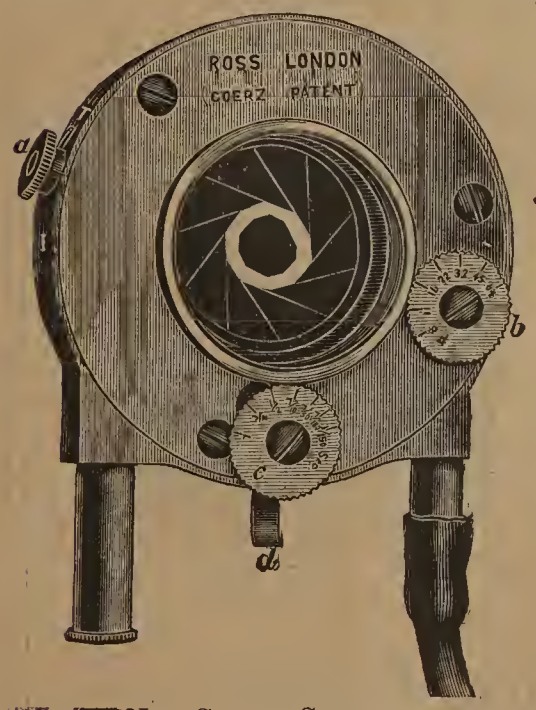
stigmats, which consist of two combinations, each of which is composed of four cemented elements, and which can be used as single lenses with a working aperture of F/12.5, whilst the two combinations working together form a rectilinear that works at an aperture of F/6·3 to F/8, according to the single lenses that are chosen. Thus, it is possible to have in one lens a set that will give a rectilinear of one focus with either two single lenses of the same foci, which is about double that of the rectilinear, or else two



Planar Lens.

Double Anastigmat.

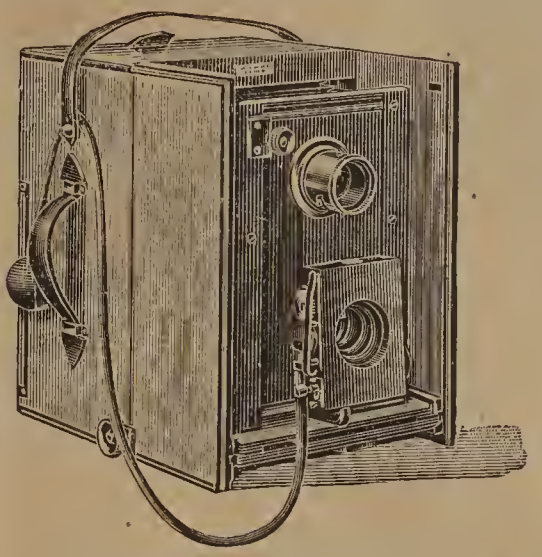
single lenses of dissimilar foci, so that one may have practically two or three lenses in one. This lens may aptly be called a universal lens suitable for all classes of work, for the rectilinear when stopped down gives such excellent definition over a large angle that it can be used on a big plate as a wide angle lens. A still more perfect lens is the "Planar," which is a symmetrical lens composed of four separated lenses, the outer one being single and separated by an air space from a doublet. The great features of this lens are that it works at an aperture of F/3·6 to F/6, and perfectly corrected for spherical and chromatic aberrations up to an angle of 62° to 72°. They are made in varying foci from three-quarters of an inch up to 33 inches, and the smaller sizes are provided with the English Microscopic Society screw, and for photo-micrographic enlargements the results are superior to anything yet done with lenses of similar foci. From the large working aperture they are obviously specially suitable for portraiture and kinematographic work, and the corrections are so perfect as to enable them to be used for all process and three-colour work.



New Sector Shutter.

Another valuable lens which is manufactured as the above at Clapham by Ross, Ltd., is the Goerz Double Anastigmat, the invention of Herren Goerz and Van Hoegh. These lenses are also characterised by their perfect correction and flatness of field and exquisite definition, even with the full aperture of F/8 over an angle of 70°, whilst stopping down increases the angle of sharp definition to 90°.

Goerz's New Sector Shutter is of the well-known iris diaphragm pattern, fitting between the combinations of a doublet lens, and opening from and closing to the centre. The full aperture is easily controlled, a scale of millimetres at the side enabling one to set it. The speed, too, is controllable by a milled head, from one second to 1/150th of a second; and the speeds are constant for any sized aperture, which is a distinct advance. The shutter is set without opening the lens, and works without shock or jar of any kind.



Portable Twin-Lens Camera.

One of the great difficulties in hand camera work is to ensure the sharpness of the image, and the most advanced workers are gradually coming round to the use of twin lens cameras, in which, by the use of a second lens, the composition as well as the definition of the picture can be seen, and a convenient and well-made camera of this pattern is that made by Ross, Ltd., which is fitted with two accurately paired lenses, a blind shutter, and either three dark slides or changing box for twelve plates. The address of Messrs. Ross, Ltd., is 111, New Bond Street, W.

"VELOX" PAPER.

Messrs. John J. Griffin & Sons, of 22, Garrick Street, Covent Garden, W.C., have taken up the sole wholesale agency of Velox Paper, which has gained considerable reputation in the U.S.A., the land of its birth, and also on the Continent. It is a development paper very slow, requiring for an average negative an exposure of from one to eight seconds to diffused daylight a few feet away from northern window; electric arc light requires about same exposure. Welsbach gas-light needs several seconds more than arc light; an ordinary gas-jet three or four inches distance from negative will yield a print in one or two minutes. The peculiarity of the paper is that it may be manipulated in subdued gas-light without any harm accruing, and whilst metol-quinol or amidol or metol alone are recommended for development, it will work well with any developer suitable for bromide paper. The results we have obtained are characterised by extremely rich velvety blacks, pure whites, and good gradations. It is made in two kinds and in six grades—the ordinary velox in "carbon," "glossy," and "rough" surfaces, and the special, which is somewhat quicker than the other, in "portrait," "glossy," and "rough." An excellent paper, worth pushing.

VOIGTLÄNDER AND SON.

Messrs. Voigtländer & Son, of Brunswick, and 92, Hatton Garden, E.C., are renowned as the manufacturers of the first Petzval Portrait Lens and the first Euryscope. Now with the advance of photographic optics they have introduced a series of anastigmatic lenses perfectly corrected for all the aberrations, with large aperture and good covering power. These lenses compare favourably with any of the newer lenses, and should not be overlooked.

REYNOLDS AND BRANSON.

Messrs. Reynolds & Branson, of Leeds, have for some considerable time made a specialty of apparatus for radiography, and amongst other good things is the Phœnix Camera, of superior quality and fitted with three double dark slides. The Phœnix Dark Room Lamps are also well made, and that for gas is so arranged that white light may be obtained at will. For testing plates a standard and constant light is of great importance, and the Hefner-Alteneck Amyl-Acetate Lamp, which has been modified by this firm, is on the Continent the generally accepted unit of light.

News in Brief

Mr. J. Uri Lloyd, of Cincinnati, U.S.A., is engaged in connection with Professor Felter, in getting out a new edition of the 'American Dispensatory,' reprinting and setting anew. The work is expected to be ready about the end of the year.

Liverpool Pharmaceutical Students' Society.—The usual smoking concert to wind up the winter session took place on Thursday, March 24, at the Kardomah Café, about forty members and their friends assisting.—The President, Mr. Pierson, performed the duties of chairman in a most satisfactory manner, working through a long programme of vocal and instrumental music, interspersed with recitations and a few short speeches concerning the work of the Society. During the evening a collection was made on behalf of the Pharmaceutical Society's Benevolent Fund, and its claims on the support of all connected with pharmacy were impressed upon the assembly by the President and Mr. Wardleworth. The excellent arrangements for the comfort of the audience reflected great credit on the Secretary, Mr. J. Harris Burns, who was indefatigable in his endeavours to make the affair a success.

Brighton Junior Association of Pharmacy.—On Wednesday, March 23, the above Association held a meeting at its headquarters, 31, Cannon Place. The chair was taken by the President, Mr. C. A. Blamey.—Mr. R. A. Cripps read a paper on "Official Extracts and Liquid Extracts," which proved most interesting and instructive.—This was the last scientific meeting of the session, but the annual conversazione and dance was held at the King's Apartments, Royal Pavilion, on Thursday, March 31, the rooms being prettily decorated, and the gathering, which lasted from 8.30 p.m. till 2 a.m., being most successful. The stewards Messrs. C. A. Blamey (President), C. G. Yates, G. B. Savage, S. Ching, and W. H. Andrews (Hon. Secretary).

Presentation at Exeter.—On Thursday last week a presentation was made at the Exeter Technical and University Extension College to Mr. Alan H. Ware, Ph.C., the Teacher of Pharmacy, Botany, and Chemistry. Some of his students and friends on the staff of the College subscribed for a handsome tea service, which was presented by Mr. Trott, who, in the name of the subscribers, expressed the esteem which was felt for Mr. Ware at the College by all who came in contact with him, and wished him every happiness during his approaching honeymoon. The tea service was accompanied by an illuminated address containing the names of the subscribers.

Manchester Literary and Philosophical Society.—At a special meeting of this Society, held on Tucsday, the Wilde medal for 1898 was presented to Sir Joseph Dalton Hooker, G.C.S.I., F.R.S., and the Wilde premium (£15 15s.) for 1898 to Mr. John Butterworth, F.R.M.S. Mr. J. Cosmo Melville presided, and Sir Joseph D. Hooker gave some interesting reminiscences of his visits to Manchester.

Mr. J. W. Drinkwater has opened a chemist's shop at Manchester Road, Chorlton-cum-Hardy, Manchester, and the entire fittings, including cabinet ware, show cases, counters, shop rounds, jars, etc., have been supplied by Messrs. Ayrton & Saunders, Liverpool. This shop is particularly artistic and the effect produced by it is extremely good.

J. H. Morris, Chemist, Branksome, Bournemouth, was elected, on Monday last, at the head of the poll to the Branksome Urban District Council (East Ward Division).

Mr. B. Kühn, of 36, St. Mary-at-Hill, Eastcheap, E.C., has, with the assistance of Messrs. Fritzsche, of Hamburg, the patentees of Chinosol, formed the business into a limited company under the style of "The Chinosol Hygiene Company, Limited." Mr. Kühn, who has previously had the sole agency for Chinosol and its various preparations, will act as Managing Director, and the address of the company will be 36, St. Mary-at-Hill.

Mr. C. Rundle has retired from the business of Messrs. W. Hooper & Co., Russell Street, Covent Garden, which he has carried on for the past fourteen years in conjunction with Mr. William Warren. This change involves Mr. Rundle's retirement from the Strand Board of Works, of which he was a prominent member.

Messrs. James Hillock's drug and chemical concern in Armagh is to be disposed of by public auction in consequence of the death of the proprietor.

The Trustees of the National Library, Kildare Street, Dublin, have added, by request, the Calendar of the Pharmaceutical Society of Great Britain to their collection of volumes.

An Interesting Lecture on "Exposure and Development" was given last week in Belfast by Mr. A. R. Hogg, a local chemist and druggist, before the Ulster Amateur Photographic Society.

A Statutory Notice to Creditors has been issued in the goods of the late Dr. Hamilton, Director of Messrs. Hamilton, Long and Co., state pharmaceutical chemists, Dublin, who died recently. Probate of the will of deceased has been granted to Messrs. W. and Arthur B. Watson, and a distribution of assets will take place on June 1 next.

The Grand Jury at County Armagh have recommended that before submitting samples for analysis due authority for the same must be obtained. They believe that the Food and Drugs Act would be more efficiently administered by the exercise of more discrimination in the selection of samples.

Publications received.

Ueber die Einwirkung der Somatose auf die Secretion der Muttermilch, von Dr. Richard Drews, Kinderarzt in Hamburg. Reprint from "Therapeutischen Wochenschrift," Nr. 45. 1897, Wien.

Introduction to the Study of Organic Chemistry. By John Wade, B.Sc. (Lond.). Pp. xvi. + 460. Price 7*s.* 6*d.* London: Swan, Sonnenschein & Co., Ltd., Paternoster Square, E.C. 1897. From the Publishers.

The Earliest Recorded Discovery of Thermal Springs. By Prosser James, M.D. Pp. 16. Reprint from the *Journal of Balneology and Climatology*, October, 1897. London: John Bale, Sons & Danielsson, Ltd. 1897. From the Publishers.

'Ueber die therapeutische Amwendung eines Condensations productes von Tannin und Urotropin (Hexamethylentetramin),' von Dr. E. Schreiber. Reprint from *Deutschen Medicinischen Wochenschrift.* 1897. No. 49.

The Relative Strength of Antiseptics. By Dr. Louis Kahlenberg. Reprint from the *Pharmaceutical Review.* Vol. XV., No. 4. From the Publishers.

The Origin of Zymotic Diseases. By F. A. Cooper, B.Sc. (Lond.). Pp. 21. Price 3*d.* Birmingham: Geo. Jones and Son, 87 to 89, Edmund Street. From the Author.

St. Thomas's Hospital Reports, New Series. Edited by Dr. Hector Mackenzie and Mr. G. H. Makins. Vol. XXV., pp. xiv. + 499. Medical School Calendar and Prospectus for the year commencing October 1, 1897. Pp. 119. London: J. and A. Churchill, 7, Great Marlborough Street. 1897. From the Publishers.

Die Heilpflanzen der Verschiedenen völker und Zeiten ihre Anwendung, Wesentlichiin Bestanatheile und Geschichkle. Von Dr. med. et. phil. Georg Dragendorff. Part I. Pp. 160. Price 4s. Stuttgart: Verlag von Ferdinand Enke. 1898. From the publisher.

Zur Charkteristik der Somatose, Von Dr. Friedrich Maassen in Wien, being a reprint from *Wiener Medicinischen Wochenschrift* (No. 1, 1898). From the publishers

'Doctor and Patient: Hints to Both.' By Dr. Robert Gersuny, translated, with the permission of the Author, by A. S. Levetus, with a preface by D. J. Leech, M.D., F.R.C.P., etc. Pp. 79. Price 2*s.* net. Bristol: J. Wright & Co. 1898. From the Publishers.

'Till Läran om Syphilis Congenita,' af Professor E. Odmansson. Pp. 208. Stockholm: Kungl, Boktryekeriet. P. A. Norstedt & Söner. 1898. From the Publisher.

Erfahrungen über Trional als Schlafmittel mit Besondeur Rücksicht auf die Beeinflussung des Blutdruckes Von Dr. Sigmund Kornfeld Pp. 28 Reprint from "*Wiener Medizinische Blätter*," Wien, 1898. From Messrs. Friedr Bayer & Co., Elberfeld.

MARKET REPORT and Prices Current

Specially compiled for the Pharmaceutical Journal

The quotations here given are in all cases the lowest cash prices for bulk quantities, and often the articles quoted have to be sorted in order to suit the requirements of the retail pharmacist. The cost of freightage from the chemical and drug works to the various distributing centres must also be considered. It is important that these conditions should be borne in mind in making any comparison between the prices quoted and those of the wholesale drug trade.

LONDON REPORT.

APRIL 6, 1898.

Business has been greatly restricted during the past few days, the threatened rupture between the United States and Spain, combined with other political uncertainties, together with the near approach of the Easter holidays, having reduced actual transactions almost to the vanishing point. Quinine has had another tumble, it is hoped, however, now that the worst is over, and that we may shortly see a reaction. Acid Citric and Tartaric and Cream of Tartar are firm. Borax and Acid Boracic quiet and unchanged. Acetanilide, Phenacetine, and Sulphonal steady. Cocaine quiet. Iodine and Iodides, Bromine and Bromides, Bismuth Salts, and Lithia without change. Cod-Liver Oil higher. Glycerin steady. Ipecacuanha firm. Opium, Morphia, dull. Codeia steady. Pilocarpine expected to be dearer. Senna in short supply, and very firm. Cacao Butter higher. Prices ruling for articles of chief interest are as follow :—

ACETANILIDE—Is quiet at 1s. 2d. to 1s. 3d. per lb

ACID CARBOLIC.—Rather firmer at 6½d. to 6¾d. per lb., according to quantity and make, for the 35-36° acid in *ice crystal* in 2½-cwt. drums and overcasks. Other qualities and packing higher in proportion. *Crude* : 60° F., 2s. 1½d. per gallon; 75° F., 2s. 7½d. *Liquid* : 95 per cent., of pale straw colour, 1s. 3d. per gallon in 40-gallon casks.

ACID CITRIC—Steady at 1s. 0¾d. per lb. for prompt, makers not being ready sellers for forward delivery.

ACID OXALIC—Is quoted 3½d. to 3¾d. per lb., delivered in London.

ACID TARTARIC—Firm at 1s. 1d. for *English* in crystals ; *foreign*, 12¾d. per lb.

AMBERGRIS.—Really fine quality is becoming scarce, and with a good demand, prices, failing a good "find," will be bound to go dearer. For really fine grey, of good flavour, 95s. to 105s. per cwt. is asked.

AMMONIA COMPOUNDS.—*Sulphate* dull and weak. Gray, prompt, 24 per cent., London, £8 15s. per ton, Hull, £8 15s., Leith, £8 16s. 3d., Beckton, £8 12s. 6d., Beckton terms prompt, £8 10s. *Bromide* : 2s. 2d. per lb. *Iodide* : 13s. 4d. per lb. *Sulpho-cyanide*, 1s. 2d. to 1s. 3d. per lb. *Oxalate* : 6½d. per lb. *Sal ammoniac* : Firsts, sublimed, 35s. to 36s. per cwt. ; seconds, 33s. per cwt. *Chloride* : 26s. to 30s. per cwt.

BLEACHING POWDER—Is quoted £6 15s. to £7 5s. per ton on the spot, according to quantity.

BORACIC ACID—Steady at 22s. 6d. per cwt. for *crystals*, and 24s. 6d. per cwt. for *powder*.

BORAX—Quiet ; *crystals* 14s. 6d. per cwt., *powder* 15s. per cwt.

BROMINE AND BROMIDES—Without alteration, *Pot. Bromide* being in good demand at 1s. 9d. to 1s. 10d. per lb. *Soda Bromide*, 2s. 1d. to 2s. 2d. *Ammon. Bromide*, 2s. 1d. to 2s. 2d. per lb., according to quantity.

BUCHU LEAVES.—Although prices were lower in last week's auctions, it has been found by home consumers that privately no supplies are to be had at the prices then established. The whole of the late arrivals seem to have been purchased for shipments, whilst stocks here are held for more money. 5d. per lb. may be called the nearest value for good green round leaves.

CAFFEINE—In fair demand at 14s. 4d. per lb. for the *pure*, and 11s. 2d. per lb. for the *Citrate*.

CAMPHOR.—Market is lifeless, there being sellers of *China*, April to June steamer, at 84s. 6d., and of *Japan* at 90s. to 92s. 6d. per cwt., *c.i.f.*

CASCARA SAGRADA.—Good old bark is held for 22s. 6d. to 23s. 6d. per cwt., there not being very much offering.

CLOVES.—*Zanzibar* : Firm and in fair demand. Sales comprise June to August delivery at $3\frac{15}{16}$d. to 4d., and August to October at $4\frac{3}{32}$d.

COAL TAR DISTILLATION PRODUCTS.—*Toluol* : Pure, 3s. per gallon. *Benzole* : 50 per cent., 1s. 5d. per gallon ; 90 per cent., 1s. 3d. *Crude Naphtha* : 30 per cent. at 120° C., 9d. *Solvent Naphtha* : 95 per cent. at 160° C., 1s. 11d. per gallon.

COCAINE—Is firmer, best brands being quoted at 10s. to 10s. 6d. per oz. for quantity in bulk, makes less in favour being offered at rather lower figures. Messrs. C. F. Boehringer and Soehne have issued an English translation of a reprint from the *Pharmaceutische Centralhalle*, 1898, No. 9, on the "Ammonia Test of Cocainum Hydrochloricum according to Maclagan," which should prove of interest to those who might be otherwise tempted by the somewhat cheaper price to buy a less reliable brand of *Cocaine*. As will be well known to our readers, the *B. & S.* brand enjoys a world-wide reputation, and the fact that it so fully answers the requirements of the Maclagan test will no doubt be one of the causes of its popularity amongst those best able to judge the quality of the article. The publication in question appears to prove beyond all question the absolute necessity that cocaine should fully answer the Maclagan test, and that a preparation which does not fulfil these requirements is better avoided, however much apparent advantage same may offer in price.

COCOA BUTTER.—At the monthly auctions on Tuesday this article experienced a further rise, 65 tons of Cadbury's make selling with good competition at an average of 10½d. per lb., against 9¾d. in the March, and 9½d. per lb. in the February auctions.

CODEINE—Is in fair demand at 11s. 3d. to 11s. 6d. per oz. for quantity.

COD-LIVER OIL.—Price of the new *Norwegian* oil appears to be creeping up. Much will, however, depend upon the course of the fishing, result of which, so far, has been anything but favourable. Quotations vary from 82s. 6d. to 90s. per barrel *c.i.f.*, there being, however, no pressure on part of the agents to effect sales. Old *Norwegian* oil is obtainable at 70s. to 75s. per barrel.

CREAM OF TARTAR.—Without change at 77s. for first white *crystals* on the spot and 79s. to 80s. for *powder*.

DRAGON'S BLOOD.—There are several inquiries on the market for really fine, bright re-boiled lump, but although importers have sent orders out for this quality some time back, there would appear to be none coming. Nominal quotation for this quality, £12 10s. per cwt. *Reeds* are firmly held at £8 15s. to £9, according to quality. Ordinary re-boiled saucers can be had at £6 to £7 per cwt.

ESERINE.—*Physostigmine* : Makers have fixed the price at 1s. 6d. per gramme for quantities of less than 25 grammes. *Calabar Beans* are dearer, which may mean still further advanced price for eserine.

GLYCERIN.—Best *German* white chemically-pure double-distilled 1·260 quality is quoted 52s. 6d. to 57s. 6d. per cwt. in tins and cases. *English* : 50s. to 52s. 6d., according to quantity and make.

GUM ASAFŒTIDA.—Several orders from the United States have come in this week, but limits being below the ideas of importers, no business of importance has resulted. It would appear that America is really short of the article, so that we may hear of important business resulting ere long.

INSECT FLOWERS.—The stocks in Trieste are fairly large, and the demand for America seems to be rather smaller than usual. Prices are quoted 125s. per cwt. for closed, 90s. for half closed, 60s. per cwt. for open flowers, *f.o.b.*, Trieste.

IODINE AND IODIDES—Unchanged at 7½d. per oz. for the former, and 9s. 9d. per lb. for *potassium iodide* in 2-cwt. lots.

IPECACUANHA.—Since our last 122 bales of *Rio* quality have arrived, but as this was known before the sales, no change in the position has taken place, and holders decline to sell below 8s. per lb. for fair ordinary, and 8s. 6d. for good bold. Buyers, however, hold off in view of high prices asked, and the future course of the market resolves itself into a question as to whether buyers or importers can hold out the longer. *Carthagena* : A little more business has been done at the reduced figures of last sale.

JAPAN WAX—Is in slight demand on the spot at 35s. 6d. per cwt., while for April-June steamer 36s. per cwt. *c.i.f.* is asked.

LITHIA—Is firm at 10s. 8d. per lb. for the *Carbonate* in 2-cwt. lots.

MENTHOL.—7s. 3d. to 7s. 6d. per lb. is the price for best dry white crystals.

MERCURIALS—Unchanged at 2s. 2d. for *Corrosive Sublimate*, and 2s. 6d. per lb. for *Calomel* in half-ton lots.

MORPHIA — Quiet but unchanged at

Monthly Statement of Drugs, etc., Warehoused in London.—March 31, 1898.

		March, 1898.		Stocks, March 31.	
		Arrivals.	Deliveries.	1898.	1897.
Aloes (all kinds)	packages	175	186	5,090	4,810
Balsams ,,	,,	128	39	408	614
Cinchona Bark	,,	3,329	2,313	20,309	20,970
Quinine Sulphate	ounces	105,360	78,272	1,719,344	1,332,288
Beeswax	packages	186	566	1,423	1,438
Camphor	,,	821	592	11,433	11,696
Cardamoms	,,	580	335	1,170	884
Cochineal	,,	65	206	2,481	2,263
Calumba Root	,,	109	5	129	125
Cubebs	,,	385	8	1,629	306
Dragon's Blood	,,	14	30	29	23
Galls (all kinds)	,,	51	341	3,085	4,702
Gum, Ammoniacum	,,	—	—	36	35
Arabic, all kinds	,,	1,462	2,435	11,543	11,101
Asafœtida	,,	1	95	651	274
Benjamin	,,	308	413	2,507	2,939
Galbanum	,,	—	—	—	1
Gamboge	,,	30	24	304	189
Guaiacum	,,	—	12	73	42
Kino	,,	18	1	41	34

		March, 1898.		Stocks, March 28.	
		Arrivals.	Deliveries.	1898.	1897.
Gum, Mastic	packages	—	1	23	16
Myrrh	,,	4	35	473	538
Olibanum	,,	251	466	2,314	2,508
Tragacanth	,,	137	834	2,881	3,097
Ipecacuanha	,,	88	39	244	510
Jalap	,,	—	21	311	269
Nux Vomica	,,	41	6	158	454
Oils, Castor	,,	47	152	573	852
Olive	,,	222	133	800	1,000
Aniseed	,,	—	11	122	109
Cassia	,,	—	8	114	87
Rhubarb	,,	181	192	803	262
Saltpetre	tons	2,878	4,973	1,196	3,105
Sarsaparilla	packages	160	78	303	269
Senna	,,	327	486	833	1,923
Shellac	,,	8,156	3,944	56,501	43,283
Terra Japonica, Gambier	tons	341	829	1,442	1,462
Cutch	,,	64	77	1,325	1,706
Turmeric	,,	—	20	256	821

The stocks of camphor, oils of aniseed and cassia are incomplete, some warehouses not making returns.

4s. 3d. per oz. for the *Hydrochlorate salt* in powder.

Nitrate of Silver—Weak in sympathy with the *metal*. Crystals are quoted 1s. 4¾d. to 1s. 5¼d.; sticks, 1s. 6d. per oz. for 1000-oz. lots.

Oils (Essential).—*Peppermint*: American *H.G.H.* 5s. 9d. to 6s. *Wayne County*: 3s. 9d. to 4s. *Japanese*: Dementholised, 3s. 3d. to 3s. 6d. on spot, 40 per cent. 4s. 3d. to 4s. 6d. spot, and *c.i.f. Star Aniseed* 6s. 9d. to 7s. for spot and arrival. *Cassia*: 80 per cent. 5s. 3d. *c.i.f.*, 75 to 80 per cent, 4s. 9d. *Citronella*: 1s. 2d. to 1s. 3d. per lb. *Lemon-grass*: 5d. to 6d. per oz. according to quantity.

Oils (Fixed) and Spirits.—*Linseed*: Quiet at about 2s. 6d. decline, spot pipes £15 7s. 6d. to £15 10s., barrels £15 17s. 6d. *Rape*: Steady, ordinary brown spot £22 10s., refined £23 10s. to £24. *Cotton*: Quiet, London crude spot £13 to £13 2s 6d.; May to August £13 5s.; refined spot £14 10s. to £15, according to make. *Olive*: Spanish £33, Levant £32 10s. to £33. *Cocoanut*: Ceylon spot £23, April to June £22, *c.i.f.*, Cochin spot £27 10s., April to June £24 10s., *c.i.f. Palm*: Lagos spot £23. *Turpentine* firmer. American spot 23s. 7½d. to 23s. 9d., May 23s., June 21s. 10½d., July-December 20s. 9d. *Petroleum Oil* dull. Russian spot and forward 4⅛d. to 4⅜d. American: 4⅜d. to 4½d., water white 5¾d. per gallon. *Petroleum Spirit*: American 5⅜d., deodorised 5½d. to 5¾d. per gallon.

Opium.—Very quiet at 10s. to 10s. 9d. per lb. *Persian*, 8s. 3d. to 9s. for *manufacturing*, 9s. to 10s. 6d. for *Druggists*, and 10s. to 12s. for *soft shipping*, there being, however, but little doing in the article.

Orris Root.—*Florentine* is quoted at 35s. to 50s. per cwt. *c.i.f.*, according to quality; higher prices are, however, looked for in the near future.

Permanganate of Potash—Rather firmer at 62s. 6d. per cwt. for small crystals, and 67s. 6d. for large crystals.

Phenazone.—A reliable article is being offered at 1s. per oz. in quantity. While *Dr. Knorr's antipyrine* is still held for 2s. 1½d. per oz., the result can only be that *antipyrine Knorr* will be gradually superseded by *Phenazone*.

Phenacetin.—Steady at 3s. 9d. to 4s. 3d. for *crystals* or *powder*, according to quantity and packing. Bayer's make is still held at the fancy price of 14s. 3d. per lb., for quantity and bulk packing.

Pilocarpine — Is very firm at late advance to 33s. per oz. for *Nitrate* and *Hydrochlorate*, it being thought that, in view of continued scarcity of *Jaborandi Leaves* suitable for manufacture and yielding a fair result, we may yet see even a considerably higher price for the alkaloid and its salts.

Potash Compounds.—*Chlorate* quiet at 3¼d. to 3½d. per lb., according to quantity. *Bromide* steady at 1s. 10d. per lb. *Prussiate*: Yellow, 6¾d. per lb.; red, 1s. 2d. to 1s. 3d. per lb. *Bichromate*, 4d. per lb. *Oxalate*: Neutral, 3⅞d. to 4⅛d. per lb. *Permanganate* steady at 60s. to 62s. 6d. per cwt. for small crystals, and 5s. per cwt. more for large crystals. *Cyanide* firm at 1s. 2d. to 1s. 3d. per lb. for 98 per cent. cake, according to delivery required. *Bicarbonate*: Crystal or powder, 30s. to 32s. 6d. per cwt.

Quicksilver—Importers quote £7 1s. 3d., there being sellers, however, from second hand at £7 per bottle.

Quinine.—German makers reduced their price on the 5th inst. to 9½d. per oz. for the *Sulphate* for 1000 oz. lots in 100 oz. tins. The course of the article this year has proved more than disappointing to holders. The belief is, however, expressed that the worst is past, and that a reaction is not impossible.

Rhubarb—Is in good inquiry, and some sales have been made since last week's auctions. Fair round *Canton*, part rough, but of good colour, has been done at 1s. 2d. per lb.

Saccharin. — Position remains unchanged; the Saccharin Corporation claiming the right to the monopoly of the article, a question which, however, has yet to be decided in a court of law. Buyers will, nevertheless, do well to be careful as to the source of the article which they may have offered to them, it being asserted that doubtful quality is being offered in some quarters.

Saffron—Is firm at 35s. up to 45s. per lb. for very finest *Valencia*, and 22s. 6d. to 25s. for *Alicante*.

Salicine.—Makers' price remains at 10s. 6d. per lb. for quantity.

Senna.—*Tinnevelly*: As will be seen from the statistics given to-day, stocks are very low, and in the face of an apparent closing up of last year's crop it would appear that there will be some considerable scarcity before the new crop arrives in July or August next. There is a strong demand privately, and leaves, which in ordinary years are worth only 1½d. to 2d. per lb., are now being turned over at 3d. to 3½d. per lb. Of finer grades there is an absolute dearth. *Alexandrian*: Finer qualities scarce, but broken in poor leaf in over supply.

Shellac—Quiet, with, however, rather more demand on the spot. Fair *TN* has been sold at 60s. for cash terms, while for arrival there are buyers at 58s. per cwt. *c.i.f.* for April-June steamer. There are, however, no sellers at this figure.

Soda Compounds.—*Crystals*: 57s. 6d. per ton, *ex* ship. *Bicarbonate*: Commercial 98 per cent. is quoted £7 to £7 5s.; pure, fully bicarbonated, £18 per ton. *Caustic*: 60 per cent., £6 10s. to £6 15s.; 70 per cent., £7 10s. to £7 15s. per ton. *Hyposulphite*: 6s. to 8s. per cwt. *Iodide*: 10s. 7d. per lb. *Bromide*: 2s. 2d. per lb. *Nitrate*: Refined, £8 per ton. *Sulphite*: 18s. to 22s. 6d. per cwt., according to quantity and brand.

Sugar of Milk—Is quoted 55s. to 62s. 6d. per cwt. for *powder*, according to quantity and brand.

Sulphate of Copper.—Firm at 17s. to 17s. 6d. per cwt.

Sulphonal.—One of the makers is still accepting small orders at 7s. 3d. per lb. for *cryst.* and *powder*. It is, however, stated positively that a considerable advance in price may take place at any moment.

NEWCASTLE CHEMICAL REPORT.

April 6, 1898.

Rather more is doing in the heavy goods line, principally for Baltic and English Channel ports. Prices, however, go unchanged. Mr. James Tennant, Managing Director of the United Alkali Association, Limited, is announced as a

"traders'" candidate for a seat on the River Tyne Commission. Nine extra places have been granted by the Lords Committee through a Bill now before the House. Quotations are: Bleaching Powder, according to market, £6 5s. to £6 10s. Caustic Soda, 70 per cent. basis, £7 10s. to £7 15s. Soda Crystals, 45s. to 57s. 6d. Soda Ash, 52 per cent., £4 5s. Alkali, 52 per cent., £5 5s. Sulphur, £4 15s. to £5 per ton.

LIVERPOOL REPORT.

APRIL 6, 1898.

Business has been more than usually dull, even for the time of the year, sales have been small, and quotations as a whole are practically those of last week.

CARNAUBA WAX.—Yellow has been selling at 70s. per cwt.

CANARYSEED.—There is only a small inquiry, and Turkish is still quoted at 26s. to 27s. per 464 lbs.

CASTOR SEED.—500 bags of Brazilian from Pernambuco and Maceio sold *ex* quay at 9s. 6d. per cwt.

CREAM OF TARTAR—Remains quiet at 77s. per cwt. for finest white.

HONEY.—100 barrels of Peruvian Pile 3 found buyers at 22s. 6d. per cwt.

KOLA NUTS.—23 packages of dried brought 1½d. per lb.

LINSEED—Quiet. River Plate "spot parcels" is quoted at 33s. 9d. per 416 lbs., and Calcutta, 36s.; River Plate to arrive in a few days, 33s. 3d. Turkish "feeding" variety has been selling at 39s.

OILS.—*Castor*: Both French and Calcutta only command a small amount of attention, but prices are steady at 3¼d. to 3⅝d. per lb. for Calcutta and 3¼d. for French 1st pressure. *Olive*: Values are unchanged and the market is quiet. Candia offers at £34 per tun and Spanish at £32 to £33 10s. *Linseed* of Liverpool makes is firmly held for 17s. to 17s. 6d. per cwt. *Cottonseed* is still at 15s. 3d. to 15s. 9d. per cwt. *Spirit of Turpentine* has dropped to 25s. per cwt., and is in moderate demand.

MANCHESTER CHEMICAL REPORT.

APRIL 6, 1898.

There is absolutely no change to report in heavy chemicals, and in face of the coming holidays business is decidedly slack. Sulphate of Copper is somewhat higher, and is quoted at £17 to £17 10s. for best brands, Manchester, although resale lots, may be had lower. Greater supplies of Brown Acetate of Lime appear to be coming to hand, and prices are rather lower, £5 10s. to £5 15s. for Welsh and Best American delivered Manchester. Sulphate of Ammonia is fairly firm for Lancashire make. Green Copperas appears to be in greater inquiry, notwithstanding the influx of Welsh for disinfecting and sewage purposes. Pitch is in better demand. Saltcake is rather lower. Naphthas are fairly firm, but Benzols are dull. Manganese is in fair request at the recent advance. Yellow Prussiate unchanged at 6¾d. to 7d per lb. for best Lancashire make.

EXCHANGE.

Prepaid Notices not exceeding thirty words, including name and address, are inserted at a fee of Sixpence each, if they do not partake of the nature of ordinary advertisements. For every twelve words (or less) extra, the charge is Sixpence. A price, or two initials, will count as one word. The fee for use of the Serle Street address, including re-direction of replies, is Sixpence. The right is reserved to omit any notice if considered necessary. All communications should be addressed "PHARMACEUTICAL JOURNAL," 5, Serle Street, Lincoln's Inn, London, W.C., where notices can be received until 10 a.m. on Thursdays.

OFFERED.

Miscellaneous.

Magic Lanterns, second-hand; triples and biunials; oxyhydrogen microscope; marvellous pamphengos oil; lantern gives 14-ft. picture; 60,000 slides and effects; 4-in. 4-wick lanterns, 18s. 6d. each, bargains; illustrated list post free, 2d. Animated photographs: A splendid machine for £9 9s.—Hughes, Brewster House, 82, Mortimer Road, Kingsland, N.

Werner's Pill-massing Machine, 6 lbs. size, nearly new, price £5, cost £8 10s., *vide* 'C. and D. Diary,' 1897 and 1898.—Holden, Chemist, Barnsley.

Soda-water Trolley; a boy of eight can easily convey 3 dozen syphons and cases any distance; 35s., carriage paid.—Arthur and Co., Cambridge.

Oertling's balance and case weights. Cost £11 5s. Perfect condition. Price £7.—Hatfield, chemist, Limehouse.

Dental Chair (Perkins' pat.), in good condition, green plush, all parts adjustable, high and low base, suit tall or short operator, £6 10s.—Trow, Dentist, 237, Stratford Road, Birmingham.

WANTED.

Old Platinum Utensils or Scrap, also Old Electric Lamps wanted for prompt cash by P. Rowsell, 14, Walcot Square, London, S.E.

Wanted, Latin-English and English-Latin Dictionary.—G. B. Gray, Branksome Pharmacy, Westbourne, Bournemouth.

Wanted.—'Inorganic Chemistry' (Newth's); Green's 'Botany'; Kipping's 'Inorganic.'—Pill, 20, St. Margaret's Road, Plumstead.

NEW BOOKS AND NEW EDITIONS.

"Pittonia": A Series of Botanical Papers. By E. L. Greene. With plates. Vol. III., part 17. Pp. 199 to 256. 8vo., sewed. 2s. net. London: Wesley.

"The Early History of Chlorine," being papers by Carl Wilhelm Scheele (1774), C. L. Berthollet (1785), Guyton de Morveau (1787), J. L. Gay-Lussac and L. J. Thenard (1809). Pp. 50. Cr. 8vo. 1s. 6d. net. (Alembic Club reprints.) London: Simpkin.

"Purification of Sewage and Water." By W. J. Dibdin. 21s. London: The Sanitary Publishing Company.

"Researches on the Molecular Asymmetry of Natural Organic Products." 1860. By Louis Pasteur. Pp. 46. Cr. 8vo. 1s. 6d. net. Alembic Club reprints, No. 14. London: Simpkin.

"Introduction to the Study of Organic Chemistry." By J. Wade. A text-book for students in the Universities and technical schools. Pp 476. Cr. 8vo. 7s. 6d. London: Sonnenschein.

"Lippincott Medical Directory": A complete vocabulary of the terms used in medicine, etc., prepared on the basis of Thomas's Complete Medical Dictionary. By R. W. Greene, J. Ashurst, etc. Roy. 8vo. 31s. 6d. London: Lippincott.

DIARY FOR THE WEEK.

WEDNESDAY, APRIL 13.

MIDLAND CHEMISTS' ASSISTANTS' ASSOCIATION.
Third Annual Dinner.

SHEFFIELD PHARMACEUTICAL AND CHEMICAL SOCIETY, at 8.30 p.m.
"Microscopical Evening." Papers by J. Austen and C. O. Morrison.

THURSDAY, APRIL 14.

MIDLAND PHARMACEUTICAL ASSOCIATION, at 8.30 p.m.
Demonstration with an Electric Projecting Microscopic Lantern, by J. D. Whittles.

PHARMACY CLUB, at 7 p.m.
Meeting at Café Royal.

EDINBURGH CHEMISTS', ASSISTANTS', AND APPRENTICES' ASSOCIATION, at 9.15 p.m.
Annual Business Meeting.

SHEFFIELD MICROSCOPICAL SOCIETY, at 8 p.m.
Lecture by Charles Hoole.

Football News.

PHARMACEUTICAL F.C.—PAST *v.* PRESENT.—Despite the hostility of the elements the above teams turned out on Saturday, March 26, at Wormholt Farm, Shepherd's Bush. After a sharp and very short scramble in the mud the Old Boys were declared victors by 1 goal to *nil*.

TEAMS.

PAST.—W. Robinson (goal), A. Surfleet (Captain) and S. Sturton (backs), Spurge, Webster, and Butler (half-backs), C. Robinson, Lorimer, Fothergill (centre), Tebbutt and Morley (forwards).

PRESENT.—Prescott (goal), Jones and Metcalfe (backs), Evans, Nelson and Lescher (half-backs), Happold, Day, Owen (centre), Durbin and Warren (forwards).

Mr. T. Tickle acted as referee.

After the match the teams and their friends were entertained to tea at the Bush Hotel by the Pharmaceutical Football Club. The spread was followed by a very enjoyable smoking concert. Songs were contributed by a goodly number of past and present students, the talent displayed being of a very high order, and well supported by a powerful chorus. The piano was ably presided over by Mr. W. Prescott. During the evening Mr. Day proposed the toast of the Past Students of the School of Pharmacy, coupling with it the name of Mr. A. Surfleet, to whose exertions the mustering of such an excellent team of Old Boys was due. This was drunk with musical honours. The toasts of the Football Club, the Organising Committee, and the Chairman were also proposed by Messrs. Spurge, Sturton, and Tickle respectively, and were received with great enthusiasm. The evening was brought to a close with the "Square Anthem," Auld Lang Syne, and God Save the Queen.

PARTNERSHIPS DISSOLVED.

(From the London Gazette.)

P. O. Haynes & Charles T. W. Hirsch. General Medical Practitioners, Woolwich. All debts will be received and paid by Charles T. W. Hirsch on behalf of the firm.

J. N. Choat, A. F. Williams, & T. Wardley (trading as the Red Cross Chemists' Co.), Abbey Parade, Herne Hill, and York Road, Ilford.

Photographic Tourists' Guide.

IN the following list an asterisk (*) preceding the name of a town indicates inability to find that any chemist in the place has a dark-room, though there may be one or more who stock photographic materials. Where there is a dark-room, the fact is indicated by a capital "D" following the name and address, and except where the dark-room is at an hotel, it may mostly be taken for granted that plates and other photographic materials are stocked. The dark-rooms can, in some cases, be used for developing as well a changing, and even where there is not a dark-room, it is usually possible to get plates changed.

Bovey Tracey (Devon).

E. Browning, chemist.

Bovey Tracey is four miles from Chudleigh and a short distance from Newton Abbott. It is noted for the Bovey coal, which is found in the neighbourhood.

Braemar (Aberdeen).

A. R. Clark, Rowan Cottage.

Braemar is about 1100 feet above sea-level, and is the sanatorium of Deeside, which abounds with landscape pictures of great beauty. Braemar Castle, Invercauld Bridge, Crathie Church, Crathes Castle, the Devil's Point, the Linn of Dee, Balmoral Castle, Aboyne Castle, Glenmuick House, and Danzig Shiel are all within easy distance. Some of the most beautiful "bits" of Deeside scenery are found between Braemar and the Linn. Mar Lodge, the autumn quarters of the Duke of Fife, is in this section. It was at Braemar that the Earl of Mar raised the standard of rebellion in 1715.

Chertsey (Surrey).

F. R. Flintan, Guildford St.
C. A. Jago, Guildford St. D.
Surrey Chemists' Co. D.

Chertsey is an irregularly built town, built partly on the site of an ancient monastery, near the right bank of the Thames.

Chester (Cheshire).

J. Guy, The Mount, Queen's Park.
G. Kemp, 59, Bridge St. D.
Shrubsole & Son, Town Hall Sq. D.
J. H. Spencer, 36, Bridge St.

Chester has many objects of interest in addition to a fine old Cathedral and the old city of Chester with its Rows, Roman Walls and Baths. Hawarden Castle, the seat of Mr. Gladstone, Eaton Hall, the seat of the Duke of Westminster, are within walking distance, while there is much beautiful scenery on the River Dee.

Chesterfield (Derby).

G. Sampson, 7, Market Place. D.
G. Wright, Cavendish Sq. D.

Chesterfield has in its immediate neighbourhood much of interest to photographers, the chief places of interest including Chatsworth, Hardwick Hall, and Bolsover Castle.

Chichester (Sussex).

E. A. Long, 15, East St. D.
F. H. Playfoot, 15, East St. D.
E. Thorp, 9, North St. D.

Chichester possesses a fine old Cathedral with various styles of architecture, the Old Cross, 15th century, built by Bishop Storey. The places of interest are Boxgrove Priory (Norman and 13th century work); Goodwood House, the seat of the Duke of Richmond; Cowdray Park, Midhurst, the seat of the Earl of Egmont, and the village of Bosham, a resort of artists.

Chippenham (Wilts).

Edgar Neal, High St. D.

Chippenham is within a few miles of Malmesbury Abbey, Avebury, Bowood, and Lacock Abbey and village, there being much of interest to the camerist.

*Chipping Norton (Oxon).

F. W. Freeman, Middle Row. D.

Chipping Norton is picturesquely situated on the slope of a hill, and contains public buildings of the usual character, including a substantial Doric town hall.

Chiswick (Middlesex).

G. Curtis, 441, High Rd. D.

Chiswick is near the Thames, and is a well-known resort of rowing men. There are some very pretty views at Chiswick Eyot.

Chorley (Lancs).

H. R. Dorning, Pall Mall. D.

Chorley is a very busy town on a considerable elevation near Preston. Near it are bleach fields, print works, coal mines and stone quarries.

*Christchurch (Hants).

A. Mallett, Church St. D.

Christchurch is named after the noble church of an Augustinian priory (1150), which includes every style of architecture from Norman to Perpendicular. There is an Early English porch and a beautiful rood screen.

Cirencester (Gloucester).

W. Griffiths, Market Place. D.

Cirencester has a fine church and some interesting old streets, and is surrounded by good landscape scenery.

Clacton-on-Sea (Essex).

W. Mann, 2, Pier Avenue. D.

Clacton-on-Sea has many objects of architectural interest, and is about four and a half miles from St. Osyth's Priory and Church. Good views may also be obtained from the pier.

*Cleckheaton (Yorks).

Knowles & Co., Ltd., Market St. D.

Cleckheaton is pleasantly situated on a declivity in the West Riding, about eight and a half miles west of Leeds.

Clevedon (Somerset).

J. H. Hart, Marine House. D.

Clevedon is famed for the magnificent sunsets to be seen across the Bristol Channel, then there are several 13th century churches and old marine houses, fine moorland scenery, and a tidal estuary, near where "low tide" pictures may be obtained.

*Clifton (Gloucester).

F. Bromhead, 1, Regent St. D.

Clifton stands above St. Vincent's Rocks, which rise majestically from the Avon, and the river is here spanned, 245 feet above high water, by a suspension bridge.

*Clun (Salop).

E. Vaughan, Jubilee Commercial House. D.

Clun stands on the river of that name, about five and a half miles S.S.W. of Bishop's Castle; the remains of a castle erected by the Earl of Arundel present a picturesque object in the surrounding landscape.

Coalville (Leicester).

F. Brunt. D.

Coalville is a village sixteen miles N.W. of Leicester by rail. It derives its importance chiefly from its collieries.

Cockermouth (Cumberland).

Cooper Bros, 17, Market Pl. D.

Cockermouth is situated at the confluence of Cocker and the Derwent. Each river is crossed by a handsome stone bridge. The castle is picturesquely situated on rising ground between the two rivers.

Colchester (Essex).

J. C. Shenstone, 13, High St. D.
A. Weddell, 105, High St. D.

Colchester and neighbourhood is rich in ancient buildings, including Roman remains, Norman castle, and ruins of a Norman priory, and there is a good museum, especially rich in Roman antiquities. The town is within a few miles of the village of Dedham, where most of Constable's pictures were painted.

Colne (Lancs).

Hirst & Co., 22, Market St. D.
T. Stuttard, Albert Rd. D.

Colne is within easy reach of Bolton Abbey and Woods, Barden Tower, "Wycollar Hall" and Glen, mentioned in Ainsworth's 'Lancashire Witches,' Pendle Forest, and other places of interest.

Colwyn Bay (Denbigh).

J. W. Adamson, Queen's Bldgs.
J. L. Hunt, Conway Rd. D.

Colwyn Bay is in the heart of plenty of lovely scenery—woodland, mountain, and river—has a very pretty seascape. It is within a few miles of Llandudno, Conway, Abergele, and other places where good pictures may be obtained.

Conway (Carnarvon).

L. Jones, Lancaster Sq. D.

Conway has many interesting subjects for the photographer, including Conway Castle and suspension bridge, Royal Cambrian Academy, town walls and ruins. It is also a good centre for excursions amongst the beautiful North Wales scenery.

*Copperhouse (Cornwall).

W. Pengelly, Fore St. D.

Copperhouse is noted amongst camerists for the good pictures to be obtained in the neighbourhood, the Godrevy Lighthouse, rocks, quays, shipping, and river providing abundance of material for work with the camera.

Cork (Ireland).

Cork Chemical & Drug Co., Ltd. D.
J. Blair & Son, 7, Patrick St. D.
Kiloh & Co.
R. Sumner, 31, Patrick St. D.

Cork contains two fine cathedrals, and is surrounded by beautiful scenery. There are several ancient ruins, including those of Blarney Castle. Its harbour is unsurpassed.

*Coupar Angus (N.B.).

A. Geekie, Abbotsville. D.

Coupar Angus is on the main line from Perth to Aberdeen, and has some very picturesque scenery.

Coventry (Warwick).

W. Clarke, Hampton House. D.
H. Glover, 68 & 69, Spon St. D.

Coventry itself, as well as the surrounding district, is most interesting to photographers, abounding as it does in magnificent churches, old streets and houses, and delightful scenery.

Cowes (I. of W).

A. E. Beken, Blenheim House. D.

Cowes is a good centre to "work" the district, which affords ample opportunities for both seascape and landscape studies.

Cranbrook (Kent).

A. W. Hudson, Market Place Pharmacy. D.

Cranbrook is an ancient market town in the Weald of Kent. The church is a fine specimen of Gothic style. There are also some very pleasant views in the neighbourhood.

Crewe (Cheshire).

E. Booth, 5, Chester Bridge. D.
J. L. Laing, 56, Victoria St. D.

Crewe is an excellent centre for many objects of interest, chiefly archæological, in the neighbourhood. At Sandbach, distant about six miles, there are some interesting ancient crosses (Druidical) with rude engravings and several old-fashioned hotels. There are also some fine old country residences in the neighbourhood.

*Crewkerne (Somerset).

J. Mumford, Market Sq. D.

Crewkerne has a cruciform Perpendicular Church, with a fine west front; also a Grammar School dating from 1499.

*Cricklade (Wilts).

White Horse Hotel. D.

Cricklade, a very ancient town, is situated on the Isis (Thames), seven miles N.N.W. of Swindon. It has some handsome stone crosses in the churchyards.

Crieff (Perth).

J. Harley, 5, James's Sq. D.

Crieff is in the midst of magnificent mountain and river scenery, the Falls of Turret and Barvick presenting very pretty views.

Crowle (Lincoln).

W. Pickering, Market Place. D.

Crowle stands on a plain, nearly surrounded by moorland, and has a church of the time of Henry I.

Crowthorne (Berks).

F. Satchell, High St. D.

Crowthorne is a residential village charmingly situated in the midst of extensive pine forests. It is a favourite resort for invalids, and on account of its beautiful situation affords endless scope for lovers of landscape photography. Places of interest: Royal Wellington College, and, within very short cycling distance, the Royal Sandhurst Military College, Cæsar's Camp—a Roman remains—and Eversley, the home and birth-place of Charles Kingsley.

Croydon (Surrey).

W. C. Phillips, 43, South End. D.
D. P. Roberts, 120, North End. D.
W. J. Rugg, 63, White Horse Rd. D.
H. Woodcock, 56, George St. D.

Croydon lies near the Banstead Downs at the source of the Wandle Whitgift's Hospital is a red brick quadrangular pile, and there are also the Whitgift Schools. Thirteen railway stations.

*Cullen (Banff).

Seafield Arms Hotel. D.

Cullen is a fishing-town with a harbour, backed by the conical Bin Hill (1050 feet). Cullen House, a seat of the Earl of Seafield, is a Scottish baronial pile.

*Cupar (Fife).

W. Courts & Son, 27, Crossgate. D

Cupar has a handsome Free Church, the Duncan Institute, a public park, and a large corn market.

Dalbeattie (Kirkcudbright).

H. Kerr, 92, High St. D.

Dalbeattie is situated amidst the famed beauties, in hill and wood and glen, of Galloway.

*Dalton-in-Furness (Lancs).

H. Armistead.

Dalton-in-Furness has extensive malting and ironworks. The ruins of Furness Abbey are in the vicinity.

*Danbury (Essex).

H. Reynolds, Griffin Hotel. D.

Danbury is a contraction from Danesbury, signifying town or castle of the Danes. On the summit of a hill there is an ancient encampment, about 680 yards in circumference.

Darlington (Durham).

G. Best, Bondgate. D.
J. Robinson, 7, Northgate. D.
F. G. Walton, 77, Parkgate. D.

Darlington is favoured with magnificent suburbs, and other attractions are its renowned engineering works, Training College, Queen Elizabeth's Grammar School, the Technical College, lovely parks and lakes, Stephenson's first passenger-train engine, and St. Cuthbert's Collegiate Church (1188), an example of Early English architecture. Richmond and Barnard Castle, with their unsurpassed scenery, are close by.

Dartford (Kent).

Horrell & Goff, High St.

Dartford is the centre for the Darenth Valley, and amongst other attractions there is a Roman villa.

Dartmouth (Devon).

H. M. Hadfield, The Quay.
H. Humphry, 2, Fairfax Pl. D.

Dartmouth is a lovely spot, and its surroundings constitute the most unique combination of scenery—river, sea, and and—in England. The rocks are very picturesque, and there are many quaint old houses.

Darwen (Lancs).

R. Shorrock, 6, Market St. D.

Darwen is near much lovely scenery in the valleys of the Ribble and the Hodder. Whalley Abbey and other places of interest also attract visitors.

Dawlish (Devon).

G. J. Cutcliffe, 7, Strand. D.

Dawlish is a convenient centre for South Devon scenery, which offers good scope for photographers, both on sea and land.

*Deal (Kent).

W. H. Franklin, High St. D.

Deal is on a bold open beach near the south extremity of the Downs. The features of interest include the fishing vessels, Deal Castle, and Walmer Castle.

Denmark Hill (S.E.).

T. H. Powell, 116, Denmark Hill. D.

Denmark Hill is on the L.C. & D.R., a few minutes ride from Ludgate Hill.

*Denton (Lancs).

J. Buckley, 27, Ashton Rd. D.

Denton is near Manchester, and a manufacturing centre. Its name is probably derived from Dane-town.

Derby (Derby).

W. H. Hoare, 8, Osmaston Rd. D.
Blunt & Evans, 26, Market Pl.

Derby possesses many buildings of good design, including All Saints' Church, of which the inhabitants are very proud. In the vicinity are many places of interest, and noblemen's and gentlemen's seats.

Devizes (Wilts).

W. Hill, 25, The Brittox. D.

Devizes Market-place has a very foreign look about it. St. John's Church is one of the most interesting in the county. The Quaker's Walk, leading from St. Mary's Church at Roundway, is worth taking.

Devonport (Devon).

F. J. Ryall, 40, Portland Rd., Stoke.

Devonport is on the east shore of the estuary of the Tamar, called the Hamoaze. Many men-of-war may be seen here. The arsenal and dockyard extend about four miles along the left bank of the estuary. Mount Edgcumbe is opposite Devonport.

*Dewsbury (Yorks).

Needhams, 3, Market St.

Dewsbury has some important public buildings of recent erection. With Batley it is the centre of the shoddy trade.

Dolgelly (Merioneth).

H. Morris, Bridge St.

Dolgelly is near the glen known as Torrent Walk, and is a good starting-point for the ascent of Cader Idris.

Doncaster (Yorks).

Howorth & Parkin, Thorne Rd.
Dunhill & Stiles, 2, French Gate.

Doncaster offers good scope for both architectural and landscape work. The parish church is one of the finest examples of Modern Gothic architecture in the kingdom.

Dorchester (Dorset).

A. H. Evans, 33, High East St. D.

Dorchester has fine avenues of trees. Pretty views may be had along the banks of the Frome just outside the town. The bridge is worth taking.

Dorking (Surrey).

F. W. Doubleday, 78, High St. D.

Dorking contains many very pretty corners much favoured by artists. Close to Boxhill and Mickleham Downs, both well-known resorts.

Douglas (I. of M.).

Brearey & Son, Prospect Hill. D.
T. S. Qualtrough, 76, Buck's Rd. D.

Douglas is surrounded by splendid scenery, both on sea and land, in endless variety.

Dover (Kent).

Long Bros., 1, New Bridge. D.

Dover offers good opportunities to the photographer in the cross-channel boats as seen from the pier, the Castle and the heights, but it is necessary to operate outside the fortifications

Dovercourt (Essex).

Bevan & Son, 7, Second Avenue. D.

Dovercourt is a watering-place near to Harwich, where photographers may obtain many "bits" amongst the shipping and river scenery. It has a sea-wall two miles long.

*Downham Market (Norfolk).

F. W. Coulson, High St.

Downham Market is a well-built town, and has an ancient Gothic church, with a low embattled tower surmounted by a spire.

*Drumnadrochit (Inverness).

Drumnadrochit Hotel. D.

Drumnadrochit is a romantic village, and the scenery is excellent. The ruins of Urquhart Castle, and a waterfall at Abriachan, may be specially noticed.

Dublin (Ireland).

Dobsons & Curtis Bros., 10, Suffolk St, D.
W. Hayes & Co., 12, Grafton St.
J. B. Laphen, 37, Mary St. D.
T. Mason, 5, Dame St. D.
T. Mayne, 19, Lord Edward St. D.

Dublin possesses one of the largest parks in the world—Phœnix Park, with the Vice-regal Lodge. Trinity College and Bank of Ireland are fine architectural subjects. Kingstown Harbour is not far away and should not be missed.

Dudley (Worcester).

W. H. Richardson, 222, Market Pl.
E. Smith, 83, High St.

Dudley has some immense caverns wrought in the limestone rock, which are very interesting. One extends nearly two miles into the solid rock and is traversed by a canal, by which the quarried material is conveyed to the mouth of the tunnel. Just outside the town are the ruins of an ancient castle, from which may be obtained a fine view.

Dumfries (Scotland).

A. Turner, Buccleuch St. D.
J. Tocher, 84, High St. D.
R. B. Carruthers, 90, High St.
J. Keith. D.
J. Reid, 104, High St. D.

Dumfries contains a statue of Burns and the house where he lived and died. It is situated amidst good scenery, including several historic views.

Dundalk (Ireland).

H. Backhouse & Co.

Dundalk, in county Louth is near mountains and lakes, that form distinctive points in beautiful landscapes.

*Dundee (Forfar).

Birnie, 48, Lindsay St. D.
B. Feathers, 6, Castle St. D.

Dundee is a very busy town on the Tay. There are places of interest near at hand and of easy access. The Cowgate, the Royal Arch, the Albert Memorial, and the Tay Bridge are worth notice.

Dunfermline (Fife).

W. L. Ker, 56, High St. D.

Dunfermline contains the old Abbey and Palace ruins.

*Dunkeld (Perth).

E. Cesari, Birnan's Hotel. D.

Dunkeld Bridge over the Tay, the Cathedral, including the marble monument to the Black Watch, and a monument to Wolf of Badenoch, are the principal objects. Around Dunkeld and on the river a day may easily be spent.

Dunoon (Argyle).

G. Stirling, Argyle St. D.

Dunoon is a pretty and fashionable watering place, and is full of hand and stand camera work. There are beautiful spots for both marine and landscape pictures.

Duns (Berwick).

W. Gunn, Market Place. D.

Duns is in a fine wooded district, and old border castles are within easy reach.

*Dunstable (Beds).

F. Knight, 2, George St. D.

Dunstable is an old-fashioned, brick-built place, and stands at the intersection of Watling and Icknield Streets. It has a fine priory church, partly Norman. In 1110 this priory was the scene of the earliest miracle play on record.

*Durham (Durham).

J. Chapelow, 14, Claypath. D.
W. Wilkinson, 81, North Rd. D.

Durham is magnificently situated, and its Cathedral, with its Norman nave and Lady Chapel, is one of the finest in the kingdom. The tombs of St. Cuthbert and the Venerable Bede are both within the Cathedral. The castle, river, bridges, and surrounding country offer a fine field to the photographer.

*Dursley (Glo'ster).

G. Ayliffe, Old Bell Hotel. D.

Dursley is situated amid picturesque scenery, near the Cotswold Hills. Near it are quarries of Bath stone.

Ealing (Middlesex).

R. W. Houfe, 12, The Mall.

Ealing is a pleasant residential suburb about five miles west of Paddington.

Earlestown (Lancs).

A. Peake, Queen St.
W. R. Knowles, Town Hall Pharmacy.

Earlestown is a suburb of Newton-le Willows, near which are the remains of an ancient barrow crowned with venerable oaks.

Earls Colne (Essex).

C. S. Tyler, High St.

Earls Colne is a town as ancient as the time of King Edward the Confessor. The church, in the Decorated style, has a large embattled tower, in which are six bells dated 1169.

Eastbourne (Sussex).

R. H. Browne, 1, Cornfield Rd. D.
J. Gibbs & Son, 53D, Terminus Rd. D.
G. A. Harmer, 47, South St. D.

Eastbourne is near Beachy Head, the South Downs, etc. There are several interesting old churches and castles, including Battle Abbey, Pevensey and Hurstmonceux Castles.

East Dereham (Norfolk).

E. Peck, High St. D.

East Dereham is a pleasant market town, having a cruciform church with a detached belfry, the "New Cocker," a font of 1468, a good south porch, St. Withburga's Well, and the grave of the poet Cowper.

East Molesey (Surrey).

W. Longtoft, Bridge Rd.

East Molesey is on the south side of the Thames, opposite Hampton Court

MARRIAGES.

Lander—Smith.—At St. Thomas's Church, Eighton Banks, Co. Durham, on April 11, by the Rev. S. Atkinson, assisted by the Rev. J. G. Disney, Arthur Lander, Pharmaceutical Chemist of the Medical Hall, Canterbury, to Hannah, eldest daughter of Councillor J. Smith, of Wrekenton.

Barker — Rawnsley. — At Trinity Church, Mirfield, by the Rev. C. T. England. Arthur Brook Barker, Chemist and Druggist, Market Place, Heckmondwike, to Mary Alice Sharp Rawnsley, Eastthorpe, Mirfield.

NEWS ITEMS.

The Kinninmont Prize.—Those intending to compete for the Kinninmont Prize are reminded that Saturday, April 30, is the last day upon which candidates' names can be received. Full particulars concerning the competition may be had from the Secretary, William L. Currie, 223, Byres Road, Dowanhill, Glasgow.

Chemist Sub-Postmasters. — At the Conference of the National Federation of Sub-Postmasters, held at Nottingham on Easter Monday, the following chemists were present:—W. F. Palmer (Nottingham), Fred. Coates (New Basford, Nottingham, President of the Nottingham Branch), W. K. Inglis (Delph, Oldham), Mr. Cussons (Ossett, Yorks), Arthur Hanon (Queensbury, Bradford), Fred. Lumby, J. T. Ruyson (Nottingham), F. B. Flint (Manchester), R. W. Silson (Bradford), J. Thorpe (Leeds). A general discussion took place at the conclusion of other business on the grievances of postmasters, in which several amusing instances of the way the Department treats its employés were given. A resolution, moved by Mr. Silson (Bradford), thanking the Chairman and officers for their services, and also the Nottingham branch for the arrangements made to receive the Conference, brought the proceedings to a close.

Mr. Gorrie, whose death is announced in this week's Journal, served his apprenticeship with Mr. Glass, of Perth, and went to Edinburgh in 1876 to Messrs. T. and H. Smith and Co. In 1878 he acquired the business at Minto Street, which he has since conducted. He was a loyal member of the Society, possessed considerable skill and ingenuity as a practical pharmacist, and on several occasions contributed papers to evening meetings of the Society in Edinburgh. He was at business as usual on Friday night, complained a little of feeling unwell before retiring to rest, and was found dead in bed in the morning. His high character and integrity had won for him the esteem of all who knew him. He leaves a widow and five children to mourn his loss.

The Dunlop Pneumatic Tyre Co., Ltd., 160, Clerkenwell Road, send a copy of the spring number of the *Dunlop News*, which contains interesting articles "About Tyre Repairs and Detachers," "The Gentle Art of Pacemaking," "The Past Winter's Racing," and numerous other items, including hints on cycling etiquette. A copy is sent post free on application to the firm.

Vi-Cocoa.—It having come to the knowledge of the Directors of Dr. Tibbles' Vi-Cocoa (1898), Limited, that a report is in circulation that a Mr. Harness is in some way connected with or interested in their business, Mr. G. Brooke Smalley, the secretary to the company, writes to contradict the report, which he states is wholly without foundation. No person of the name of Harness has ever been in any way concerned or interested in or in any way connected with the business, either under its present or former proprietorship.

Ether Drinking, which threatened some years ago to play havoc among the Irish poor, has broken out in East Prussia with great virulence. According to Dr. Sohn, a medical official in that province, men, women, and children indulge so freely in the pernicious habit that the roads and markets reek with tho mawkish fumes of the drug, and the schools strive against it in vain. The Lithuanian peasants are the chief victims, and their favourite tipple, known as "Schwefeläther," and consisting of ether and spirits of wine, may be bought freely in grocers' shops. Dr. Sohn attributes the spread of the practice to the imposition in 1887 of a duty on corn-brandy, which costs about eightpence a quart, whereas ether, being untaxed, can be purchased for sixpence. The local authorities have prohibited the sale of the noxious stuff, save by apothecaries and under medical authority; but it is anticipated that strong measures will have to be taken by the Government to stamp out the evil.—*Daily Chronicle.*

The Sale of Poisons.—We wonder whether the authorities are aware of the entire ineffectiveness of the Sale of Poisons Act. As a matter of fact, the same person who cannot procure from the chemist twopennyworth of laudanum to soothe an aching tooth can buy, without any formalities at all, poisons enough to slaughter a regiment from the people who sell photographic apparatus. We have not the slightest intention of saying what these poisons are; but at least one of them is many degrees more powerful than the ordinary dilution of hydrocyanic acid.—*Globe.*

Poisoned Grain.—Robert Watson, chemist and druggist, Sheffield, and the occupier of a farm at Goadby Marwood, was summoned at Melton Mowbray Petty Sessions, on April 12, for placing grain, mixed with poison, calculated to destroy life, in a field at Goadby Marwood, on March 21. — Police-constable Stapleton stated that a number of crows and pigeons had been found dead in a plantation on Mr. Watson's farm, and, on opening several birds, he found they had eaten some wheat. He saw Mr. Watson, who admitted that he wanted some crows to "tie up," and on the Saturday before he left Sheffield, having sold some poison to a farmer to dress wheat, he thought he might dress some himself, and on the Monday following he scattered it about the field at Goadby Marwood.—Supt. Mantle said it might have turned out a very serious matter, as several pigeons were found that were not quite dead, and one man was going to take some birds (including also a pheasant) and cook them. The poison was strychnine.—It was stated on Mr. Watson's behalf that he was not aware he was infringing the law in any way.—The Chairman said they regarded the case as a very serious one, but accepted the explanation given. The maximum penalty was £10, and he would have to pay £2, and costs, 14s. 6d.

Mr. W. J. Hardy, President of the Irish Pharmacists Assistants' Association, is leaving Messrs. J. J. Graham's State Pharmacy, Westmoreland Street, Dublin, to take over the proprietorship of an old-established Medical Hall in Belfast. Mr. Hardy is extremely popular with his colleagues in Dublin, and much regret is expressed at his departure.

The Ulster Chemists' Company are stirring up the Strabane Board of Guardians vigorously over the methods by which the contracts for the supply of medicines in use in the Union are selected.

Mr. Joseph A. Corbett, Oriel House, Bangor, Ireland, has obtained a decree for £2 2s. against a lady customer whom he supplied with medicines to the value of £7. A separate action against the defendant's husband, for the remainder of the money, has been advised by the Court.

The Annual Congress of the Royal Institute of Public Health will be held this year in Trinity College, Dublin, from August 18 to 23, under the presidency of Sir Charles Cameron, public analyst for Ireland. The Congress will include sections of chemistry and medicines. The Food and Drugs Act will be discussed, and other matters of interest to the drug and chemical trade will also come nder notice.

A Medicine and Medical Aid Society has been started in Cork. The objects of the new organisation are, *inter alia*, to provide drugs, etc., at a minimum of cost to the members, whose incomes must be under £100 a year to ensure admission. Such things as bottles, dressings, and appliances, cod-liver oil, and patent or proprietary medicines are not, it is stated, supplied by the Association.

MARKET REPORT

LONDON REPORT.

The quotations here given are in all cases the lowest cash prices for bulk quantities, and often the articles quoted have to be sorted in order to suit the requirements of the retail pharmacist. The cost of freightage from the chemical and drug works to the various distributing centres must also be considered. It is important that these conditions should be borne in mind in making any comparison between the prices quoted and those of the wholesale drug trade.

APRIL 14, 1898.

As might have been expected, business has been very quiet since the holidays, while the imminent danger of the outbreak of hostilities between the United States and Spain has caused buyers in many instances to hold their hand where otherwise they might have been inclined to enter the market as purchasers. The only change of any importance has been an advance of about 1s. per lb. for Opium on the other side, which has only met with a response here to the extent of 6d. per lb. Quinine quiet at late reduction, Acid Citric and Tartaric steady. Cream of Tartar in full supply and rather lower. Quicksilver and Mercurials, Iodine and Iodides, Bromine and Bromides, without change. Glycerin quiet, as are also Cocaine, Sulphonal, and Phenacetin. Cod-liver Oil firm for new Norwegian. Borax and Acid Boracic quiet and dull of sale. The following are the actual prices ruling :—

ACETANILID—Is very quiet and 1s. 2d. to 1s. 3d. per lb., according to quantity.

ACID BORACIC—Quiet at 23s. per cwt. for *crystals*, and 25s. per cwt. for *powder*.

ACID CARBOLIC—Is quiet at 6½d. to 6⅝d. per lb. for the 35° to 36° C. *ice crystal* in drums and overcasks. *Liquid* : 95 per cent., pale straw colour, 1s. 2d. to 1s. 3d. per gallon in large casks.

ACID CITRIC—Is steady at 12¾d. to 1s. 1d. per lb. for *crystals* according to make.

ACID OXALIC—Continues unchanged at 3⅝d. per lb. net.

ACID TARTARIC — Is firm at 12¾d. per lb. for foreign, and 1s. 1d. per lb. for English *crystals* on the spot.

ALOES.—There has been a good demand for *Socotrine* in kegs for shipment to the United States, and there is comparatively little left at 80s. per cwt.

AMMONIA COMPOUNDS.—*Sulphate* dull at £8 15s. per ton for gray, prompt, 24 per cent., London ; Hull, same price ; Leith, £8 16s. 3d. to £8 17s. 6d. per ton ; Beckton, terms prompt, £8 10s. *Bromide* unchanged at 2s. 2d. per lb. *Iodide* steady at 13s. 4d. per lb. *Sulphocyanide* in good inquiry, quotations range from 1s. 2d. to 1s. 3d. per lb. *Oxalate* steady at 6½d. per lb. *Sal ammoniac* : Firsts, sublimed, 35s. per cwt. ; seconds, 33s. per cwt. *Chloride* : 26s. to 30s. per cwt.

ASAFETIDA—Is in good demand for American, a fair quantity having been sold this week at 50s. to 65s. per cwt. Really fine is scarce and wanted.

BLEACHING POWDER—Firm at £7 5s. per ton on the spot.

BORAX—Is steady at unchanged values. *Crystals*, 14s. per cwt. ; *powder*, 14s. 6d. per cwt.

BROMINE AND BROMIDES — Without change at 1s. 10d. per lb. for *Potass. Bromide*.

CAMPHOR.—The market for crude has continued very quiet, and for arrival no sales are reported, but quotations are steady ; *China* at 84s. 6d. to 86s. 6d. per cwt., and *Japan* at 90s. to 92s. 6d. per cwt. *c.i.f. Refined* is steady, with a fair business in contracts over the principal consumptive season.

CASCARA SAGRADA.—From reports from New York it would appear that the general opinion is that there will be a short crop gathered this year. At the same time it seems evident that those interested in the article on the other side do not wish to see an advance until later in the year, when it is anticipated decidedly higher values will rule. Present quotations : 22s. to 25s. per cwt. for good old bark, and 20s. to 21s. per cwt. for last season's bark.

CLOVES.—*Zanzibar* quiet, but though little business is passing prices are fractionally higher than last week, values being June to August delivery, 4 5/32d., and August to October, 4⅛d.

COAL TAR DISTILLATION PRODUCTS.—*Toluol* : Pure, 3s. per gallon. *Benzole* : 90 per cent., 1s. 2d. *Solvent Naphtha* : 95 per cent. at 160° C., 1s. 11d. per gallon.

CODEINE—Unchanged at 11s. 3d. to 11s. 6d. per oz. according to quantity.

COCAINE—Is quiet, but steady, makers' prices for best brands remaining 10s. to 10s. 6d. per oz. for quantity, while from second hands it would be possible to shade these figures.

COD-LIVER OIL—Has been inactive during the past few days, price of new *Norwegian* oil remaining practically unchanged at 85s. to 90s. per barrel, *c.i.f.*, according to brand.

COLOMBO ROOT.—Small sales have taken place at 30s. to 32s. 6d. per cwt. for fair dark to bright sorts mixed with stem. Demand is good, and late important arrivals are being absorbed gradually by home and shipping orders.

COLOCYNTH.—Demand is very small, but holders are firm, as position is good, and fine Turkey apples are not abundant. Quotations range from 1s. 1d. to 1s. 3d. per lb., according to quality.

CREAM OF TARTAR—Is very quiet, and but little business is passing. Stocks are fairly large, and prices must be quoted rather lower on the week at 75s. to 75s. 6d. per cwt. for first white French *crystals* on the spot and 78s. per cwt. for *powder*.

GUM AMMONIACUM.—Drop is held for 55s. to 60s. per cwt., whilst clean blocky can be had at 40s. per cwt.

GUM ARABIC.—Soudan sorts are a very firm market, the stock being small. Business, however, is restricted. Quotations for good soft sorts remain at 85s. per cwt. ; picked *Trieste*, £6 10s. to £14 10s. per cwt., at which small sales have been made.

GUM MASTIC.—Small sales of good clean pale tear have been made at 2s. per lb. Holders are firm, although supplies are now ample.

IODINE AND IODIDES—Are unchanged at 9s. 9d. per lb. for *Potass. Iodide* in 2-cwt. lots.

JAPAN WAX—Continues steady but quiet ; spot sales of fair to good squares at 34s. 6d. to 35s. 6d. per cwt., whilst for April to June steamer the quotation comes higher at 36s. *c.i.f.*

MENTHOL—Has been quiet this week, but prices are firm at 7s. 3d. to 7s. 6d. per lb. for good dry crystals on the spot in large bulk.

MERCURIALS.—No change in value to report.

MORPHINE.—Quiet at 4s. 3d. per oz. for the *Hydrochlorate* powder, in quantity and in bulk.

NITRATE OF SODA—Quiet at £7 15s. to £8 per ton for *refined*.

OILS (ESSENTIAL).—*Peppermint* : American oils are firmer. *H.G.H.* firm at 5s. 7½d. to 5s. 9d. per lb. *Wayne County* dearer at 4s. per lb. *Japan* steady at 3s. 3d. per lb. for dementholised, and 4s. 3d. for 40 per cent. *Star Aniseed* unchanged at 6s. 6d. per lb., with small sales passing. *Cassia* unchanged at 5s. 3d. per lb. ; 75 to 80 per cent., 4s. 9d. per lb. *Citronelle* quiet but steady at 1s. 2d. per lb. for both drums and tins. *Lemongrass* dull, with small sales at 4½d. per oz.

OILS (FIXED) AND SPIRITS.—*Linseed* is quiet on the spot, pipes, London, £15 17s. 6d., barrels, £15 15s. *Rape* quiet, ordinary brown on the spot £22 ; refined spot, £23 10s. *Cotton* steady ; London crude spot, £13 2s. 6d. Refined spot, £14 10s. to £15, according to make. *Olive* : Spanish and Levant £33. *Cocoanut* : *Ceylon* on the spot £23. *Cochin* spot £27 10s. *Palm* : Lagos on the spot

£23. *Turpentine* quiet. American spot 23s. 9d. per cwt. *Petroleum oil* dull; Russian spot 4⅛d. per gallon; American, 4⅜d. per gallon; water white, 5⅜d. per gallon. *Petroleum Spirit*: American, 5⅜d. per gallon; deodorised, 5¾d. per gallon.

Opium.—A fair amount of business has been transacted during the past few days. Prices in *Smyrna* show an advance of about 1s. per lb., which has only been responded to on this side to the extent of about half, or, say, about 6d. per lb., the demand having been chiefly for opium, showing a high percentage for manufacturing purposes, and for which as much as 9s. 6d. to 10s. per lb. has been paid on the spot, holders now asking an advance on these rates, which however, buyers are so far unwilling to concede. Should these rates be maintained we may see dearer prices for Morphia, and especially should a somewhat more active demand for the manufactured article manifest itself, a by no means improbable contingency, especially if the threatened hostilities between the United States and Spain become an accomplished fact.

Permanganate of Potash — Quiet at 60s. per cwt. for small *crystals* in half-ton lots.

Phenacetin—Is rather firmer at 3s. 9d. to 4s. 3d. per lb., according to quantity and make.

Phenazone—Continues in demand at about 1s 3d. per oz. in quantity and bulk packing, and is gradually superseding *Dr. Knorr's* antipyrine, which is still held for the fancy price of 2s. 1½d. per oz. in 1-oz. original tins.

Pilocarpine—Is firm at the late advance, 33s. 6d. per oz. being the price for both the *Muriate* and the *Nitrate* salt.

Potash Compounds.—*Chlorate* dull of sale at 3⅜d. to 3½d. per lb. on the spot. *Bromide* steady at 1s. 10d. per lb. *Prussiate*: Yellow, firm at 6¾d.; red, unchanged at 1s. 2d. to 1s. 3d. per lb. *Bichromate*: 4d. per lb. with only a small business doing. *Oxalate* unchanged at 4d. to 4⅛d. per lb. for the neutral. *Iodide* steady at 9s. 9d. to 10s. 3d. per lb. as to quantity. *Permanganate* quiet at 60s. to 62s. 6d. per cwt. for small crystals, and 5s. per cwt. more for large crystals. *Bicarbonate* firm at 30s. per cwt. for crystal or powder. *Cyanide*: Makers are full of orders and prices are firm at 1s. 2d. to 1s. 3d. per lb. for 98 per cent. cake, according to delivery required.

Quicksilver—Is steady at £7 1s. 3d. per bottle from first hands, and £7 from second hands.

Quinine—Remains quiet and without change at 9½d. per oz. for best *German* brands in 100-oz. tins and for 1000-oz. lots; while from second hand there are a few sellers at slightly below this figure. The general idea appears to be that in spite of the heavy supplies of bark we have now at last seen the worst, although some people think that in view of the large stock of raw material, coupled with the fact that the competition of Java made Quinine has still to be reckoned with, a further reduction in price is not beyond the regions of possibility, not to say probability.

Saffron — Is quiet, but firm at unchanged prices.

Sarsaparilla.—*Mexican*: Reports from New York say this article is in a very strong position, and 3½d. per lb., *c.i.f.* terms, is absolutely the lowest figure, whilst in other quarters even higher prices are asked. *Honduras* is also on the advance, 1s. 4½d. to 1s. 6½d. per lb., *c.i.f.*, being asked, according to brand.

Scammony.—*Virgin* firsts are easier at 28s. to 30s. per lb., seconds quoted nominally at 22s. to 25s. per lb. Syrian lump has been sold at 16s. per lb. *Resin* is steady at 7s. to 7s. 6d. per lb. *Roots* firmly held at 30s. per cwt.

Senna.—Long prices are being asked by second-hand holders of *Tinnevelly*, the bulk of whom are not anxious sellers on the market, preferring to keep their stocks for their own export inquiries. Sales have been made this week at 3d. to 4d. per lb. for fair small greenish to medium-sized leaves. By the steamer "Caledonia," due here on the 16th inst., about 300 bales are expected, but it is thought that these are all of a small spotty character same as late arrivals. *Alexandrian* leaves move off slowly; fine are scarce; broken have been done at 4d. per lb.

Shellac.—Business is very quiet, but holders are firm. On the spot small sales have been made of *second orange TN* at 60s. to 61s. per cwt, for middling to fair, and *Octagon B.* at 91s. 6d to 93s. per cwt, according to condition

Soda Compounds.—*Crystals* are firm at 57s. 6d. to 60s. per ton, *ex* ship terms. *Bicarbonate*: Commercial 98 per cent. is steady at £7 5s. per ton; fully bicarbonated, 18s. per cwt. *Iodide* steady at 10s. 7d. per lb. *Bromide*: Firm at 2s. 2d. per lb. *Caustic*: Unchanged, 60 per cent., £6 10s. to £6 15s. per ton; 70 per cent., £1 per ton more. *Nitrate*: Refined, £8 per ton. *Sulphite*: 18s. to 22s. 6d. per cwt., according to quantity and brand.

Strophanthus Seeds.—Some business in the *brown* has been done at 10d. per lb., whilst *green* is firmly held at 3s. 2d. per lb.

Sulphate of Copper —Is very quiet and prices are rather easier at £16 10s to £16 15s. per ton, according to make.

Sulphonal—Can still be bought from one of the two principal makers in limited quantity at 7s. 3d. per lb. for bulk packing.

LIVERPOOL REPORT.

April 13, 1898.

The Easter Holidays, coupled with the uncertainty regarding the American and Spanish war crisis, have caused an already quiet market to become even duller, transactions on a small scale being the sole ones to report, though fortunately prices are well maintained.

Ammonium Salts. — *Carbonate* is unchanged at 3d. per lb. *Sal ammoniac* firm at 35s. and 33s. per cwt. *Sulphate* continues very flat at £8 15s. per ton.

Copperas—Is firmly held for 38s. per ton Lancashire, and 36s. Welsh.

Copper Sulphate—Is firmer, due to a better demand, £6 15s. per ton.

Ginger.—320 bags of Sierra Leone "to arrive" sold at auction for 18s. per cwt.

Honey.—Sales of Peruvian Pile 3 are reported at 22s. 6d. per cwt.

Lime, Chlorinated—Is quiet at £5 12s. 6d. to £6 5s. per ton.

Oils (Fixed) and Spirits.—*Castor*: French and Calcutta are in steady demand, with better inquiry "to arrive." Calcutta 3¼d. to 3⅜d. per lb., French 3¼d. *Olive* is quiet and sales have been few. Candia is still quoted at £34 per tun and Spanish at £32 to £33. *Linseed*: Is slow of sale, but the price is well maintained, 17s. to 17s. 6d. per cwt. *Cottonseed* is unchanged at 15s. 3d. to 15s. 9d. per cwt. *Spirits of turpentine* enjoys a moderate amount of attention at 25s. per cwt.

Potash Salts.—*Chlorate*: 3¼d. to 3⅜d. per lb. *Potashes* are in slightly better demand at 20s. 9d. per cwt. *Pearlashes* are scarce at 37s. 6d. to 40s. per cwt. *Saltpetre* quiet; 21s. 6d. per cwt. *Tartar* is unchanged at 77s. per cwt. for best cream.

Soda Salts.—*Bicarbonate*: £6 15s. per ton. *Caustic* quiet; 76 per cent., £8 15s.; 70 per cent., £7 5s. per ton. *Crystals* firm, £3 per ton. *Borax*: £13 7s. 6d. per ton. *Nitrate* quiet, but steady at 7s. 4½d. to 7s. 7½d. per cwt.

Seeds.—*Castorseed*: 146 bags of Brazilian sold at 10s. per cwt. *Canaryseed*: Turkish is quoted at 25s. 6d. to 27s. per 464 lbs., and 100 bags have changed hands at the latter figure. 458 bags of damaged Turkish went at prices averaging 21s. 9d. per 464 lbs. *Linseed* is quiet, River Plate spot parcels command 32s. 9d. per 416 lbs., Calcutta ditto 35s. 6d.

NEWCASTLE CHEMICAL REPORT.

April 13, 1898.

A steady tone pervades the chemical industry of this district. More shipping orders are in circulation. The United Alkali Association has reduced Caustic Soda 5s. per ton. This is the only new feature of the week, otherwise there is no other change in values. Quotations are: Bleaching Powder, £6 5s. to £6 10s. Caustic Soda, 70 per cent. basis, £7 5s. to £7 10s. Soda Crystals, 45s. to 57s. 6d., according to markets. Soda Ash, 52 per cent., £4 5s. Alkali, 52 per cent., £5 5s. Sulphur, £4 15s. to £5 per ton.

MANCHESTER CHEMICAL REPORT.

April 13, 1898.

The Board of Trade Returns indicate that during the month of March the chemical trade was in anything but a flourishing condition. For instance, the imports of chemicals, dye-stuffs, and tanning substances were 25·7 per cent. lower in 1898 than in the corresponding period of 1897, and there are decreases to be noted in every branch of exports, especially to the United States. Chemicals and chemical and medicinal preparations show a decrease of 8 per cent., Alkali a decrease of 27·1, and Bleaching materials of 2·8 per cent. The prices for Alkali appear to have been slightly in excess of last year, while Bleach was about 6 per cent. lower. It is, however, to the United States, where the decreased exports are most marked, and of Alkali there is only 89,149 cwts., as against 253,040 cwts. for the corresponding month of last

year. Bleaching materials show little or no variation for two years past. Locally, there are again few changes to note. Caustic Soda is rather easier, but without change in price for home consumption. Brown Acetate of Lime is easier at £4 12s. 6d. per ton, delivered Manchester, and Sulphate of Copper remains firm. Yellow Prussiate of Potash is in active request at 6¾d. to 7d., according to quantity. Vitriol and Muriatic Acid are in greater inquiry, but Coal Tar Products are unusually dull in all branches, except perhaps Carbolic Acid. Green Copperas in better demand for best Lancashire make, but without change in price. Aniline Oil and Salt dull at 5¼d. and 4¾d. respectively. Epsom and Glauber Salts unchanged and quiet.

Publications received.

UEBER DAS PROTARGOL ALS ANTIBLENNORRHOICUM UND ANTISEPTICUM. Von Dr. ARTHUR STRAUS. Pp. 8. Reprint from "Monatschetfe für Praktische Dermatologie," xxvi. Band, 1898. From Messrs. Friedr. Bayer & Co., Elberfeld.

PROCEEDINGS OF THE AMERICAN PHARMACEUTICAL ASSOCIATION at the Forty-fifth Annual Meeting, held at Lake Minnetonka, Minn., August, 1897. Pp. xxviii. + 847. Baltimore: The American Pharmaceutical Association. 1897. From the Publishers.

GARDNER'S HOUSEHOLD MEDICINE AND SICK ROOM GUIDE: A description of the Means of Preserving Health and the Treatment of Diseases, Injuries, and Emergencies. By W. H. C. STAVELEY, F.R.C.S. Eng. Thirteenth edition. Pp. xii. + 511, with numerous illustrations. Price, 8s. 6d. London: Smith, Elder, and Co., 15, Waterloo Place. 1898. From the Publishers.

New Books New Editions.

"The Principles of Bacteriology," a practical manual for students, etc. By A. C. Abbott. Fourth edition. Cr. 8vo. 12s. 6d. net. London: Lewis.

"Medical Directory for 1898." Fifty-fourth annual issue. Pp. 1936, 8vo. 14s. London: Churchill.

"The Scientific Requirements of Colour Photography." By W. de W. Abney. Being the sixth Boyle lecture delivered before the Oxford University Junior Scientific Club on June 1, 1897. 1s. net. London: Frowde.

"Anthony's Photographic Bulletin and American Process Year-Book," Vol. X. Edited by W. J. Scandlin. 2s. London: Lund.

"Modern Photography for Amateurs." By J. Eaton Fearn. Third edition, revised. Illustrated. Pp. 130. Cr. 8vo., paper. 1s. London: Upcott Gill.

EXCHANGE.

Prepaid Notices not exceeding thirty words, including name and address, are inserted at a fee of Sixpence each, if they do not partake of the nature of ordinary advertisements. For every twelve words (or less) extra, the charge is Sixpence. A price, or two initials, will count as one word. The fee for use of the Serle Street address, including re-direction of replies, is Sixpence. The right is reserved to omit any notice if considered necessary. All communications should be addressed "PHARMACEUTICAL JOURNAL," 5, Serle Street, Lincoln's Inn, London, W.C., where notices can be received until 10 a.m. on Thursdays.

OFFERED.

Miscellaneous.

Magic Lanterns, second-hand; triples and biunials; oxyhydrogen microscope; marvellous pamphengos oil; lantern gives 14-ft. picture; 60,000 slides and effects; 4-in. 4-wick lanterns, 18s. 6d. each, bargains; illustrated list post free, 2d. Animated photographs: A splendid machine for £9 9s.—Hughes, Brewster House, 82, Mortimer Road, Kingsland, N.

Werner's Pill-massing Machine, 6 lbs. size, nearly new, price £5, cost £8 10s., *vide* 'C. and D. Diary,' 1897 and 1898.—Holden, Chemist, Barnsley.

What offers? 1 oz. Chinosol, 1 oz. Antikamnia, ½ Liebreich's Essence Pepsin, ½ doz. Valentine's, ¼ lb. Bromidia, ½ doz. B.W. Peptonising Powders, 2 ozs. Cocain Hydrochlorate.—Chemist, 156, Green Lanes, N.

A Chemist's Widow, in necessitous circumstances, desires to dispose of her late husband's dental forceps. Offers invited. Instruments may be seen at 17, Bloomsbury Square.

Dr. Williams' Pink Pills, 16 doz., unopened, 23s. 8d. per doz., post free; cash with order.—Harries' Drug Stores, Milford Haven.

Soda-water Machinery for sale, Barnett and Forster's No. 2 size, good condition, cheap. Apply to—R. H., 1, Southwick Street, W.

Optical and Photographic.

A few dozens of ¼-plate and ½-plate Ilford Bromide Paper, all kinds; also a few ¼-plate and ½-plate Ilford Lantern-plates, in good condition; offers wanted; samples at half price, post free.—Lecs, Chemist, Oldham.

High-Class Microscope in lock-up Mahogany Case, fine adjustment, three objectives (1 in., ⅓ in., ¼ in.), live box, tweezers, stand condenser, revolving diaphragm. Price £3.—Williams, Chemist, Llanfyllin

1½ doz. convex pebble-spectacles, 2 doz. pebble. foldcrs, cost 30s. doz.; few other concave and convex; all half-price, any lot.—Goss, 130, Notting Hill Gate, W.

Books.

Proctor's 'Pharmacy,' new, 7s.; Remsen's 'Organic Chemistry,' unused, 4s.; Southall's E Collection, 7s.; 130 specimens of official materia medica, some Southall's, 6s.—Morris, Winchmore Hill, N.

Thirteen years' 'C. and D.' 1880 to 1893, with Diaries complete, 15s.; also 12 'Year Book of Pharmacy,' 1874 and 1875, and 1878 to 1887, 12s.—Tyler, Torton, Kidderminster.

WANTED.

Old Platinum Utensils or Scrap, also Old Electric Lamps wanted for prompt cash by P. Rowsell, 14, Walcot Square, London, S.E.

Camwal Shares, 200 (more or less).—Price, including transfer, "Chemist," South Street, Ponder's End.

Books wanted, such as are required by chemists and pharmaceutical students. Send list, stating edition, date of publication, condition, and price.—Gower, Publisher, Waterloo, Liverpool.

Diary for the Week.

TUESDAY, APRIL 19.

ROYAL COLONIAL INSTITUTE, at 8 p.m.
"A Co-operative System for the Defence of the Empire," by Colonel E. T. H. Hutton.

STREATHAM, BALHAM, AND TOOTING DISTRICT CHEMISTS' ASSOCIATION.
Meeting at 11, Greyhound Lane, Streatham Common.

WEDNESDAY, APRIL 20.

MIDLAND CHEMISTS' ASSISTANTS' ASSOCIATION, at 9.15 p.m.
"Specific Gravity Methods," by F. H. Alcock.

ROYAL MICROSCOPICAL SOCIETY, at 8 p.m.
"Some Organic Substances of High Refractivity Available for Mounting Specimens for Examination under the Microscope," by H. G. Madan.
"Instantaneous Photo-micrography," by E. B. Stringer.
Exhibition of Diatoms by Hy. Morland, at 7.30.

WESTERN CHEMISTS' ASSOCIATION (OF LONDON), at 9 p.m.
Musical and Social Evening (Westbourne Restaurant).

THURSDAY, APRIL 21.

CHEMICAL SOCIETY, at 8 p.m.
"The Carbohydrates of Barley Straw," by C. F. Cross, E. J. Bevan, and Claud Smith.
"Isomeric Bornylamines," by M. O. Forster.
"Some Derivatives of Benzophenone," by F. E. Matthews.
"Researches on Camphoric Acid," by S. B. Schryver.
Ballot for the election of Fellows.

CHEMISTS' ASSISTANTS' ASSOCIATION, at 9 p.m.
Musical and Social Evening.

LINNEAN SOCIETY OF LONDON, at 8 p.m.
"The Structure of Dendroceros," by Professor Douglas Campbell.
"The Pterylosis of the Owls," by Mr. W. P. Pycraft.

FRIDAY, APRIL 22.

ROYAL INSTITUTION, at 9 p.m.
"The Recent Eclipse," by W. H. M. Christie.

PARTNERSHIPS DISSOLVED.

(From the London Gazette.)

S. Parsons Smith, Henry G. Thompson, and G. E. Newby (practising as Drs. Smith and Newby), Physicians and Surgeons, Addiscombe, Croydon. So far as G. Thompson is concerned.

John W. Pannett and Benj. Ballard, Bottle Manufacturers, 2, Minerva Street, Hackney Road, London. Debts will be received and paid by Benjamin Ballard.

Thomas Kyffin and Henry Eve, Veterinary Surgeons, 11, College Lane, Liverpool. Debts will be received and paid by Henry Eve, who will carry on the business in his own name.

RECEIVING ORDERS IN BANKRUPTCY.

(From the London Gazette.)

Charles G. Thorp, Physician and Surgeon, 22, Noel Street, Nottingham, lately residing and practising at 68, Plixton Road, Urmston, Lancaster.

Joseph Henry Collier, Assistant-Surgeon, residing in lodgings at Minerva Street, lately at Spring Road, both in Bulwell, Nottingham.

Photographic Tourists' Guide.

In the following list an asterisk (*) preceding the name of a town indicates inability to find that any chemist in the place has a dark-room, though there may be one or more who stock photographic materials. Where there is a dark-room, the fact is indicated by a capital "D" following the name and address, and except where the dark-room is at an hotel, it may mostly be taken for granted that plates and other photographic materials are stocked. The dark-rooms can, in some cases, be used for developing as well as changing, and even where there is not a dark-room, it is usually possible to get plates changed.

Eccles (Lancs).

W. I. Scholes, 130, Church St. D.

Eccles is a pleasantly situated residential suburb of Manchester.

Edinburgh (Scotland).

J. Blenkiron, 69, South Clerk St. D.
J. A. Forret, 26, Brougham Pl.
McGlashan & Co., 60, Dalry Rd. D.
J. Walker, 14, Sciennes Rd.

Edinburgh is too well known to need description, but Princes Street, the Castle, Holyrood Palace, Craigmillar Castle, Duddingston Church and Loch, and the Forth Bridge may be mentioned as points of especial interest.

Egremont (Cheshire).

J. R. Clement, Brighton St.

Egremont is near Birkenhead, and consists principally of bricks and mortar, within easy walking distance, however, is New Brighton, the well-known Cheshire sea-side resort.

Elgin (Scotland).

G. Whyte, 122, High St. D.

Elgin has very fine Cathedral ruins. Pluscarden Abbey, also in ruins, and Cove Sea Caves, are worth attention.

Ely (Cambs).

Oakes & Gardiner, High St. D.

Ely has one prominent feature in its Cathedral, and there are many other attractions to tourists in the surrounding Fen country.

*Enniskerry (Ireland).

F. Bentley, Powerscourt Arms Hotel. D.

Enniskerry in county Clare, has beautiful scenery in its neighbourhood, and its air is mild and pure.

Esher (Surrey).

J. Chapman. D.

Esher is a pretty village on the Mole. Here are Esher Place, a brick gate-tower of Wolsey's Palace, and Claremont.

Eton (Bucks).

W. Oldham, 100, High St. D.

Eton is close to Windsor with its castle and in the midst of a country abounding in historical interest. The river scenery is also very attractive.

Evesham (Worcester).

T. E. Doeg, Bridge St. D.

Evesham is surrounded by rural and river scenery.

Exeter (Devon).

J. H. Lake, 41, High St. D.
E. Lemmon, 47, High St. D.
Milton & Son, 285, High St. D.

Exeter has a cathedral and is situated amidst some of the loveliest scenery in England. There are also many subjects of antiquarian interest.

Exmouth (Devon).

A. H. Toone, 8, Rolle St. D.

Exmouth has a very old church, and there are fine cliffs and beach views.

Fakenham (Norfolk).

R. A. Metcalf, Market Place.
H. R. Plattin, Market Place.

Fakenham has in its neighbourhood several old abbeys and ruins, some dating from the Conquest.

Falmouth (Cornwall).

F. J. Wilmer, Market Strand. D.

Falmouth harbour is one of the best in England. The entrance is defended by Pendennis Castle on the west, and by St. Mawes Castle on the east. Pilchard fishery off the neighbouring coasts.

Farnham (Surrey).

A. Dunston, 52, Borough.
Griffith & Inge, 25, Borough. D.

Farnham stands on the Wey, embosomed in hop-gardens. The principal feature is the old Castle of the Bishops of Winchester, built by Bishop Henry de Blois, King Stephen's brother.

Faversham (Kent).

M. Laxon, 14, Market Place. D.

Faversham has the scanty remains of a Cluniac Abbey, founded by King Stephen in 1147. Stephen's tomb is in the parish church, a fine cruciform building, Early English.

Felixstowe (Suffolk).

F. E. Brown, 8, Parade. D.
Pain & Bayles, Hamilton Rd. D.

Felixstowe has a picturesque old church. The cliffs, the rocks at low tide, and the sea and beach from cliffs, give good pictures. Snapshots for sea and beach.

*Filey (Yorks).

Walter Fisher, Belle Vue St. D.

Filey presents an almost inexhaustible amount of coast scenery to the photographer. Other objects are St. Oswald's Church, Early English in style, Filey Brig, and a ridge of rocks extending half a mile into the sea.

*Fleet (Hants).

J. T. Hackett, 291, Albert St. D.

Fleet is a small place on the S.W.R., not far from Winchfield, and is in a picturesque woody district.

Folkestone (Kent).

Bishop & Co., Tontine St. D.

Folkestone has a harbour, fishing fleet, old houses, etc.

Fordingbridge (Hants).

S. E. Lock.

Fordingbridge is agreeably situated near the borders of the New Forest, on the lesser Avon.

*Forest Gate (Essex).

H. Mitchell, 56, Woodgrange Rd. D.

Forest Gate is a growing suburb of London, on the G.E.R. The lower part of Epping Forest is contiguous.

*Forest Hill (Kent).

A. & S. Taylor, 118, Stanstead Rd. D.

Forest Hill has very pretty scenery within easy reach.

Forfar (Scotland).

G. R. Fowler, 38, Castle St.
J. R. Mackossen, 19, East High St.

Forfar is of great antiquity. Near are the ruins of the Priory of Restennet, and five miles west stands Glamis Castle.

Foulsham (Norfolk).

H. G. Maddison. D.

Foulsham boasts of some curious monuments in its church and churchyard. The church is a noble building of flint and stone, with a tower ninety feet high.

Fratton (Hants).

W. T. Gorfett, 30, Fratton Rd. D.

Fratton is near Portsmouth, and has beautiful surrounding districts.

*Freshwater (I. of W.).

A. H. Kirk. D.
Richardson & Son.

Freshwater Bay; the Arched and Stag Rocks; Tennyson's Lane, with rustic-bridge; thatched cottage, near the church. The prospect from the highest point of the Freshwater cliffs is exceedingly fine, and includes a full view of the Needles.

Frome (Somerset).

E. C. F. Green, Catherine Hill.

Frome stands amidst beautiful country scenery and has many old buildings of historic interest.

Gainsborough (Lincoln).

W. E. White, 7, Market St. D.

Gainsborough Manor House, built by John o' Gaunt, forms part of the corn exchange. The parish church has a fine old tower, dating from the twelfth century.

Galashiels (Selkirk).

B. Cartwright, 50, High St. D.

Galashiels is near the River Tweed, Abbotsford House, and Melrose and Dryburgh Abbeys.

*Galway (Galway).

R. W. Simmons, 26, Dominick St. D.

Galway is in proximity to loughs and mountains. The western portion of Galway county is wild and romantic. The glens are very picturesque. Raths and cromlechs abound, and there are several round towers.

Gateshead (Durham).

B. T. Ord, 38, Derwentwater Rd. D.

Gateshead is on the opposite bank of the river Tyne to Newcastle, and is connected by that city with the fine High Level and Swing Bridges. Docks, quays, shipping, etc., abound.

*Glasgow (Lanark).

Glasgow contains numerous fine public buildings, while the Clyde with its shipping, presents many attractive views.

Bolton & Sons, 47, West Nile St. D.
J. Brown, 70, St. Vincent St. D.
J. Davie, 19, Gordon St. D.
J. Lizars, 101, Buchanan St. D.
G. McDonald, 1009, Cathcart Rd., Mount Florida.
G. Mason & Co., 186, Sauchichall St. D.
McGhie & Co., 75, St. Vincent St. D.
Prescott & Co., 52, Queen St. D.
Rae Bros., 134, St. Vincent St. D.
W. A. C. Smith, 53, Dundas St. D.
J. Stuart, 120, Buchanan St. D.
J. Trotter, 28, Gordon St. D.

Glastonbury (Somerset).

S. J. Hulbert. D.

Glastonbury has the ruins of a grand old abbey, whilst Wells Cathedral and the Cheddar Cliffs are within easy distance.

Glossop (Derby).

A. P. Golden, 48, High St. D.

Glossop is a market town, amid bleak but picturesque hills. Near it is Glossop Hall.

Gloucester (Gloucester).

E. G. Hughes, 86, Northgate St.
H. R. Milner, 83, Barton St. D.
W. Walwin, Southgate St. D.

Gloucester has a fine Cathedral, and the whole surrounding district is full of interest to photographers.

Godalming (Surrey).

V. Norman.

Godalming has the Charterhouse Schools, and the scenery is magnificent.

Goole (Yorks).

J. T. Bentley, Boothferry Rd.
W. H. Buck, 16, Ouse St.

Goole offers views of the river and shipping.

Gorleston (Suffolk).

W. Hindle, 90, High St. D.

Gorleston is on the east coast, near to Great Yarmouth. The contrast between the two places is very great. Gorleston is the place for quiet people, Yarmouth is not. The Broads are not very far away.

Gosport (Hants).

E. S. Balchin, 82, Stoke Rd.
B. French, 95, North St. D.
W. B. Smith, 47, High St. D.

Gosport, which adjoins Portsmouth, presents much of interest to photographers. Shipping, ironclads, the "Victory," Royal Haslar Hospital, and the Solent with its yacht races, etc.

Grange-over-Sands (Lancs).

A. W. Hankinson, The Esplanade. D.

Grange has an interesting old church, and the lake and mountain scenery are superb.

Grantham (Lincoln).

Briggs & Gamble, High St. D.

Grantham lies on the ancient Ermine Street. High over the red-tiled houses soars the noble gray spire, 278 feet high, of St. Wolfran's Church. Sir Isaac Newton was a scholar in the Grammar School.

Gravesend (Kent).

H. N. Perry, 73, High St., and 16 Windmill St.

Gravesend forms the limit of the port of London. The scenery around is good. The river presents a busy picture at times.

*Greenlaw (Berwick).

Mrs. Turnbull, Castle Hotel. D.

Greenlaw is a small town on the Blackadder. Its courthouse is a large Grecian pile.

*Greenock (Renfrew).

J. Graham, 5, Grey Place. D.

Greenock is at the mouth of the Clyde and the starting point for many places of interest on the west coast of Scotland.

Grimsby (Lincoln).

J. Wharton, 73, Freeman St.

Grimsby is the largest fishing port in the kingdom. The parish church is a good cruciform edifice, Early English. There is a statue of the Prince Consort and a public park.

Guernsey (Channel Islands).

J. H. Carré, 46, Bordage St. D.

Guernsey is noted for its sea views, landscapes, rock scenery and shipping.

Guildford (Surrey).

F. Wheeler, 129, High St. D
E. W. Martin, 68, High St. D.

Guildford is situated in a lovely country, with hill and dale, old ruins, and charming walks on all sides.

Haddington (N.B.).

D. Gardiner, 51, Court St.

Haddington lies at the southern base of the Garleton Hills, on the Tyne, about seventeen miles from Edinburgh. Its Abbey Church, known as the "Lamp of Lothian," is a Decorated red-sandstone pile with a central tower ninety feet high. The ruined castles of Dirleton and Tantallon are amongst the antiquities within easy reach.

Halifax (Yorks).

W. Haigh, 28, Northgate. D.
C. A. Higgins, 7, Bull Green. D.

Halifax is situated on the river Hebble, and is almost entirely surrounded by hills. The parish church of St. John is a fine specimen of Perpendicular Gothic; All Souls', built from designs by Sir G. G. Scott, is one of the best and most elaborate of all the churches of which he was the architect.

Halstead (Essex).

J. T. Emerson, High St. D.

Halstead is near to Hedingham Castle and the Colne Valley, which is extremely pretty. The parish church has a wooden spire and many old monuments.

*Hamilton (N.B.).

G. Buchanan, New Cross Post Office.

Hamilton is on the left bank of the Clyde about ten miles from Glasgow. Hamilton Palace is the seat of the Duke of Hamilton, and connected with the palace are a superb mausoleum, the ruins of Cadzow Castle, the herd of wild white cattle and some primeval oaks.

Hammersmith (Middlesex).

W. A. Shephard, 155, King St. D.
H. R. Procter, 113, The Grove. D.

Hammersmith forms a part of West London. It possesses a fine suspension bridge, and is a good centre from which photographers may "do" both river and city.

Handsworth (Staffs).

C. F. Jarvis, Villa Rd.

Handsworth forms part of Birmingham. The parish church contains two elegant marble monuments to the memory of Messrs. Boulton and Watt, at one time the celebrated proprietors of an extensive manufactory called Soho.

Hanley (Staffs).

J. W. Moore, 10, Tontine Sq.
J. H. Waldron & Co., 79, Broad St.

Hanley is in the heart of the Potteries, about eighteen miles from Stafford. Amongst the places of interest in the neighbourhood may be mentioned the Duke of Sutherland's seat at Trentham, Moreton Old Hall (part timber), and Mow Cop on the summit of a range of hills dividing Staffordshire and Cheshire.

Harrogate (Yorks).

C. E. J. Eynon, 13, James St. D.
F. Perkins, 22, James St.
Wilson & Son, 40, James St. D.

Harrogate is celebrated for its sulphurous, saline, and chalybeate springs. It lies amongst the moors of the West Riding, 450 feet above sea-level, and is within easy reach of many places of interest which form good photographic subjects, both landscape and historical.

Harrow (Middlesex).

S. J. Gunn, High St.
S. Hartley, High St.

Harrow-on-the-Hill is a little over eleven miles from St. Paul's Cathedral and stands on a hill overlooking thirteen shires. Its "visible church" exhibits every style of Gothic architecture from Norman to Perpendicular, whilst in the churchyard is a flat tombstone on which Byron, in his school-boy days, used to lie. The Harrow School holds a proud position amongst the great schools of England.

Hartlepool (Durham).

John Horsley, 104, High St.
J. C. Winn, 56, Lynn St.

Hartlepool is about eighteen miles E.S.E. of Durham, near the estuary of the Tees. It has an ancient sea-fishing industry, a substantial sea-wall, and delightful promenade.

Harwich (Essex).

Bevan & Son, 62, Church St. D.

Harwich is a sea-port and market-town of Essex. It has a safe and capacious harbour, defended by a battery and by Landguard Fort, which dates back to the reign of James I.

Haslingden (Lancs).

C. O. Wain, 8, Church St.

Haslingden is situated in the midst of a mountainous district on the border of the Forest of Rossendale, and is about seventeen miles from Manchester.

Hastings (Sussex).

A. Brooker, 21A, Wellington Pl.
Jameson & Curtis, Harold Pl. D.

Hastings, the famous watering-place of Sussex, is picturesquely situated, the old town being surrounded by high cliffs on all sides except the south. There are many places of historical interest in the neighbourhood, several large public gardens, and Alexandra Park.

*Havant (Hants).

W. Scorer, 14, North St. D.

Havant is a small market-town about eight miles from Portsmouth.

*Haverfordwest (Pembroke).

L. Brigstocke, 6, Market St.

Haverfordwest is beautifully situated on an eminence above the river Cleddan, about ten miles from Milford. There is an old castle built in the fourteenth century, and also the remains of a twelfth-century Augustinian priory.

Hawes (Yorks).

A. Knaggs. D.

Hawes is situated in a very pleasant position near a branch of the River Ure Hardraw Scarr, which is a short distance from the town, is a magnificent cascade falling perpendicularly 102 feet. There is also very pretty landscape, river, and mountain scenery.

Hay (Brecknock).

J. L. Davies & Son. D.

Hay is a small market town about thirteen miles from Brecknock. It has a plain but romantically situated church, and is within easy reach of many good photographic subjects.

Hayfield (Derby).

A. Livesley & Son, Chemists.

Hayfield is noted for its well-kept streets and stone houses. It possesses a handsome church, and is within easy distance of many places of interest in Derbyshire and Cheshire.

Hebden Bridge (Yorks.)

J. B. Wright, Albert St. D.

Hebden Bridge is near to Hardcastle Crags, a favourite resort with photographers who like wooded hillsides and valleys interspersed with rocky river scenery. The Hebden valley contains some of the finest scenery in west Yorkshire.

Helensburgh (Dumbarton).

J. McMurray, 13, Clyde St. West. D.

Helensburgh, a favourite watering place on the north bank of the River Clyde, twenty-four miles from Glasgow, is conveniently situated for visiting the scenery of the Clyde and Loch Lomond. There are also some fine views at Rosneath, on Gareloch, and in Glenfrain

Helmsley (Yorks).

J. E. Allenby, Bondgate. D.

Helmsley is a small market town about twenty-one miles from York. The places of interest in the neighbourhood are Helmsley Castle, Rievaulx and Byland Abbeys, Kirkdale Church and Cave, and the Rievaulx Terrace, with Temple having fine painted ceiling.

Hemel Hempstead (Herts).

C. E. Wilkinson, High St. D.

Hemel Hempstead is a centre of the straw-plaiting industry; it has a fine old church (St. Mary's) of Norman architecture, and is surrounded by very pretty country.

Hereford (Hereford).

W. E. Haines, 36, High Town.
C. T. Kemp, 7, Eign St. D.

Hereford possesses a noble cathedral built between 1079 and 1535, and exhibits every style of architecture from Norman to Perpendicular. There are a few picturesque old buildings, and some good views may be obtained on the river Wye.

Herne Bay (Kent).

H. S. Sewell, William St.

Herne Bay is a much-frequented sea-bathing place, on a beautiful bay, about 12 miles from Margate, and is also easily reached by road from Canterbury. It has a handsome clock-tower, pier, and esplanade, and is a good centre for many places of interest in the neighbourhood.

Hertford (Herts).

G. W. Fitton, 37, Fore St.

Hertford is situated on the river Lea. There are two ancient churches, and the ruins of the old Hertford Castle. Panshanger, the seat of Earl Cowper, about two miles distant, possesses a valuable collection of pictures.

Hexham (Northumberland).

Gibson & Son, Fore St. D.

Hexham is surrounded by many objects of interest to photographers. It is beautifully situated on the right bank of the Tyne, and is easily reached from Newcastle. The abbey church of St. Andrew's is a fine specimen of thirteenth-century architecture, while in the vicinity are numerous old castles and Pele Towers. The Roman Wall is also of interest.

High Wycombe (Bucks).

C. W. Dowswell, 51, Easton St. D.
J. Wilford, 7, High St. D.

High Wycombe is surrounded by beech-clad hills. It was the seat of a Saxon fortress, Desborough Castle, some remains of which may be seen, and has a fine cruciform church, commenced in 1273. Hughenden and Chalfont are near.

Hitchin (Herts.)

W. Payne, 2, High St., D.

Hitchin is noted for its lavender gardens. It was a place of some consequence in the days of King Alfred, and has a fine old parish church.

Holyhead (Anglesea).

T. J. Jones, Market St.

Holyhead has magnificent coast scenery, caverns, and arches. Irish mail-boats are arriving daily. The breakwater is grand in a rough sea. The South Stack Rock is covered in season with thousands of sea-birds. The roof of the porch and carving over porch doorway of the old church of St. Cybi should be noticed.

Holywood (Co. Down).

J. C. C. Payne, Holywood Medical Hall. D.

Holywood has the ruins of an ancient abbey called Grey Abbey. Yachting studies at Bangor Regatta can be made. The Bleach greens are interesting.

Horncastle (Lincoln).

Carlton & Sons, 4, High St. D.

Horncastle is situated in Tennyson Land. Tattershall Castle and Kirkstead Abbey Church are noteworthy objects.

Hornsea (Yorks).

C. Morrow, Market Pl. D.

Hornsea is fourteen miles from Hull, near the sea, on a mere or lake about one and a half miles long, interspersed with numerous picturesque islands.

*Horsforth (Yorks).

J. W. Sutcliffe, Town St.

Horsforth is a small town in the West Riding, about five miles N.W. of Leeds. It has extensive factories of woollen cloth, and fulling, paper, and corn mills, with some tanneries.

Horsham (Sussex).

H. W. Brassington, 26, West St. D.

Horsham has a capital landscape and good rustic bits. St. Leonard's Forest is east of the town, and two miles N.W. is Field Place, Shelley's birthplace.

Hove (Sussex).

Watts & Co., 114, Church Rd. D.
J. Williamson, 144, Church Rd. D.

Hove is a suburb of Brighton, where there is plenty to interest the photographer.

Howden (Yorks).

R. J. Latham, Market Pl. D.

Howden Church is worth taking. Wressell Castle is four miles away.

Huddersfield (Yorks).

A. Akam, 49, King St. D.
R. Cuthbert, Westgate. D.

Huddersfield has some good buildings, a marble statue of Peel, and two parks, Beaumont Park and Greenhead Park.

Hull (Yorks).

Lofthouse & Saltmer, 12, Market Pl.

Hull, or Kingston-on-Hull, has large docks and basins, with plenty of shipping. It has also some noteworthy buildings.

Hunstanton (Norfolk).

J. W. Bodger, The Pharmacy. D.

Hunstanton is a watering-place on the Wash. It has a splendid Decorated church (*circa* 1330), and a lighthouse 107 feet high. Hunstanton Hall dates from the Tudor period.

Hyde (Cheshire).

G. F. Wild, Clarendon Pl. D.

Hyde has good wooded scenery and country farmsteads.

Ilfracombe (Devon).

F. Keall, 33, High St.
C. Thornley, 23, High St. D.

Ilfracombe is beautifully situated for land and sea views. An early morning walk to Hillsboro', a little hill some fifteen minutes away, is worth while. On the harbour innumerable snapshots and stand-camera negatives may be secured of shipping, with fine backgrounds. At Lynnmouth may be seen a miniature Switzerland.

Ilkley (Yorks).

G. W. Worfolk, Brook St. D.

Ilkley Bridge, seventeenth century, and bits of river scenery, should be taken towards evening. Other objects of interest are the old Parish Church, partly Norman, on site of Roman fortress, ancient crosses in churchyard, etc. Ilkley is a first-rate centre for the photographic tourist.

Inverness (N.B.).

A. Allan, 4, Church St. D.
W. J. Bethune, Queen's Gate. D.
W. Ogston, 18, Union St. D.

Inverness can boast of hundreds of tit-bits in its neighbourhood. The town, the river, the castle, and the cathedral are all worth taking; the Falls of Foyers, the Culloden battlefield, Strathpeffer Spa, Urquhart Castle in ruins, and Cawder Castle are accessible.

Ipswich (Suffolk).

Pain & Bayles, Cornhill. D.
Wiggin & Son, 34, St. Matthew's. D.

Ipswich has many fine specimens of architecture from 200 to 350 years old. Also there are many reminiscences of Cardinal Wolsey's life and times. Magnificent scenery on the banks of the river.

Jersey (Channel Islands).

J. T. Baker, 27, Halkett Rd. D.
F. G. De Faye, 21, David Pl. D.
T. J. Le Sulleur, 17½, Beresford St. D.

Jersey—sunny Jersey—has much charming scenery, both seascape and landscape. The noble old pile, Mont Orgueil, picturesque bays, shipping, etc., afford abundant material for the photographic artist. The neighbouring islands, and St. Malo, a very quaint old place, should also be visited.

Keighley (Yorks).

A. N. Kershaw, Corn Mill Bgde. D.
D. West, High St.

Keighley is a market and manufacturing town situated amid the Brontës' country. There are two public parks in Keighley.

Kelso (Roxburgh).

W. M. Alexander, The Square. D.

Kelso Abbey, Floors Castle, Stitchill Linn, scenes by Tweed and Teviot, etc., are all worthy of attention.

Kendal (Westmoreland).

G. F. Rigg, Finkle St.
Severs & Bateson, 23, Stricklandgate. D.

Kendal has in its neighbourhood much good material for the photographer. The lake scenery, river scenery, Levens Castle, and Castle are noteworthy.

***Kenilworth** (Warwick).

W. F. Kimberley. D.

Kenilworth is noted for its Castle, which was founded about 1120 by Geoffrey de Clinton, and was also celebrated for the sumptuous entertainment given to Queen Elizabeth by Leicester, at a cost of £1000 a day for eighteen days. A fragment of an Augustinian Priory (*circa* 1122), and the Norman doorway of the Parish Church are worth notice.

***Keswick** (Cumberland).

A. Pettitt, St. John's St. D.

Keswick, besides having many points of interest within easy reach of the town, is a good centre from which to work the lakes generally. In the direction of Windermere, the road being good, the photo-cyclist can do good work.

Kettering (Northampton).

H. S. Cox, 42, High St. D.
H. Hitchman & Son, The Gold St. Pharmacy. D.

Kettering has good scenery generally. There are miles of avenues, and the Parish Church, dating from about 1150, is a fine Perpendicular structure.

Kidderminster (Worcester).

Steward & Westover, Medical Hall.

Kidderminster is situated on the Stour. It has some good buildings. The Church is Early English to Perpendicular, with a noble pinnacled tower; whilst the Town Hall is in the Renaissanee style.

***Killarney** (Ireland).

J. Graham, Glebe Hotel. D.

Killarney in the Irish lake district, is best approached *via* Cork, Bantry, and Glengariff and at each place there is much to interest the photographer. An Irish car-driver and a Killarney boatman afford good opportunities.

Kingsbridge (Devon).

R. M. Stewart, 56, Fore St.

Kingsbridge has some of the loveliest scenery in England.

King's Lynn, Norfolk.

W. H. Cockle, High St. D.

King's Lynn has many places of interest. Snapshots of shipping, fishing fleet, etc., from north bank and harbour. In the neighbourhood are Sandringham, the home of the Prince of Wales, Castle Rising, and Castle Acre.

Kingston-on-Thames (Sur'y).

W. Brewster, Market Pl. D.

Kingston-on-Thames is in the midst of good views and places of interest. The river scenery, royal parks and palaces, are especially noteworthy.

Kirkcaldy (Fife).

D. Storrar, 228, High St. D.

Kirkcaldy has the Forth Bridge near it, and has also good coast scenery.

***Kirkcudbright** (N.B.).

J. Copland, Dundrennan. D.

Kirkcudbright is the ancient capital of the county, and is surrounded with terraced woods and romantic walks. The old Castle of the Maclellans, an ivy-covered ruin in the town; St. Mary's Isle, the seat of the Earl of Selkirk, one and a half miles south; and Dundrennan Abbey, founded 1142, six miles to the south east, are worth noting.

Knaresborough (Yorks).

C. B. Southwell, High St. D.

Knaresborough is a quaint old town, and has some of the prettiest views in Yorkshire about it.

NEW IDEAS & TRADE NOTES

B.P. FORMULÆ AND PROCESSES.

The *Pharmaceutical Journal* summary of the alterations, additions, and omissions in connection with the formulæ and processes of the 1898 Pharmacopœia, published in last week's issue, was so arranged that anyone reading the notes in conjunction with the 1885 Pharmacopœia and its Addendum could readily make any of the new preparations or alter any of the old ones, without waiting until the new Pharmacopœia is actually issued to the public. That object was fully attained, and it is gratifying to learn that leading wholesale firms have placed copies of the Journal, containing the summary, in the hands of their employés who are engaged in preparing the new and altered galenicals. The opinion generally expressed is that no other journal has published anything in connection with the new Pharmacopœia that can be utilised in a similar practical manner, and as the date of publication of the B.P., 1898, is not yet announced, the *Pharmaceutical Journal* summary has been carefully revised and reprinted in a handy form for the pocket. The information the book contains can be thoroughly relied upon, and no one who possesses a copy need anticipate any difficulty in making any of the new or altered preparations. Specimen copies of the book will be sent, post free, at 4d. each; the prices for quantities are 3s. per dozen, 18s. per hundred, and £7 10s. 0d. per thousand, all carriage paid. Orders should be addressed to Messrs. Street Bros., 5, Serle Street, Lincoln's Inn, London, W.C.

Messrs. Evans, Gadd & Co. intimate that they have organised a special department for the preparation of articles for retail sale, and will be glad to quote for compounding and putting up chemists' own proprietaries in large or small quantities. The manufacture of these is under the direct supervision of a qualified manager, who will undertake to preserve the secrecy of private formulæ entrusted to him. The same firm also send a notice *re* the forthcoming Chemists Exhibition, in which is given a plan of the exhibition with the position of the firm's stand indicated.

Messrs. Tremeer and Co., of Barnstaple, have recently added to their list a finely woven fabric, coated on both sides with pure Para rubber, thoroughly waterproof, non-adhesive, highly flexible, free from creases, easily put on and taken off, and can without any difficulty be cut to the required size. It never becomes either stiff from the cold or brittle with the heat, and can after use be thoroughly cleansed and purified and rendered quite fit for further use simply by being passed through any ordinary disinfecting fluid. It serves as a substitute for oiled silk and gutta percha tissue, and is sold at 3s. per yard.

Messrs. Tremeer & Co, Barnstaple, send a synopsis of some of the more important additions and alterations of the new Pharmacopœia, which the firm is issuing for the use and information of the medical profession. Messrs. Tremeer also intimate that they will issue a revsied price-list as soon as the Pharmacopœia is on sale.

Pharmaceutical Transactions.

MIDLAND CHEMISTS' ASSISTANTS' ASSOCIATION.

At the third annual dinner of this Association, held at the Colonnade Hotel, Birmingham, on April 13, the President (Mr. Jessop) was unable to take the chair owing to indisposition. His place was taken by Mr. Casson (vice-president).—In proposing "The Pharmaceutical Society," Mr. G. E. Perry expressed his conviction that it was rapidly growing in favour with the majority of chemists. He remembered the time when it was little thought of, but now it was gradually drawing the chemists from all over the country into one body. He hoped for even better things when the Pharmacy Bill became law.—Mr. F. J. Gibson (President of the Midland Pharmaceutical Association) briefly replied to the toast —Mr. R. D Gibbs proposed "The Midland Chemists' Assistants' Association." and expressed delight at the fact that in Birmingham there were assistants energetic enough to form such a body. By banding themselves together, he was convinced assistants could obtain many advantages, chief among which he placed a reduction in the number of hours. He wished it to be clearly understood, however, that assistants could not get shorter hours by merely demanding them. It rested mainly with the public, and the public must be educated up to the fairness of the demand. Chemists' assistants must be ready to acknowledge themselves servants of the public, and filling their positions honourably and nobly their reward was sure to come.—Mr. Casson, in reply, referred to the kind help Mr. Gibbs had extended to the Association ever since its formation. He was proud to be an officer of such a body, and regretted exceedingly that the time was quickly approaching when he should be compelled to sever his connection with it.—Mr. F. G. Walton, proposing "The Health of the Visitors," said that however much they were stimulated by a spirit of independence, they were always glad to see friends from outside, whether at social or ordinary meetings.—Mr. Boucher replied to the toast, wishing the Association every success. A capital programme of music was contributed by Messrs. S. Halliley, O. Ward, T. W. Suker, and S. Austin (St. Mary's Quartette), and Messrs. Taylor, Thomas and Woolman. Mr. Smith accompanied.

MIDLAND PHARMACEUTICAL ASSOCIATION.

Under the auspices of this Association, Mr. Dencer Whittle, Lecturer on Bacteria Medica at Mason University College, gave a demonstration at the college on the 14th inst. with an electric projecting microscopic lantern. The President (Mr. F. J. Gibson) was kept away by an accident on the railway, and the chair was taken by Mr. G. E. Perry.—Mr. Whittles showed dental, medical, and veterinary specimens, and illustrated the crystallisation of many chemicals, including salicin and santonin. He also exhibited pictures explanatory of cyanide of mercury in the process of crystallising. The lecturer concluded with illustrations of the various animals which find their way into the human interior through cider, vinegar, and other liquids, and caused some merriment with pictures illustrating the flea, the sheep tick, and other minute insects possessing marvellous powers of irritation.

EDINBURGH CHEMISTS', ASSISTANTS', AND APPRENTICES' ASSOCIATION.

The annual business meeting of the twentieth session was held in the Pharmaceutical Society's House, 36, York Place, Edinburgh, on Friday, April 15, 1898, Mr. George Sinclair, President, in the chair. The Prize Committee reported that the Ewing Pharmacy Prize had been gained by Mr. David Roger, 23, Bernard Street, Leith, and in the absence of Mr. Ewing, the President presented the winner with copies of Attfield's 'Chemistry,' Green's 'Botany,' and Wills' 'Materia Medica.' The annual report and financial statement were then read and adopted, the former showing a slightly increased membership and the latter a balance of £5 2*s.* 1*d.* Mr. John Bowman was elected an honorary member. A sum of £1 1*s.* 0*d.* was voted as a subscription to the Benevolent Fund of the Pharmaceutical Society. The following office bearers were elected for next session:—President, G. H. C. Rowland; Vice-President, J. D. Sinclair; Secretary, David Harley, 9, Princes Street, ; Treasurer, J. L Reid. Members of Committee, Messrs. G. Sinclair, McBain, Mowatt, Sivewright, A. McKenzie, McDiarmid, Kidd, and Roger. Prize Committee, J. M. Cameron, A J. Dey, and G. Sinclair.

PARLIAMENTARY NOTES.

Progress Reported.—The agitation which the representatives of Democracy have for years waged against Kew officialism has at length last borne fruit. After the first day of June, Kew Gardens will be opened to the public at 10 a.m. instead of at noon as hitherto.

The First Commissioner of Works, in making the announcement, pointed out that the innovation was experimental, and if it is found that the privilege of earlier entry—which includes the recent Royal addition—is made use of by the class of persons by whom it is said to be desired, it would be continued during the remainder of the summer season. The Gardens may become in time quite a Parliamentary holiday resort, the Member for Battersea having set the example by spending the recent recess in the Royal Borough, and recuperating his mind by searchings for official shortcomings.

The Pharmacy Bill was the third item on the notice paper for the evening sitting of the House on Tuesday, and to the unfledged parliamentarian this circumstance might have inspired something akin to hope. Those with a deeper knowledge of the ways of members could give the representatives of the Society no encouragement that the desired trial of strength with Mr. Cross would come on. As a matter of fact they were right. For three hours the members indulged in "airy nothings" on the vast subject of national education, and though there were thirty-two measures awaiting consideration (Mr. Kearley's Food Adulteration Bill amongst them), not one was touched. The Pharmacy Bill was deferred till Monday next, but has little chance of a hearing then. Still, it is too early to abandon hope, and with skilful engineering the difficulties may yet be successfully negotiated.

Mr. Henniker Heaton is in good form after the recess and is peppering the Post Office authorities with a whole fusillade of pertinent inquiries. On Monday he asked for guinea postal orders, and tried to induce the Department to issue paper tokens for all amounts from 6*d.* to 21*s.*, rising in sixpenny steps. But Mr. Hanbury was obdurate; on Thursday, Mr. Heaton has a sheaf of questions dealing with the shortcoming of the Post Office. The chief item in the bundle is in the form of a protest againt the discontinuing, without notice, of the conveyance of flowers by sample post or parcel post between England and the South of France. He also grumbles against the restrictions placed on the transmission, by book post, of orders for goods. At present the merchant may send for ½d., an order form in which the essential word "send" or "forward" constitutes the whole of the printed direction, but he may not modify the brusqueness of such order by printing "please" before the verb, nor may he indicate, by adding "urgent" or "immediately," that the order is important. Mr. Heaton wants this altered and also that certain anomalies in reference to the use of particular words should either be removed or made plain to merchants, who at present run the risk of unwittingly breaking the regulations.

Chemistry versus Art.—Sir S. Montagu (Whitechapel) is to ask the First Commissioner of Works whether he intends that in the South Kensington Museum re-arrangements, laboratories are to be placed under the same roof as the works of art, and if he has thought of the danger to the pictures and silver likely to result from the generation of gases and other noxious fumes. Evidently the hon. member has paid a recent visit to a chemical laboratory and the SH_2 has entered his soul.

Adulterated Vinegar.—Major Rasch (Essex S.E.) has given notice of a question respecting a recent case of poisoning by vinegar containing arsenic. The object of the inquiry is to ascertain the source of the adulterated article and whether it was British or imported.

Vaccination occupied the House during the Tuesday morning sitting, but no progress was made with it, owing to unexpected opposition by those who object "on principle." Sir Walter Foster and Sir Wm. Priestley both contributed to the debate, and both rather damned the measure with faint praise. Until the second reading of this Bill is done with no progress will be made with the London University Commission Bill, which, by the way, promises to be a very tough bone of contention indeed.

MARRIAGES

Watson—Lewis.—At the Parish Church, Tottenham, April 14, by the Rev. F. Speke, Herbert Shepley Watson, A.P.S., son of the late Alfred Watson, solicitor, Leeds, to Florence Mary, eldest daughter of Mr. G. D. Lewis, Tollesbury, Essex.

NEWS IN BRIEF

"A Pocket Synopsis of the British Pharmacopœia, 1898," with concise notes on the changes, particulars of new preparations, tables of doses, strengths, etc., compiled by Mr. H. Wippell Gadd, will shortly be published by Messrs. Evans, Gadd & Co., of Exeter.

The London School of Medicine for Women is to be congratulated on having secured royal recognition for its work in technical education. It is rumoured that the laboratories which the school authorities are establishing in connection with their premises at Handel Street, Brunswick Square, are to be opened by H.R.H. The Princess of Wales in July next. It is expected that the Prince of Wales will also be present on the occasion.

To Encourage the Teaching of Science the Technical Education Board of the London County Council will proceed shortly to award not less than five Senior County Scholarships. These scholarships are of the value of £50 a year, whilst tuition fees will be paid up to £30 a year, and are tenable for three years at University colleges and advanced technical institutes. The scholarships are confined to residents within the administrative county of London, and are open only to those whose parents are in receipt of not more than £400 a year. Candidates should, as a rule, be under twenty-two years of age, though the Board reserves the right to give preference to candidates who are under nineteen years of age. The scholarships are intended to encourage more especially the teaching of science, and to encourage those students who cannot afford a University training to pursue advanced studies for a period of three years in the highest University institutions in this country or abroad. Of the seventeen students who are now holding senior scholarships five are studying at Cambridge, five at the Central Technical College in Exhibition Road, three at the Durham College of Science, Newcastle-upon-Tyne, two at German universities, and two (ladies) at Bedford College and Holloway College respectively. The scholarships are awarded on a consideration of the past record and general qualifications of the candidates, and not upon the results of a set examination. Application forms may be obtained from the Board's Secretary, 116, St. Martin's Lane, W.C., and must be returned not later than Monday, May 16.

The International Photographic Exhibition, 1898, held under the auspices of the Royal Photographic Society, will be formally opened at the Crystal Palace, on Wednesday, April 27, and will remain open until Saturday, May 14. The various branches and applications of photography will be divided into sections, the following having been arranged:—(1) The History of Photography, (2) Pictorial Photography, (3) Portraiture and General Technical Photography, (4) Apparatus and Material, (5) Photo-mechanical Processes, (6) Scientific Applications of Photography, (7) Photography in Colours, (8) Photography as a Science.

The Photographic Guild is a society intended for the benefit of isolated photographers, amateur and professional. The guildhall and offices are at 6, Farringdon Avenue, London, E.C., the organising secretary being the Editor of the *Photogram*. Full particulars, rules, etc., are sent to applicants on receipt of a stamped addressed envelope by the Assistant-secretary at the above address.

The Western Chemists' Association (of London) held a very successful musical and social evening at the Westbourne Restaurant, Craven Road, W., on Wednesday, April 20, Mr. Walter Hills, President of the Pharmaceutical Society, in the chair. An excellent programme had been arranged, consisting of songs, humorous and otherwise, trios, violin solos, and a capital ventriloquial entertainment. A most enjoyable evening was concluded by the singing of the National Anthem.

P.A.T.A.—In connection with the election of the Retail Section of the Grocery Council, fifteen gentlemen have been nominated for the ten seats vacant. The election of the Council is being proceeded with, but as two of the twelve candidates nominated have stated their unwillingness to serve if elected, thus leaving ten candidates, the requisite number, there will be no poll. There are two new members, Mr. J. Hessell, chemist and druggist, Highgate Road, N.W., and Mr. C. J. G. Bunker, chemist and druggist, Great Dover Street, S.E., who take the places of Mr. John Williams, Chairman of the Manchester Grocers' Association, who is a candidate for the Grocery Council, and Mr. James Cocks, chemist and druggist, Stonehouse, Plymouth. The Retail Drug Section will now consist of chemists only. The *Record* expresses regret that Mr. Cocks, of Plymouth, the former Vice-President of the P.A.T.A., is unable for this year to devote the necessary time to enable him to serve on the Council, and goes on to hope that his absence from the Council will be but a temporary one. The Retail Section of the Photographic Branch of the Council consists of three members, the following gentlemen having been nominated:—Mr. W. Denham, Leeds; Mr. F. V. A. Lloyd, Liverpool; and Mr. J. J. Laws, the Secretary of the Streatham and District Chemists' Association. The Manufacturer's Section of this Council at present consists of Mr. David Allen, 147, Whitfield Street, W.; Mr. Otto Scholzig, Clapham; and Mr. W. Tyler, Aston, Birmingham, these gentlemen having control of the Photographic Section. The annual meeting of the Association, followed by the annual dinner, will take place at the Chemists' Exhibition, to be held in the Agricultural Hall during the week commencing June 13.

Plymouth, Devonport, Stonehouse and District Chemists' Association.—A committee meeting of the Educational Section was held on Thursday, the 14th inst. It was decided to hold examinations in pharmacy and materia medica in the first week in May. Prizes for the same were kindly offered by the President (Mr. Jas. Cocks), Messrs. R. F. Roper and J. K. Bond, Ba., B.Sc. Botanical rambles and evening classes in botany were also arranged for, Mr. O. A. Reade having again kindly offered his services in conducting the same.

Edinburgh District Chemists' Golf Club.—The members of this Club held their annual spring prize competition at Largo on Monday, the 18th inst. (Edinburgh spring holiday). The Captain's (Mr. H. D. Alexander) and two Club prizes, along with the Gibson Handicap Medal, were played for, with the following results: Captain's prize and Gibson Medal, James Stott; second prize, J. G. Anderson; third prize, H. D. Alexander. After luncheon, served in the Crusoe Hotel, a match between teams, Captain *versus* Vice Captain, resulted in favour of the latter by 6 holes.

New Pharmacies in Edinburgh.—Mr. James Anderson, chemist and druggist, has opened the new Lochrin Pharmacy, at 36, Home Street, and Mr. James McBain, chemist and druggist, ex-president of the Assistants' Association and the Pharmacy Athletic Club, is shortly to open a new pharmacy at Haymarket Terrace.

Public Dispensers' Association.—A meeting of this Association will be held at the Bloomsbury Hall, Hart Street, W.C., on Friday, April 29, at 8 p.m., when Dr. G. Dean, of the British Institute of Preventive Medicine, will deliver a lecture on "Antitoxins." The Committee desire to welcome all dispensers to this meeting.

Mr. W. Morley Martin, pharmaceutical chemist, Redruth, has been elected a member of the Redruth Urban District Council Election.

Judge Waddy, the learned Recorder of Sheffield, when committing a miner to prison for a month for attempting to kill himself by a dose of laudanum, followed by one of embrocation, rather puzzled those present by remarking that if the man did not go to gaol, he might be making another attempt on his life, and probably he would succeed, "and then he would find out how foolish he had been."

At Arbroath a Chemists', Assistants', and Apprentices' Association has been formed, Mr. R. Alexander being appointed to the position of secretary.

MARKET REPORT and Prices Current

Specially compiled for the Pharmaceutical Journal

The quotations here given are in all cases the lowest cash prices for bulk quantities, and often the articles quoted have to be sorted in order to suit the requirements of the retail pharmacist. The cost of freightage from the chemical and drug works to the various distributing centres must also be considered. It is important that these conditions should be borne in mind in making any comparison between the prices quoted and those of the wholesale drug trade.

LONDON REPORT.

APRIL 21, 1898.

The past week has been one of considerable excitement in consequence of the dispute between the United States and Spain having gradually reached a climax. At the moment of writing war appear quite inevitable, while the results of such a war, the course of which it is apparently impossible to foretell can hardly fail to have a not inconsiderable effect on several of the articles referred to in these columns. Probably American drugs will be among the first to feel the effects. This would appear especially likely in the case of Cascara Sagrada, American Oil of Peppermint, etc. Already the makers of the German brand of Quinine most in favour, viz., *B. & S.*, have decided to stop selling, and the market for the article is in consequence decidedly harder. Glycerin will probably be affected, as also will perhaps be the case with Opium and Morphia, and probably Carbolic Acid. It is thought possible also that Quicksilver will be dearer, which would no doubt eventually mean also an advance in price of mercurials. Much will, of course, depend upon how events shape themselves, and, on this point, opinions are divided, many people thinking that in the event of war it will probably go hard with America at the commencement. At the same time few people can doubt what would be the eventful result of the struggle, if war does break out; and it seems now practically absolutely certain that there will be war. As regards actual changes during the week, these have been few and of minor importance, Ipecacuanha being rather lower. The following are the particulars of prices actually ruling.

ACETANILID—Is quiet at 1s. 2d. to 1s. 4d. per lb., according to quantity.

ACID BORACIC—Unchanged at 23s. per cwt. for *crystals*, and 25s. per cwt. for *powder*.

ACID CARBOLIC—Is quiet at 6½d. per lb. for 35° to 36° C. *ice crystal*, 7d. for 39° to 40° C. ditto, and 8d. for 39° to 40° C. *Detached crystals* in quantity, and large bulk packing; *crude* 60° F. 2s. per gallon, 75° F. 2s. 6d. *Liquid*: 95 per cent. of pale straw colour in 40-gallon casks, 1s. 2d. to 1s. 3d. per gallon for quantity.

ACID CITRIC—Is quiet at 12½d. to 1s. 1d. per lb. for foreign and English *crystals* respectively.

ACID LACTIC.—Makers quote 2s. 3d. to 2s. 6d. per lb. for the conc. 1·21 quality, in quantity and in bulk.

ACID OXALIC—Steady at 3⅝d. per lb. for *crystals*, and 4⅛d. per lb. for *powder*.

ACID TARTARIC.—English *crystals* are unchanged at 1s. 1d. per lb. on the spot, whilst foreign *crystals* are firmer at 12⅝d. 12¼d. per lb.

AMMONIA COMPOUNDS.—*Sulphate* continues dull, but quotations are unchanged at £8 15s. per ton, for grey prompt 24 per cent., London. *Iodide* firm at 13s. 4d. per lb. *Oxalate* rather cheaper at 6d. per lb. *Sulpho-cyanide* steady at 1s. 1d. to 1s. 2d. per lb. *Chloride*, free from metal, 98 per cent., 25s. 6d. per cwt.; chemically-pure small crystals 32s. per cwt. *Sal ammoniac* unchanged at 33s. to 35s. for sublimed. *Vanadiate* 21s. 6d. per cwt.

ASAFETIDA—Has been in good inquiry for the United States, and several parcels have been taken at prices ranging from 50s. to 65s. per cwt.

ATROPINE—Is firm at 12s. 9d. to 13s. for the *Sulphate P.B.* in quantity.

BALSAM COPAIBA—Is very firm, and tending dearer. Quotations range from 1s. 9d. to 1s. 10d. per lb., *c.i.f.* terms.

BALSAM TOLU—Is very firm on the spot at 1s. 9d. per lb., whilst for arrival more money is asked, 1s. 9¾d. per lb., *c.i.f.*, being the current quotation.

BISMUTH—Steady at 5s. per lb. for the *metal*, and 4s. 10d. for the *subnitrate* in 5-cwt. lots.

BORAX—Unchanged at 14s. per cwt. for *crystals*, and 14s. 6d. per cwt. for *powder* in large bulk.

BROMIDES—Are in good demand at 1s. 10d. per lb. for *Potass. Bromide*, and 2s. 2d. for *Ammon.* and *Soda Bromide* price of *Bromine* being 1s. 11d. per lb. in 20-case lots.

BUCHU LEAVES.—*Rounds* are steady at 4½d. to 5d. for good to fine green, *longs* scarce at 9d. per lb.

CAMOMILES.—Good Belgian flowers are scarce, quotations being firm at 45s. to 47s. 6d. per cwt.; ordinary, 31s. 6d. to 32s. per cwt.

CAMPHOR—Continues dull for crude. Business for arrival has been done in *China*, April-June steamer at 83s. cwt., whilst for *Japan* there are sellers, same shipment, at 89s. per cwt., *c.i.f.* *Refined* is unchanged, but firm.

CASCARA SAGRADA—Is quiet, and there are evident "bear" interests at work to keep the price from rising just at present. Stocks on the Pacific Coast are said to be practically exhausted, and old bark is worth more in New York than on the London market. The position may change at any moment as soon as it is known what quantity, if any, is gathered this season. Old bark is selling at 25s. per cwt. on the spot.

CLOVES.—Privately *Zanzibar* are weak, and only small business is passing: prices for delivery are, June-August, 3 3/32d., August-October, 4⅛d. At auction only 70 bales *Zanzibar* were offered and mostly bought in, fine at 4½d., 20 bales damaged being sold up to 3⅞d.: 55 bags *Amboyna* bought in at 5¾d.

CINCHONIDINE SULPHATE—Is in fair inquiry at 6¼d. per oz. in large bulk.

COAL TAR DISTILLATION PRODUCTS.—*Toluol*. commercial, 1s. 9d.; pure, 3s. per gal. *Benzole*: 50 per cent., 1s. 3d. per gallon; 90 per cent., 1s. *Crude Naphtha*: 30 per cent. at 120° C., 8d.; *Solvent Naphtha*: 95 per cent. at 160° C., 1s. 9d.; 90 per cent. at 160° C., 1s. 6d.; 90 per cent. 190° C, 1s. 3d. per gallon.

COCAINE.—Some of the makes less in favour are being pressed for sale at low prices, while the makers of best brands still quote 10s. to 10s. 6d. per oz. for the *Hydrochlorate* in 100 oz. lots. It is thought, however, that they will probably have to reduce their price in order to meet competition, although it is stated that the position of *crude* would not justify any such reduction.

COCA LEAVES.—Green *Truxillo* are firm at 7d. per lb.

CODEIA.—In fair demand at unchanged price, viz., 11s. 3d. to 11s. 6d. per oz. for quantity in bulk.

COD-LIVER OIL.—Market remains firm at 82s. 6d. to 95s per barrel, according to brand, for new non-congealing *Norwegian* in tin-lined packages, old *Norwegian* oil being held for 75s. to 80s. As regards the position and probable future course of the market, our Tromsoe correspondent writes as follows:—Lofoten fishery about to close. Production up to April 11, 9271 hectl. Southern fisheries closed. Finmarken: No fishing commenced. Total production of cod-liver oil up till April 11, 18921 hectl.; total against same date 1897, 27956 hectl.; total against same date 1896, 14482 hectl.; total against same date 1895, 16274 hectl.; total against same date 1894, 18287 hectl.; total against same date 1893, 28000 hectl.; average preceding five years, 21000 hectl. During the same five years the average prices for non-freezing oil *c.i.f.* London first days of April have been: 1893, 60s.; 1894, 110s.; 1895, 130s.; 1896, 220s.; 1897, 80s.; average, 120s. Most exporters now quote 90s. It being now left entirely to Finmarken to make up for the deficiency, it is probable that until reports from those districts commence sounding more promising and indicating a larger output of oil prices will continue their upward course. All makers and exporters keep but very moderate stocks, and will be in no hurry to clear the same.

COLOCYNTH.—Further arrivals have taken place, but, whilst demand is slow, holders are firm at 1s. 2d. to 1s. 3d. per lb. for small discoloured to fair bold pale apple.

CREAM OF TARTAR—Is quiet, with but little business passing. First white *crystals* on spot 75s. per cwt.; *powder* 77s. to 78s. per cwt.

CUTCH—Is dearer, closing firm at 28s. per cwt. for *Eagle*, 31s. 6d. for *Star B.*, and 34s. cwt. for good tablets.

GINGER.—At auction *Cochin* went off flatly, and 1468 bags rough were mostly bought in; fair to good washed at 26s. to 0s., only 200 bags finding buyers at barely

previous rates; cuttings, 15s. 6d.; shrivelled pickings, 11s. 6d.; ends, 14s. 6d.; common dusty washed rough, 21s. Of cut kinds 145 cases sold, chiefly new crop Calicut; cut small, 32s. 6d.; medium and small, 46s.; bold and medium, 71s. to 77s. 6d.; fine bold, 75s. to 80s.; selected bold, 87s. 6d. to 91s. 55 bags limed *Japan* bought in. *Jamaica* met a good demand, and 309 barrels mostly sold at steady rates for common and at advanced prices for better qualities. Low dark Rhatoon, 67s.; common lean and small scraped, 72s. 6d. to 79s. 6d.; low middling to middling washed, 82s. 6d. to 91s.; good middling to good bright, 92s. to 103s.

Glycerin—Is decidedly firmer at 52s. 6d. to 60s. per lb., according to quantity and brand, for *German* white, double distilled chemically pure 1 260 quality in tins and cases, *English* being quoted rather below these figures. It is thought that the outbreak of hostilities between the United States and Spain, which is now apparently unavoidable, will lead to higher prices for this article.

Golden Seal Root—Is very firm in New York, and quotations come dearer at 1s. 11d. per lb., *c.i.f.* Supplies ars said to be very limited.

Guarana—Is slow of sale, but price is steady at 1s. 9d. per lb.

Gum Mastic—Is in fair supply, but only small sales have been made at 2s per lb. for clean pale tear.

Gum Tragacanth.—In the auctions held on the 15th inst a fair quantity changed hands. The prices of the finer qualities were maintained, but other qualities showed a decline of about 5s per cwt. Firsts are quoted £13 10s. per cwt., seconds £12 5s., thirds £11, lower qualities from 35s. to £9 10s. per cwt.

Iodides—Are in brisk demand at 9s. 9d. per lb. for *Potass. Iodide* in 2-cwt. lots, and 13s. 4d. for *Iodoform*, price of *Iodine* being unchanged at 7½d. per oz.

Ipecacuanha.—*Rio* is lower, one importer making sales at 7s. 6d. per lb. The principal importer, to whom the last shipment of 120 bales came, is said to be firm in asking 8s. per lb., but at the moment the demand can be filled at the lower value. For *Carthagena* there is a fair inquiry, notwithstanding that the new Pharmacopœia distinctly prohibits its use, price being firm at 5s. 6d. to 5s. 9d. per lb.

Isinglass.—The monthly auctions took place on Tuesday, when a total of 550 packages was offered, as against 607 packages in March. Demand was very slow, and only a small proportion sold at on the whole easier rates. The bulk again consisted of *Bombay* and *Kurrachee*, which met little demand, and holders being firm nearly the whole was bought in, Leaf selling at about previous rates. Tongue all bought in. Cake steady for the few lots sold. A good supply of *Penang* was chiefly sold, with less competition, and prices of both Leaf and Tongue were cheaper, cake being dearer. The small supply of *Saigon* leaf was neglected, and only a few cases were sold at about previous rates. Supplies of *Para* were light, but with a slow demand prices showed an average decline of 2d. per lb. *West India* also easier.

Jalap—Is very queit, and with the new crop arriving in New York, prices are tending easier. On the spot good small heavy root offers at 6d. per lb., whilst for arrival new crop good root, but damp, offers at 5d. per lb. *c.i.f.*

Japan Wax—Quiet, good squares offered at 35s. 6d. per cwt. on the spot; for arrival April-June steamer is quoted same price *c.i.f.* terms.

Lead Acetate—Is dearer by 1s. 6d. per cwt., quotations now being 27s. 6d. per cwt. on the spot.

Lithia Salts—are firm at 10s. 8d. for the *Carbonate*, 5s. 7d. for the *Citrate Cryst.*, and 6s. 1d. for the *Citrate Powder* in 2-cwt. lots.

Lobelia Herb.—Pressed packages are steady at 7d. to 8d. per lb. on the spot, loose 5d. to 6d. per lb. according to quantity.

Mercurials—Without change at 2s. 2d. per lb. for *Corrosive Sublimate*, and 2s. 9d. for *Calomel* in 10-cwt. lots, other *Quicksilver* preparations being quoted in proportion.

Morphia.—Quiet at 4s. 3d. per oz. for the *Hydrochlorate salt* in powder for quantity and bulk packing.

Nitrate of Soda.—*Commercial*, £7 10s. to £7 15s.: refined, £8 to £8 5s. per ton.

Nitrate of Silver.—Quiet at 1s. 5d. to 1s. 6d. per oz. for *crystals* in quantity, *sticks* higher in proportion.

Oils (Essential).—*Star Aniseed* is fairly firm at 6s. 9d. per lb. on the spot. *Cassia* very quiet and quotations are quite nominal. *Citronelle*, steady at 1s. 2d. per lb. for both tins and drums. *Peppermint*: American *H.G.H.* is steady at 5s. 7½d. to 5s. 9d. per lb. on the spot. *Wayne County* in fair demand at 3s. 9d. to 4s per lb., *c.i.f.* terms. *Sassafras*: Good quality, 1s. 9d. per lb. *Cajaputa* firm at 4s. 6d. to 4s. 9d. per bottle. *Sandalwood* is firmer at 12s. 6d. to 13s. per lb. for English drawn, and 11s. 6d. to 12s. 6d. for Australian. *Bergamot* is steady at 8s. 3d. to 8s. 9d. per lb. *Lemon*, 3s. 9d. to 4s. 6d. per lb. *Orange*: Sweet, 9s. per lb.; bitter, 9s. 9d. to 10s. per lb.

Oils (Fixed) and Spirits.—*Linseed* has been lower, but closes dearer again at £15 17s. 6d. for pipes on the spot, barrels £16 5s. *Rape* firm and rather dearer at £22 10s.; refined, £24 on the spot. *Cotton*: Crude on the spot is dearer at £13 5s.; refined spot, £14 15s. to £15 5s., according to make. *Olive*: Spanish and Levant firm at £33. *Coconut*: Ceylon, on the spot, £23; Cochin: £27 on the spot. *Palm*: Lagos, on the spot, £23. *Turpentine* steady at 23s. 9d. per cwt. on the spot. *Petroleum Oil* dull, Russian spot, 4⅛d. per gallon; American, 4½d. per gallon.

Opium—Is about 6d. per lb. dearer on this side, values here having now advanced to approximately the parity of prices ruling in *Smyrna*, value there being, however, still slightly higher than here.

Phenacetin—Unchanged at 3s. 9d. to 4s. 3d. per lb. for both *cryst.* and *powder*, according to quantity and brand.

Potash Compounds.—*Chlorate* is rather easier at 3⅜d. per lb. on the spot. *Bromide* firm at 1s. 10d. per lb. *Cyanide*: Most makers are oversold and considerably behind in their deliveries. For the 98 to 100 per cent. white cake 1s. 2d. per lb. is being paid for quantity. *Permanganate*: Present low prices are inducing buyers to cover their requirements for the coming season at 62s. 6d. per cwt. for *small crystals*, and 67s. 6d. per cwt. for *large crystals*. *Prussiate*: *Yellow* quiet at 6¼d. per lb. *Red*: 1s. 1d. to 1s. 2d. per lb. *Iodide* firm at 9s. 9d. to 10s. 3d. per lb., according to quantity. *Bicarbonate* steady at 30s. for *crystals* or *powder*. *Oxalate*: Neutral is steady at 5d. per lb. for *crystals*. *Bichromate* quiet at 4d. per lb. *Carbonate*: 21s. to 22s. per cwt. is asked for the 96 to 98 per cent. in large bulk.

Potash Permanganate—Steady at 60s. to 65s. per cwt., according to quantity for *small crystals* in 1 cwt. kegs; large crystals 5s. per cwt. more.

Quicksilver—Quiet at £7 1s. 3d. per bottle from first hands, and £7 from second hands.

Quinine—Remains quiet, makers' price for best *German* brands being still 9½d. per oz. for the *Sulphate*, for 1000-oz. lots in 100-oz. tins, while from second hands it would be possible to buy a shade below this figure. Brands of less repute are freely offered at 9d. per oz., without, however, finding many buyers. Future course of the article remains somewhat a puzzle, even to those who are usually best informed as to position and probable future course of the market. Since writing this we learn that the agents for the B. & S. brand have received instructions from the makers to cease selling.

Senna.—The demand for *Tinnevelly* continues strong, and sales have been made of small greenish but slightly spotty leaves at 3d. per lb. *Alexandrian*: Good picked leaves are wanted, nominal value being 7d. per lb. Broken leaf is steady at 4½d. per lb.; siftings, 2¾d. per lb.; pods being quiet at 5d. per lb.

Shellac.—At the fortnightly sales on Tuesday small supplies were catalogued. A fair demand prevailed, and about one-fourth found buyers at an advance of 1s. per cwt. for *Second Orange, TN* being now worth fully 61s. to 62s. per cwt. A total of 619 cases offered and 160 cases sold. *Second Orange*: Of 511 cases 139 sold, bright red shivered at 60s., fair to good fair *TN* 61s. to 62s., good bright *J* in circle at 62s. to 63s.; the remainder being bought in, including *M* in circle, fine pale flat little matted at 82s., fine bright *PM* in double-triangle at 82s., and good bright *MR* ditto at 78s. *Garnet*: 44 cases offered in small parcels and bought in, weak cakey *GG** at 64s., flat ruby *KG* in circle at 62s, and blocky snake at 60s. *Button*: Of 64 cases 21 sold, without reserve, low resinous black 60s. to 66s.; the remainder bought in including *KG* in circle 2's stamped at 77s.

Soda Compounds.—*Crystals* firm at 57s. 6d. per ton *ex* ship terms. *Bromide* firm at 2s. 2d. per lb. *Iodide* unchanged at 10s. 7d. per lb. *Acetate*: The chemically pure is firm at 35s. per cwt. *Hyposulphite* in good demand at 5s. 6d. to 8s. per cwt., according to brand. *Sulphite* steady at 18s. to 22s. 6d. per cwt., according to quantity and brand. *Caustic*: 70 per cent. white, £7 10s. per ton; 60 per cent., £6 10s. per ton in large quantity. *Nitrate*: Refined, £7 12s. 6d. to £8 per ton, according to quantity.

Spices (Various).—*Black Pepper* quiet; 368 bags Lampong sold at 3⅛d.; 247 bags Singapore bought in at 4⅛d. to 4¼d.; 246 bags Tellicherry bought in at 4⅜d.; 7 bags fine Wynaad sold at 4¼d. *White Pepper*: Only 131 bags Singapore sold, partly without reserve, fine bold, 8¼d. to 8¾d. *Cayenne Pepper*: 8 cases Nepaul

bought in at 1s. 6d. *Chillies*: 22 bales Zanzibar bought in at 35s.; 4 bags fine red Japan sold at 42s. *Cassia Lignea*: 284 bales, broken, bought in, also 9 boxes, whole Saigon at 56s. *Cinnamon Chips*: 871 bags Ceylon, all bought in at 3d. to 3¾d. *Mace*: 28 cases Penang, bought in at 1s. 7d. to 1s. 9d.; pickings, 1s. 5d. 15 packages West India, sold at 1s. 4d. to 1s. 7d. *Nutmegs* dull at about previous rates. *Pimento*: Of 210 bags, only 20 bags sold, middling at 4⅜d.

SULPHATE OF COPPER—Is easier. On the spot £16 to £16 10s. per ton, according to brand.

SULPHONAL—Remains quiet, price being unchanged at 7s. 3d. per lb. in bulk, at which price makers are still accepting orders, for limited quantities only, from regular customers.

TURMERIC — Quiet, but fairly steady, *Bengal*, dark fracture, selling at 14s. 6d. per cwt. *Cochin* split bulbs 9s. to 9s. 6d. per cwt.

THYMOL.—Demand is quiet at 6s. 6d. to 7s. per lb., according to quantity.

NEWCASTLE CHEMICAL REPORT.

APRIL 20, 1898.

This market, although not extra active, is kept moving fairly well with current shipping orders. Prices, however, do not vary, and are quoted as follow:—Bleaching Powder, £6 5s. to £6 10s. Soda Crystals, basis, 45s. to 55s. Caustic Soda, 70 per cent. basis, £7 5s. to £7 10s. Soda Ash, 52 per cent., £4 5s. Alkali, 52 per cent., £5 5s. Sulphur, £4 15s. to £5 per ton.

MANCHESTER CHEMICAL REPORT.

APRIL 20, 1898.

The trade in heavy chemicals remains quiet in this district and there is no improvement to note. In miscellaneous articles therea re few changes. Sulphate of Copper remains easy, notwithstanding the continued firmness of the metal, and is quoted £17 per ton, best brands, delivered Manchester. Brown Acetate of Lime is lower, £5 7s. 6d. to £5 10s., according to delivery. Salt Cake is firmer at £1 per ton, on rails. Aniline Oil and Salt are unchanged and weak. Recovered sulphur varies from £4 10s. to £4 15s. on rails. Arsenic is variable, and about £19 to £19 10s., ex ship. Coal Tar Products are dull, and Pitch may be quoted 17s. per ton, *f.a.s.*, Manchester Ship Canal. Naphthas continue steady, but Benzols have a downward tendency. Ammonia Alkali, 58 per cent., varies from £4 to £4 5s. on rails. Alum is dull at £4 15s. to £5 per ton for loose lump on rails, £5 2s. 6d. lump in tierces, and £5 10s. ground in bags.

LIVERPOOL REPORT.

APRIL 20, 1898.

Business is still slack, and quotations have undergone but little change since last week.

GINGER.—Sales of Sierra Leone are reported at 18s. per cwt.

KOLA NUTS.—124 bags of dried sold *ex* quay at 1½d. per lb.

OILS (FIXED) AND SPIRITS.—*Castor* is still quoted at 3¼d. to 3⅝d. per lb. for Calcutta "good seconds," and 3¼d. per lb. for French first pressure, in which a good amount of business is passing. *Olive* is steady in price, but not much inquired for. Spanish sells at £31 10s. to £32 10s. per tun. *Linseed* of Liverpool make is very firm at 17s. to 17s. 6d. per cwt. *Cottonseed*: Liverpool refined is a turn dearer, selling now at 15s. 6d. to 16s. 6d. per cwt. *Spirits of turpentine* is firm at 25s. per cwt.

SEEDS.—*Canaryseed* is selling fairly well at good rates for Turkish, of which 350 bags have changed hands at 26s. to 26s. 6d. per 464 lbs.

LINSEED—Is a very strong market, and holders are firm in their requirements. 1000 bags of good "feeding" River Plate secd sold, ex-quay, at 34s. per 416 lbs.

The other items usually noticed in this calumn are without change from last report.

WEDNESDAY, APRIL 27.

FORFARSHIRE AND DISTRICT CHEMISTS' ASSOCIATION, at 4 p.m.
Annual Meeting and Dinner (5.30 p.m.) at the Imperial Hotel, Arbroath.

ROYAL PHOTOGRAPHIC SOCIETY.
Exhibition at the Crystal Palace.

THURSDAY, APRIL 28.

CHEMISTS' ASSISTANTS' ASSOCIATION, at 9 p.m.
Short Papers by Members.

FRIDAY, APRIL 29.

PUBLIC DISPENSERS' ASSOCIATION, at 8 p.m.
"Antitoxins," by Dr. G. Dean.

ROYAL INSTITUTION, at 9 p.m.
"Magneto-Optic Rotation and its Explanation by a Gyrostatic Medium" (with experiments and illustrations), by Professor Andrew Gray.

SHEFFIELD MICROSCOPICAL SOCIETY, at 8 p.m.
Demonstration on "Some Pathogenic Micro-Organisms," by Dr. Waddy.

Advertisements.

(Received too late for Classification).

PIETERMARITZBURG, NATAL.—ASSISTANT wanted with Minor qualification. Must have experience in good business, and be quick and accurate dispenser, and thoroughly steady. Three years' agreement to be signed. Second-class passage paid. Room supplied, but not board. Salary £12 10s. per month first year, £13 10s. second year, and £15 third year. Apply, stating experience, to D. O., care of John Murdoch & Co., 52, Leadenhall St., E.C.

A GOOD business Man as ASSISTANT at once, in suburban good-class business. Knowledge of photography preferred, and preference given to one requiring in-door berth for some time. Qualification not essential. Applications with all particulars to PHARMACIEN, "Pharm. Journal" Office, 5, Serle St., London, W.C.

EXCHANGE.

Prepaid Notices not exceeding thirty words, including name and address, are inserted at a fee of Sixpence each, if they do not partake of the nature of ordinary advertisements. For every twelve words (or less) extra, the charge is Sixpence. A price, or two initials, will count as one word. The fee for use of the Serle Street address, including re-direction of replies, is Sixpence. The right is reserved to omit any notice if considered necessary. All communications should be addressed "PHARMACEUTICAL JOURNAL," 5, Serle Street, Lincoln's Inn, London, W.C., where notices can be received until 10 a.m. on Thursdays.

OFFERED.

Books.

Books! Books!! Books!!! Various assortment, Latin, French, Greek, and Geometry, etc., from one-third to one-half published price, good condition; for list, with prices, apply to—Herbert Jackson, 432, Victoria Street, Grimsby.

Students' and Chemists' Books offered and wanted, for cash or exchange; purchasers please state requirements; sellers send list stating edition, date of publication, condition, and price.—Gower, Publisher, Waterloo, Liverpool.

Optical and Photographic.

A few dozens of ¼-plate and ½-plate Ilford Bromide Paper, all kinds; also a few ¼-plate and ½-plate Ilford Lantern-plates, in good condition; offers wanted; samples at half price, post free.—Lees, Chemist, Oldham.

Miscellaneous.

Magic Lanterns, second-hand; triples and biunials; oxyhydrogen microscope; marvellous pamphengos oil; lantern gives 14-ft. picture; 60,000 slides and effects; 4-in. 4-wick lanterns, 18s. 6d. each, bargains; illustrated list post free, 2d. Animated photographs: A splendid machine for £9 9s.—Hughes, Brewster House, 82, Mortimer Road, Kingsland, N.

Surplus Stock.—Dozen each Williams' Carter's, ann Cockle's Pills, Steedman's Powders (small), half-dozen large £3 1s. Cash with order, or London references if fresh customers, and cheque on receipt, carriage paid —Eastman, Forest Lane, Stratford.

Drugs and Chemicals.

25 oz. Quinine Sulphate, B.P., 11d. per oz., carriage paid.—Wells Wood, Chemist, Albion Parade, Stoke Newington, London, N.

What offers? 1 oz. Chinosol, 1 oz. Antikamnia, 1 lb. Iodoform, ½ lb. Liebreich's Essence Pepsin, ¼ lb. Bromidia, 3 B.W. Peptonising Powders (tubes), 1 oz. Piperazin, together or separate.—Chemist, 156, Green Lancs, N.

Apparatus and Machinery.

Chemical Balance. Write for particulars. Maw's No. 10 Medicine Chest. Specie Jar, 9 ins. diameter, handsomely labelled. Wenham Gas Lamp, 7s. 6d.—Allen, Chemist, Plymouth. Patents half price. Write for list.

WANTED.

Wanted.—Spark Coil, Battery, and any Apparatus suitable for X ray and spectroscopic work. Particulars to—Markham, 71, Queen Street, Hull.

The Questions, Practical and Oral, asked at the Examinations for Assistants, Apothecaries' Hall, London, held during 1897, and in January and April, 1398. State price.—A., "Pharm. Journ." Office, 5, Serle Street, London, W.C.

Old Platinum Utensils or Scrap, also Old Electric Lamps wanted for prompt cash by P. Rowsell, 14, Walcot Square, London, S.E.

Wanted.—'London Latin Pharmacopœia,' 185 1 edition. State price.—H. Wiley, York Road, West Hartlepool.

Wanted.—Remsen's 'Organic Chemistry' and Muter's 'Analytical Chemistry,' recent editions.—Davis, 7, Sidney Terrace, Weston-super-Mare.

Photographic Tourists' Guide.

IN the following list an asterisk (*) preceding the name of a town indicates inability to find that any chemist in the place has a dark-room, though there may be one or more who stock photographic materials. Where there is a dark-room, the fact is indicated by a capital "D" following the name and address, and except where the dark-room is at an hotel, it may mostly be taken for granted that plates and other photographic materials are stocked. The dark-rooms can, in some cases, be used for developing as well as changing, and even where there is not a dark-room, it is usually possible to get plates changed.

Kidderminster (Worcester).

Steward & Westover, Medical Hall.
G. H. Taylor, 2, Worcester St. D.

Kidderminster is about two and a half miles distant from Habberley Valley, a popular resort of tourists and holiday makers, where there is good scope for camera work.

Kilmarnock (Ayr).

D. McNay, 12 & 14, Bank St. D.

Kilmarnock is the principal town of the county. The whole district is associated with the poet Burns and the covenanting period.

King's Heath (Warwick).

T. H. Foden, High St.

King's Heath is a suburb of Birmingham.

Kinross (Kinross).

W Dow, The Apothecary Hall. D.

Kinross is surrounded by very fine scenery, and is near to Lochleven, which has a castle in the centre, where Mary Queen of Scots was imprisoned. The Falls of Devon in the neighbourhood make pretty pictures.

Kirkby - Lonsdale (Westmoreland).

Royal Hotel. D.

Kirkby-Lonsdale is on the river Lune, which is here crossed by a picturesque bridge of three lofty arches. The surrounding scenery is very fine.

Lancaster (Lancs).

W. Briggs, 21, Cheapside. D.
W. Wyatt & Co., 34, New St., and 4, Stonewell. D.

Lancaster is a convenient centre for photographic work at the seaside (Morecambe) and in the Lake district There are many places of interest in the neighbourhood, including the Castle, while the river scenery is worth attention.

Leamington (Warwick).

C. Davies, 90, Warwick St. D.
Smith & Son, 102, The Parade. D.

Leamington makes a beautiful centre for doing Warwickshire, that garden county, filled with natural beauty and historical associations. Some pretty bits may be obtained on the banks of the Leam. At Warwick Castle, Guy's Cliff, and Kenilworth, there is everything almost to be desired.

Lechlade (Glo'ster).

G. A. Davis, Chemist.

Lechlade is pleasantly situated near the head of the River Thames, which affords some very pretty views. A plate or two may also be used on Fairford Church with its windows.

Ledbury (Hereford).

V. W. Meacham, High St. D.

Ledbury is surrounded by delightful scenery; other objects of interest are Eastnor Castle, the quaint Market House, and fine church.

Leeds (Yorks).

W. S. Baxton, Upper Town St.
Bramley. D.
G. W. Kendall, 163, Dewsbury Rd.
Reynolds & Branson, 14, Commercial St. D.

Leeds has some good public buildings, the Yorkshire College, Town Hall, Exchanges, etc. Kirkstall Abbey and Adel Church (1140) should also be noticed.

Leek (Stafford).

Johnson & Sons, 5, Stanley St D.

Leek is in the midst of some of the finest scenery in Staffordshire. Near by is Rudyard Lake, a favourite resort of cyclists.

Leicester (Leicester).

H. W. Clear, 66, Belgrave Gate. D.
F. W. Goodess, Hotel St.
H. Pickering, High Cross St. D.
S. Wand, 18, Haymarket.
J. L. West, 3, Market St. D.
J. Young, 16, Gallowtree Gate. D.

Leicester has many old buildings, including monasteries and churches, Leicester and Belvoir Castles, Jewry Wall, Roman Pavement, also Bradgate and Wistow Parks, Charnwood Forest, Longliffe, Woodhouse Eaves, and other places of interest.

Leigh (Lancs.)

W. Hampson, 73, Chapel St. D.

Leigh is near to Chat Moss, which is a suitable place for picture making and sky effects.

Leighton Buzzard (Bedford.)

Herington & Son, 16, Market Sq. D.
W. F. Piggott, 7, High St. D.

Leighton Buzzard is in a district purely agricultural. The Market Cross and the old parish church are amongst the objects of interest, and in the immediate vicinity are the houses of several county families, *viz.*, Earl Rosebery's seat, "Mentmore," Duke of Bedford's seat, Woburn Abbey, and the seats of Earl Brownlow and Lord Rothschild.

Leith (Edinburgh).

A. D. Guthrie, Bonnington. D.

Leith harbour, docks and shipping, together with Newhaven harbour, the village and fisher folk, provide many opportunities for the camerist to obtain interesting pictures. The City of Edinburgh also offers a large field for work, while a branch railway line runs to Evamond, and steamers to the Forth Bridge.

Leominster (Hereford).

Ellwood & Son, 25, Draper's Lane. D.

Leominster has a quaint old timber Butter Cross (1633). The church presents every style of architecture from Norman to Perpendicular.

Lerwick (Shetland).

A. L. Laing, Chemist.

Lerwick is a first-class holiday resort for photographers who care for wild rocky scenery, and visitors there will find plenty of material for pictures.

Leytonstone (Essex).

J. J. Ferguson, 143, Cann Hall Rd. D.
Matthews & Son, 722, High Rd.

Leytonstone is situated near to Epping Forest, where some very pretty bits may be obtained; a few plates may also be used in Wanstead Park.

Lichfield (Stafford).

J. B. Bayley, 36, Bore Street. D.

Lichfield Cathedral affords ample scope for both interior and exterior work. The elaborately sculptured west front requires a short focus lens. Chantrey's "Sleeping Children," inside the cathedral, should not be missed. In addition to Dr. Johnson's statue and birthplace, there are many quaint houses, and lots of pictures in the vicinity.

Limehouse (Middlesex).

Hatfield & Son, 817, Commercial Rd.

Limehouse forms a part of the East End of London. The principal objects of interest are the docks and Blackwall Tunnel, which is near.

*Limerick (Ireland).

J. Laird and Co., 116, George St.
P. Hartigan, Royal George Hotel. D.

Limerick Cathedral was founded in the 12th century. It has a fine tower, and the exterior is embattlemented. In the nave are Early English arches. The Roman Catholic Cathedral is a fine Gothic structure, and the bridges across the Shannon are deserving of notice.

Lincoln (Lincoln).

Battle, Son & Maltby.
J. T. Birkbeck, 5, Bailgate. D.

Lincoln is very ancient, and contains very interesting specimens of early architecture, notably the Castle; the Newportgate; the Stonebow Gateway, supporting a guildhall of mediæval architecture, the Jew's House, etc. The chief glory of the place, however, is the cathedral, admittedly one of the finest in England.

Linlithgow (Linlithgow).

C. M. Spence, 133, High St. D.
C. M. Spence, 67, High St. (Cross). D.

Linlithgow has been called "The Windsor of Scotland." Magnificent historical palace and Loch. St. Michael's Church. Numerous items of interest might be got in High Street, such as the beautiful and ancient (1628) Cross Well; St. Michael's Well; and ancient buildings. Other historical ruins in this district are Niddrie Castle, Blackness Castle, Binn's Tower, Haining Castle, and at side of River Avon an ivy-clad ruin of an old Carmelite Priory. There is also a fine glen—Carribber Glen—with the ruins of Rob Gib's Castle; Torphichen Priory; a splendid aqueduct, over which the Union Canal runs; a viaduct, over which the N. B. Edinburgh and Glasgow Railway passes; remains of Roman fortifications; and lovely landscapes, interesting historically and photographically.

Littlehampton (Sussex).

J. H. Longman, Beach Rd. D.

Littlehampton presents some splendid sea and river views, while Arundel Park and the old churches in the neighbourhood are worth attention.

Liverpool (Lancs).

R. H. Aspinall, 1, Leece St.
J. B. Beckwith, 139, Oakfield Rd.
Symes & Co., Hardman St.
F. Walker, Post Office, Beacon Lane. D.
J. Wood, 118, Northbrook St.

Liverpool, in addition to its numerous fine public buildings, is especially interesting to hand camerists on account of its shipping, both the docks and Landing Stage providing many good subjects. Some good marine views are also to be obtained.

*Llandilo (Carmarthen).

W. Williams Rutland House. D.

Llandilo is on the right bank of the Towey, in South Wales In the vicinity are limestone, flag, and mica slate quarries.

Llandudno (Carnarvon).

G. H. Brookes, Medical Hall.

Llandudno presents the usual snapshot subjects on the shore in the morning, with the arrival of the Liverpool steamer at 1; the Happy Valley, at 3·30; the eastern side of Great Orme, for breaking waves in stormy weather; Conway shore, for fine sunset effects; St. Tudno's Church (top of Great Orme), in the afternoon.

Llanelly (Carmarthen).

J. Davies, Stepney St. D.

Llanelly is a seaport with large docks. There are large copper works, also silver, lead, iron and tin works, potteries, chemical works, etc., in the vicinity.

Llangollen (Denbigh).

E. D. Jones, Medical Hall.

Llangollen is a popular holiday resort, in the heart of some of the most beautiful scenery on the river Dee. There are also many places of interest within easy reach.

Llanidloes (Montgomery).

T. P. Marshall, Trewythen Hotel. D.

Llanidloes has an interesting Church, built partly with materials from Cwmhir Abbey. There are extensive lead mines in the neighbourhood.

London.

J. Adams, 323, Kentish Town Rd.
W. H. Allen, 3, Liverpool Terrace, Barking Rd.
W. G. Blackham, 675, Holloway Rd., and 510, Hornsey Rd. D.
J. Brooks, 7, Broadway, East Ham.
C. W. Brumwell, 118, Holland Park Avenue. D.
J. Chilwell, 6, Weymouth St.
G. Daniel, 630, Holloway Rd.
G. W. Evans, 239, Hammersmith Rd.
F. H. Glew, 156, Clapham Rd. D.
A. W. Hanson, 26, East Dulwich Road. D.
W. Ham, 176, High St., Hounslow.
G. A. Hodgkinson, 254, Goswell Rd.
G. A. Hodgkinson, 9, Chapel St, Somers Town.
R. Howden, 28, Gracechurch St.
Lockyer Bros., High St., Deptford. D.
J. C. Meacher, 61, Stroud Green Rd. D.
T. A. C. Newton, Carlton Rd., Kilburn.
Owen and Co., 142, Fortess Rd.
G. Pasco and Son, 57, Hackney Rd.
J. H. Read, 90, Victoria St.
C. B. Robeson, Pavement, New Cross.
Rouch & Co, 180, Strand. D.
W. Sharman, 274, Mare St
G. J. Thomas and Co., 411, Mare St. D

London possesses so many public buildings and other places of interest to photographers that no attempt can be made in the space at disposal to enumerate them. Apart from the "fixtures," however, the river, streets and parks offer to the camerist an endless panorama of living pictures.

*Londonderry (Ireland).

Maxwell, Greer & Co., Ltd, Foyle St. D.

Londonderry has a triumphal arch—one of the gates of the city—erected to commemorate the siege of 1689, and a column erected in honour of George Walker, governor of the city at the time. There are two cathedrals, and other important public buildings. The harbour affords opportunities of snapshot work.

Longton (Staffs).

R. Prince, Market Place. D.

Longton is situated in the district of china and earthenware manufacture, and close by are ironworks and collieries.

Loughborough (Leicester).

J. H. Hepworth, 9, Church Gate. D.

Loughborough parish church is in the Decorated style, dating from the fourteenth century, but has a Perpendicular tower. There is also a bell foundry here, where the great bell of St. Paul's was cast. Charnwood Forest is not far away.

Louth (Lincoln).

Smith and Elkington, Mercer Row. D.

Louth.—There are a number of old churches in the Marshes, and some pretty wooded scenery on the Wolds.

Lowestoft (Suffolk).

G. E. Clarke, 129, London Rd. D.
Fryer & Co., Pier Pharmacy. D.
J. W. D. Hume, London Rd. D.
A. Wright, High Street.

Lowestoft offers splendid scope for snapshot and marine work, the sea, yachting, and fisher-folk providing many opportunities for pictures. There are also several interesting old churches.

Ludlow (Salop).

G. Woodhouse, 45, Bull Ring. D.

Ludlow has many old houses and buildings, also an ancient castle and some good river scenery.

Luton (Bedford).

H. E. Cocker, 81, George St. D.
Wootton & Webb, Market Place.

Luton possesses a very fine old parish church and a few antiquated buildings. Good landscapes may be obtained, and in a park near are a number of very large trees. At Someries, two miles away, are the remains of an old castle.

Lymington (Hants).

G. H. Gare, 24, High St. D.

Lymington is a picturesque little town situated on the Solent, and its neighbourhood offers special scope for the photographic artist. On one side there are the many beauties of the New Forest, while from here also is the shortest passage to the Isle of Wight (twenty minutes only from Yarmouth) where splendid views of Totland and Alum Bay and the Needles are to be had. The possibilities of the photographer from this little town are far too numerous and varied to be here described.

*Lymm (Cheshire).

C. E. Arden, The Bazaar. D.
David Hooley, Fleece Hotel. D.

Lymm is a very picturesque neighbourhood There is an old Roman cross with stocks. It is a good headquarters for surrounding places of interest: Rosthorne, Arley Hall, the private chapel at High Legh, with its splendid interior; quaint old church at Warburton.

*Lynton (Devon).

C. Hipp, Valley Rd. D.

Lynton is noted for its picturesque situation, 428 feet above Lynmouth, which Shelley called "the finest spot, except Cintra and Arrabida," he ever saw.

Lytham (Lancs).

H. H. Gourlay, 1, Church Rd. D.

Lytham objects of interest are the Green Drive, with picturesque pond and lodges; Lowther Gardens, Market Hall, St. Cuthbert's Church, Promenade, with St. Mary's Church, windmill, and lifeboat house. There are to be obtained also beautiful sunset and calm-sea pictures. The golf-links are on the seashore.

Macclesfield (Cheshire).

J. Hodkinson, 101, Mill St. D.

Macclesfield is situated on the river Bollin. It has a fine old church, founded by Queen Eleanor in 1278, a town hall, and other public buildings, as well as a park of 16 acres.

Maidenhead (Berks).

Thompson & Walton, 69, High St.
A. Upson, 35, High St. D.

Maidenhead.—There is very pretty river scenery on the Thames in the neighbourhood. Windsor Castle and Burnham Beeches are amongst the places of interest.

Maidstone (Kent).

Messrs. May & Co., 59, Week St. D.

Maidstone is a capital centre for a photographic holiday. The fine old church, 1381, is a miniature cathedral. Scores of old houses abound in the streets. Just outside the town there is a wide field of work for the camera.

Maldon (Essex).

A. W. Heaver, 64, High St. D.

Maldon affords ample scope for the camera, as it provides both land and sea scape. It boasts of many objects of interest to the antiquarian as well as the photographer, amongst which are the Tower or Moot (1440), with Council Chamber, in which are exhibited fourteen of the old Borough charters dating from 1290. St. Mary's Church (1056), All Saints' Church, which furnishes a unique example of an equilaterally triangular tower, the Tower of St. Peter's Church, and Becleigh Abbey, founded in 1180.

Malling, West (Kent).

H. C. H. Oliver, High St. D.

Malling has many archæological objects in its neighbourhood, including Malling Abbey and St. Leonard's Tower, both built by Gundulf.

*Mallwyd (Merianeth).

J. Steadman, Penarth Arms Hotel. D.

*Malton (Yorks).

G. J. Jones, 8, Wheelgate. D.

Malton is in both the East and West Ridings. It has a Norman church, 1150, and a free grammar school, founded 1545.

Malvern, Great (Worcester).

W. & J. Burrow, Devereux Gallery. D.
J. Need, Lygon House. D.

Malvern, West (Worcester).

J. Need. D.

Malvern is a favourite resort for photographers. From the summit of Worcestershire Beacon extensive views are obtained. The church is a fine cruciform structure, and Malvern College is a handsome building.

Manchester (Lancs.).

S. Broadbent, Stretford. D.
A. Bushby, 41, Stockport Rd. D.
J. T. Chapman, Albert Sq. D.
A. Gilmour, 451, Stockport Rd. D.
W. Maskew, 285, Oxford St. D.
J. W. Walton, 427, Bury New Rd., Higher Broughton. D.
J. Woolley, Sons & Co., Ltd., Victoria Bridge. D.

Manchester Cathedral, built in 1422, is a fine Gothic structure. The Town Hall and many other public buildings are worthy of note. There are also statues and monuments. The streets present many very busy spectacles, and some of the warehouses are of gigantic proportions.

Manningham (Yorks).

R. W. Silson, Church St. D.

Manningham is a suburb of Bradford; the latter has already been mentioned in this guide.

Mansfield (Notts).

Agar Bros, 14, Westgate. D.
J. A. Pegg, Church St. D.

Mansfield is in close proximity to Newstead Abbey, Rufford Abbey, Hardwick Hall, The Dukeries, and Sherwood Forest. The Ancient Rock Houses, or Cave dwellings, at the east end of the town, are well worth attention.

March (Cambs)

P. H. Davies, High St. D.

March parish church has a fine Perpendicular clerestory, with a splendid roof.

Markinch (Fife).

J. C. McCorquodale, The Pharmacy.

Markinch is situated in a picturesque part of Fifeshire (the "Kent" of Scotland), and is surrounded by charming landscape materials. Lochleven and Falkland Palace are within easy distance.

Margate (Kent).

W. S. Harvey, 20, Market Pl. D.

Margate is within walking distance of the ruins of various castles and abbeys, and the surrounding country is charming. The sands are the happy hunting grounds of the snap-shottist in search of novel and humorous pictures. The sunsets are almost unrivalled, and Margate is one of the few places in England where both the rising and setting of the sun can be viewed on the sea.

Market Harboro' (Leicester).

H. Dean, Desborough. D.

Market Harborough is situated amid woodland scenery and has some ancient buildings, notably a fine Perpendicular church, built by John of Gaunt.

*Marlborough (Wilts).

Angel Temperance Hotel. D.

Marlborough High Street is one of the widest in the Kingdom, and has several ancient houses. St. Mary's Church, with its Norman doorway (wide-angle lens at mid-day), the College chapel, especially the interior and the surrounding view (permission of Bursar required), Savernake Forest, abounding in views, and many other objects of interest may be noticed.

Maybole (Ayr).

R. Tocher, 10, High St., and Ardmay Cottage. D.

Maybole is in the "Land of Burns." It lies between Ayr and Girvan, surrounded by the most picturesque scenery. It is in the neighbourhood of the Castles of Culzean, Blairquhan, Cloncaird, Cassillis, Kilkerran, etc., and also the historic places of Turnberry, Crossraguel, Maybole Castle, Dunure Castle, Colleyiohr Church of Maybole, etc. The roads for cycling are excellent.

*Malton (Yorks).

G. J. Jones, 8, Wheelgate. D.

Malton is situated on the river Derwent. It has two ancient churches one in the Norman, the other in the later English style.

Mayfield (Sussex).

W. F. Crowther, High St. D.

Mayfield has very pretty landscapes and other objects of interest. To be specially noted are the Middle House (1754), the Convent, the Lower House (Tudor period), Stow House (1664), and old-fashioned inns and cottages, woods, etc.

Melrose (Roxburgh).

Bogie and Brown, Exchange Bldgs D.
D. F. Johnstone, High St. D.

Melrose Abbey is considered the finest ruin in Scotland. Abbotsford is in the neighbourhood, also Dryburgh Abbey, Rhymer Glen, etc.

Melton Mowbray (Leicester).

R. W. Brownlow, 6, Cheapside. D

Melton Mowbray has fine residences of notable people, besides many village scenes and churches worth taking.

Merthyr Tydfil (Glamorgan).

Thomas & Sons, 64 & 143, High St. D.

Merthyr Tydfil is on the River Taff. The old church, the Hospital, and Cyfartha Castle, of Roman architecture, are well worth taking. A mile northwest is Cwm Ffrwd, where grand country, river, and waterful scenes are to be obtained. The Cefn Bridge, with its fifteen magnificent arches, if taken from the Cwm Ffrwd side, makes a rare picture.

Merton (Surrey).

F. T. Bowen, 240, High St. D.

Merton has charming country scenery around it.

Mexborough (Yorks).

R. J. Shields, 56, High St. D.

Mexborough is situated in the West Riding of the county.

EXTRACTS FROM CONSULAR REPORTS.

Artificial Wine.—Consul Neville-Rolfe in his report for the Consulate of Naples 1896, referred to the German manufacture of a certain liquor from barley having the character of port wine (see *P. J.* [4], iv., 502). The paragraph was at the time facetiously handled by the English press, but in his latest report he confirms his statement, and says that the *Rivista Agraria*, an agricultural journal, states in its issue of November 7, 1897, that a large establishment is at work at Wandsbek, near Hamburg, producing "Malten-Weine" by an entirely new process of fermentation, the liquor having the characteristics of the wines of Southern Europe. The factory is reported to produce 10,000 hectolitres. The original discovery of the process was due to Pasteur, but the practical application of the theory was left to a Danish scientist, Mr. Hansen, and a German bacteriologist, Dr. Sauer. The barley is malted and carried to the point of fermentation, when lactic acid and vinous ferments are introduced into it, and it is then treated by sundry variations of temperature. When fermentation is completed the new wine is put into huge vats and then into casks, where it is subjected to artificial maturing by being raised to a high temperature. The wines are said to be noted for the large percentage of alcohol they contain, derived entirely from fermentation and not from added alcohol. The product is sold and described as "Highly fermented barley wine."

The Aruba Phosphate Company has suffered severely during the past few years through the large outputs of phosphates in Florida, U.S.A., which have brought down prices to very low figures, but the Company has the satisfaction, such as it is, of knowing that the export last year was about 55 per cent. more than in 1896, Great Britain being the best market, while formerly the greatest part of the phosphate of lime went to Germany.

The Cyanide Process for the extraction of gold from ore has during the last two years been adopted by the Aruba Island Gold Mining Company, Limited, with good results, a not inconsiderable sum of money having been obtained from the tailings, which had previously been laid aside. If the crushed ores can be worked in the dry state the cyanide process promises much better results than were formerly obtained.

The Export of Aloes and Orange-Peel from Curaçoa during 1897 was dull and unprofitable. In former years aloes had been exported to advantage, but, owing to the system of taxation in that and the sister islands from which this article is brought to Curaçoa for exportation, a duty was imposed on both producers and exporters; as Consul Jesurun remarks, "a most contradictory method of promoting the export trade of the colony." However, in future, as a result of a recommendation by the said Consul, who was a member of a commission to regulate the tariff, the import duty has been reduced to ½ per cent.

The Customs Tariff of France is based to a great extent on the actual weight of the article imported, except in the case of wines and spirits. Therefore, as this system is applied to manufactured goods as well as to raw material, Consul Hertslet is of opinion that British manufacturers should carefully consider how far lightness can be secured without loss of quality. Sheffield cutlery, it is stated, has suffered to a considerable extent through German competition in the French market, solely on account of the greater lightness of German articles, and their consequent admission into France on payment of less duty than that levied on English cutlery.

The Trade Mark "Made in Germany," according to a report on the trade of Samoa, is not confined to articles of German manufacture, but is frequently employed in the case of goods originally made in Manchester and purchased by German firms, who mark them with German trade marks and export them to other countries. One traveller doing a large business in Samoa and the adjoining colonies in the Western Pacific is reported to have stated in explanation, "The English manufacturers will not send out the goods, so we do it and make the profit."

The Imports of Chemicals into Ancona, consisting of acids, alkali, sulphates and oxides, during 1897 amounted to 2738 tons, of which 926 tons were exported from Great Britain, the remainder being sent from Austria-Hungary and Germany.

PARLIAMENTARY NOTES.

The Death of Col. Sir V. Majendie will occasion some delay in the presentation of the Report of the Petroleum Committee. The deceased gentleman has for the past few meetings of the Committee been the sole witness, and his evidence has been rather in the form of an epitome of the results of the whole petroleum investigation than the casual opinions of a Departmental official. In fact, there is reason to believe that the Committee were relying on the witness to reduce the mass of details to manageable proportions and to furnish material for the draft report. It was a work for which he was eminently fitted and, apart from the regret felt at the loss of a distinguished personality, the public will generally deplore the sudden interruption of his valuable services in this direction. The Committee will take no more evidence and will apply itself diligently for some weeks to the appalling task of drafting conclusions and recommendations.

Interest in the various non-official Bills in the House is slowly but surely dying as the hopelessness of their chances of progress becomes more and more apparent. We are unwilling to include the Pharmacy Bill in this category, but candour compels us to admit that the infinitesimal "Noes" have the advantage just now. The Bill is on the notice paper as we go to press, but that fact counts for little unless the official business is despatched before midnight. Early opposition is now producing its effect, and if Fate is not kinder within the next few weeks the Session will be barren so far as pharmaceutical legislature is concerned.

Early Closing is in the same parlous condition. The two Shop Bills have not even reached a second reading. No opposition is tabled, in the list of notices, but each time the measures are reached there are verbal protests and consequent postponement. The Bills are now down for Tuesday, May 10—a day when academic discussions and counts out are the rule and legislation the exception.

Economy and Efficiency is the motto of Dr. Clark (Caithness)—especially economy. It has been brought to his notice that the Privy Council has so little to do that the subordinate branches of the Department have been reduced. Forthwith it occurs to him that it is a sinful waste to pay the Clerk to the Council £1700 a year and his assistant £1200 for looking after a diminishing establishment, and he therefore proposes to ask the First Lord of the Treasury if this scandal cannot be abolished by amalgamating the two offices when a vacancy next occurs in either of them. It is to hoped that the honourable member will not dwell too much on the lack of business in the Privy Council Office or they may turn out some of their pigeon-holes and startle the House with a popular Poisons Bill!

Lead Poisoning.—Replying on Friday 22 to Mr. Coghill (Stoke-on-Trent), the Home Secretary stated that he had two eminent scientific experts engaged in researches having for their object the discovery of an innocuous glaze. They would report on the comparative danger or safety of different materials. The wider question of how far materials found to be comparatively harmless could be practically utilised was one which he thought could only be decided after experiment by the manufacturers themselves. He therefore invited their co-operation in following up the investigations now being undertaken by the Department. Chemical experts ought to be in request in the Potteries.

When?—The President of the Local Government Board was delightfully candid on Friday when Mr. Channing asked him when he proposed to bring in the Bill to amend the Food and Drugs Act. "When?" replied the Minister, "as soon as I see any prospect of being able to make progress with the measure." The Delphic Oracle could not be more oracular.

Hydrogen Sulphide is not to be allowed to roam unmuzzled at South Kensington to the detriment of the works of art in the reconstituted Museums. Replying to Sir S. Montagu, Mr. Akers-Douglas has pledged his word as an honourable First Commissioner that laboratories and art museums shall not reside under one roof when the new buildings are completed. A Departmental Committee is now engaged in allocating the space at their disposal for the rearrangement of the art and other treasures of the Science and Art Department.

British Pharmacopœia (1898) Synopsis.

The second edition of the 'Pharmaceutical Journal Synopsis of the formulæ and processes of the new British Pharmacopœia—which will become official forthwith—is now ready, and specimen copies will be sent post free, at 4d. each, on application to Messrs. Street Bros., 5, Serle St., Lincoln's Inn, London, W.C. The prices for quantities are 3s. per dozen, 18s. per hundred, and £7 10s. per thousand, carriage paid. Arrangements can be made to print the purchaser's name and address on a special wrapper in quantities of one hundred or more.

PHOTOGRAPHIC TOURISTS' GUIDE.—This guide will be completed next week, and will then be reprinted in book form. Readers who have not yet applied for a copy should fill up the coupon which appears in our advertisement pages this week.

MR. J. HOLDING, chemist and druggist, has been re-elected one of the churchwardens of St. Andrew's, Thornhill Square, Barnsbury, N.

EDINBURGH PHARMACY GOLF CLUB.—The final tie in the Spring Competition for the "T. and H. Smith" Trophy was played on the Braids on Saturday, April 23. After some good play Messrs. J. D. Sinclair and W. J. Walker, jun., defeated their opponents, Messrs. J. H. Murdoch and Wilson, by four holes up and three to play.

THE BRITISH INSTITUTE OF PREVENTIVE MEDICINE, after May 1, 1898, will be transferred from 101, Great Russell Street, W.C., the address at which it has been for some time past, to Grosvenor Road, London.

FORFARSHIRE DISTRICT CHEMISTS' ASSOCIATION.—The second annual meeting of the Association was held in the Imperial Hotel, Arbroath, on Wednesday, April 27. Mr. Charles Kerr, President, in the chair. There was a representative gathering. The Chairman, in referring to the work done by the Association, congratulated the members on the continued prosperity and evidence of lively interest in those matters affecting the craft. They had expressed warm approval of the Pharmacy Acts Amendment Bill at their last gathering, and although it had not yet become law, they sincerely hoped it would soon do so. The Hon. Sec. and Treasurer, Mr. James Russell, read the financial statement, which showed a satisfactory balance. Mr. Charles Kerr and Bailie Doig (Dundee) were re-elected President and Vice-President respectively; Mr. William Cummings (Dundee) waselected Secretary and Treasurer in place of Mr. James Russell, who retired after twenty-five years' service. The previous year's Committee was re-elected. Mr. J. Rutherford Hill then opened a discussion on "Regulations for the Sale of Poisons," a detailed report of which is held over until nextweek.

CHEMISTS' ASSISTANTS' ASSOCIATION.—This Association met on Thursday, April 21, at 73, Norman Street, W. As it was the first meeting after the Easter holidays, the evsning was devoted to proceedings of a musical and conversational character, songs etc., being contributed by Members.

MR. A. H. WADDINGTON, Chemist and Druggist, of Bradford, at the annual meeting of the Bradford branch of the Royal Society for the Prevention of Cruelty to Animals, was presented by the Mayor with a diploma of life membership of the Society, in recognition of his services as Hon. Sec. during the past five years.

ELLIMAN'S EMBROCATION.—The action by Messrs. Elliman, Sons & Co. against Flather, the object of which was to restrain the defendant from advertising and offering for sale recipes for the manufacture of Elliman's embrocation or liniment, or of an embrocation closely resembling it, came on for trial before Mr. Justice North on Saturday, April 23, as a short cause, the defendant not having appeared.—Mr. Ingpen appeared for the plaintiffs, and on his application his Lordship granted a perpetual injunction restraining the defendant advertising such recipes, or from using the name Elliman in connection with any recipe for the manufacture of embrocation or liniment, or from in any way representing or enabling or inducing others to represent or offer for sale embrocation or liniment not of the plaintiff's manufacture as theirs. He was also ordered to deliver up for destruction any circulars, advertisements, etc., which would be a breach of the above injunction, and to pay the costs of the action. —The plaintiff did not ask for damages.

THE REYNOLDS AND BRANSON'S CRICKET CLUB list of fixtures for the coming season, 1898, is to hand. Some twenty matches have been arranged, the first being on April 30, and the last on September 3. Mr. R. Reynolds is the President of the Club; Mr. F. Islip, Captain; Mr. H. Goodson, Hon. Secretary; and Mr. G. Jackson, Treasurer. The other officers are Messrs. F. W. Branson and R. F. Reynolds, Vice-Presidents; Mr. H. Hudson, Vice-Captain; Mr. J. W. Price, Assistant-Secretary; Messrs. E. R. Dixon, T. H. Goodson, E. B. Harrison, J. H. Jackson, and W. Key, forming the Committee. The Club ground is at New Peacock, Elland Road, Leeds.

MESSRS. WHITTAKER & Co. announce a second edition of 'The Chemists' Compendium," by C. J. S. Thompson. The additions to the work will include—A Complete Synopsis of the New British Pharmacopœia, A Synopsis of the United States Pharmacopœia, A Synopsis of the French Codex, A List of Modern Remedies, New Photographic Formulæ, Formulæ for preparing Medicated Wools and Surgical Dressings, and Miscellaneous Formulæ, including Recipes for all well-known unofficial preparations.

MR. JAMES WHITTLE, Chemist and Druggist, of Bedlington, has purchased the business carried on by the late Mr. T. R. Davidson, at 30, Bridge Street, Morpeth.

ACCIDENTAL POISONING CASES.—An inquiry respecting the death of Dr. Douie, aged 39 years, was held at Sevenoaks, on Wednesday, April 20. The evidence showed that the deceased, who was in his usual health on the Monday, was about to visit his patients, when he called to his wife to procure some mustard and water, explaining that he had made a mistake. Subsequently he added that, feeling thirsty, he had hurriedly taken up a glass and drunk a quantity of water. Afterwards, noticing a peculiar taste, he was horrified to find that he had used a glass which had previously contained tincture of nuxvomica. Dr. Marriott was called in, but so rapid was the action of the poison that the emetic did not take effect in time, and Dr. Douie expired within thirty minutes. Dr. Marriott having certified that the cause of death was poisoning, a verdict of death by misadventure was returned, and the jury expressed sympathy with the widow.—Dr. Danford Thomas held an inquest at the Hampstead Provident Dispensary Hall, on April 20, on the body of Henry Duke, 44, an ironmonger, of 32, Mill Lane, West Hampstead.—The evidence showed that the deceased got up early on Saturday, and went to work in a room in the basement of his shop. At 7 o'clock he went to his wife's bedroom, and told her he had drunk some spirit of salts by mistake. Dr. E. Mason, said when he was called in the deceased told him that he was sitting at his work, and felt thirsty. He thought the glass containing spirit of salts at his elbow contained water, and took a "mouthful." He tried to spit it out but could not, and so swallowed it. The coroner said that was an extraordinary mistake to make. The doctor said that as far as he could judge it was a mistake. He administered antidotes but the deceased died in two hours. The coroner said that for years the medical profession had been endeavouring to put the sale of such poisons as this under restrictions, and make it compulsory to keep them in special bottles. This would not prevent suicide, but it would stop cases such as this. A verdict of death from misadventure was returned.

FOODS AND DRUGS ACT PROSECUTIONS.—At the Sunderland Borough Police Court on Friday, April 15, several local chemists were summoned for selling drugs not of the nature, substance and quality demanded by the purchaser. The prosecutions were instituted by the Health Department, and some of the cases were in respect to

Gregory's powder. In the first case evidence was given that the powder contained 44·34 per cent. of carbonate of magnesia.—The defence was that the presence of this ingredient was not prejudicial to the purchaser, as this form of the powder was the most common one used.—A doctor, called for the defence, also stated that the powder as sold in that case was preferable to the form of preparation given in the British Pharmacopœia, as it was easier mixed with water, and there would be practically no difference in the results, whether carbonate of magnesia or oxide of magnesia were used.—The Magistrates said a technical offence had been committed, and therefore there would be a fine of 1s., without costs.—Three other cases were dealt with in like manner.—In another case the powder was stated to contain a percentage of carbonate of magnesia and also of carbonate of lime, and a fine of 1s. was imposed.—In another case the charge was in respect to precipitated sulphur, which was said to contain a percentage of sulphate of lime, but it was not suggested that it was deliberately added.—A technical offence was held to have been committed, and the defendant was ordered to pay 1s.—In a similar case the percentage of sulphate of lime amounted to about two-thirds of the article. This was held to be a more serious case, but as there was no fraudulent intention a fine of 1s. was imposed.—Precipitated sulphur was the cause of the other cases, sublimate of sulphur having been supplied when the precipitated was asked for. In one case, however, the packet was marked "Flowers of Sulphur," and the assistant offered to take it back if it was not the kind required, so the case was withdrawn. In the other cases fines of 1s. were inflicted.

NEW IDEAS & TRADE NOTES

A NEW CATALOGUE.

Messrs. J. Woolley, Sons & Co., Ltd., of Manchester, send a copy of the fourth edition of their new druggists'. sundries catalogue, which the firm is now ready to supply to any pharmacist requiring one on receipt of his business card. The catalogue is in six parts: (1) Surgeon's Instruments and Appliances; (2) Druggists' Sundries; (3) Proprietary Articles; (4) N.N. (no name) Series; Proprietaries without maker's name; (5) Stamped medicines, miscellaneous proprietary goods; (6) Photographic Apparatus, Cameras, dry plates, etc. It consists of 750 pages, and contains over 2000 illustrations, with a comprehensive index. Altogether it is a most useful book of reference for prices current of drugs and pharmaceutieal preparations.

IDRIS & CO., LIMITED.

The subscription list to a new issue of £70,000 four per cent. mortgage debenture stock at par, in this well known company, opened on Friday, April 29, and will close on or before Tuesday, May 3, for town, and on Wednesday, May 4, for country. Applications are invited for the above amount in sums of £10, or multiples thereof, payable 10 per cent. on application, 40 per cent. on allotment, and 50 per cent. on May 31 next. Further particulars will be found in our advertisement columns.

BREWED GINGER BEER.

The Directors of "Camwal" announce that first class modern ginger-beer plants have just been fixed at all their factories, and that from February 15, the association will be in a position to supply chemists with their own brand of brewed ginger-beer in stone bottles. This was at one time the most popular of temperance beverages, and is again coming into vogue, but the public have hitherto found some difficulty in getting a brand of the article on which they can rely as being manufactured from the best possible materials. In consequence of this, the Directors see no reason why chemists should not secure the better class trade in the beverage, and "Camwal" has now arranged to take up the manufacture. To ensure the supply of an article superior to any already in the market, no expense is being spared either in the materials used for manufacture of the ginger beer or in the style and get up of the bottle. The beverage itself is excellent, and if its palatability in cold weather is any guide, a hot "spell" ought to bring an enormous demand for it.

PARTNERSHIPS DISSOLVED.

(From the London Gazette.)

Charles D. Green & F. Murphy, Physicians and Surgeons, Upper Edmonton and Tottenham.

John Shaw & Alex. J. Fleming, General Medical Practitioners, Burlington House, Willoughby Road, and 3, Arkwright Road, Hampstead.

J. T. Pummell & D. Mansfield, Box Manufacturers, Pendleton Works, St. Saviour's, Norwich. Debts will be received and paid by D. Mansfield.

O. H. A. Maggs & A. F. Penny, General Medical Practitioners, 165, Buckingham Palace Rd., and 10, Oakley St., Chelsea.

W. R. Mills & W. F. Howes, Veterinary Surgeons, &c., Castle Meadow, Norwich. Debts will be received and paid by W. F. Howes, who will continue the business.

RECEIVING ORDER IN BANKRUPTCY.

(From the London Gazette.)

Timothy Lockett, Manufacturing Chemist, 26, Upper Albert Road, Heeley, Sheffield.

NEWCASTLE CHEMICAL REPORT.

April 27, 1898.

This market retains steadiness. More shipping orders for heavy goods are in circulation for the Baltic ports now that steamers have begun to run in that direction. Prices, however, remain unchanged, and are quoted as follow:—Bleaching Powder, £6 5s. to £6 10s. Caustic Soda, 70 per cent. basis, £7 5s. to £7 10s. Soda Crystals, basis, 45s. to 52s. 6d. Soda Ash, 52 per cent., £4 5s. Alkali, 52 per cent., £5 5s. Sulphur, £4 15s. to £5 per ton.

Publications received.

The Flora of Berkshire. By G. Claridge Druce, Hon. M.A. Oxon. Pp. cxcix. + 644. Oxford: The Clarendon Press. 1897. From the Publishers.

Clinical Lectures on Diseases of the Heart and Aorta. By George William Balfour, M.D. St. And., LL.D. Edin. and St. And., F.R.C.P. Edin., F.R.S. Edin. Third Edition. Pp. xxiv. + 479. Price 12s. 6d. London: Adam and Charles Black, Soho Square, W. 1898. From the Publishers.

Helfenberger Annalen, 1897. Zweiter Band des zweiten Dezenniums. Im Auftrage der Chemischen Fabrik in Helfenberg. bei, Dresden, Eugen Dieterich, herausgegeben von Dr. Karl Dieterich. Pp. 466. Berlin: Verlag von Julius Springer. 1898. From the Author.

LIVERPOOL REPORT.

April 27, 1898.

Ammonium Salts.—*Carbonate*, 3d. per lb. *Sal Ammoniac* firm at 35s. and 33s. per cwt. *Sulphate* dull at £8 15s. per ton.

Beeswax.—10 tons of Benguela in bags was sold privately; terms not reported.

Bleaching Powder—Quiet at £5 12s. 6d. to £8 5s. per ton.

Cochineal.—10 bags of Teneriffe black sold on private terms; the rest is now held for 10½d. to 11½d. per lb.

Copperas.—Lancashire firm at 38s. per ton.

Copper Sulphate—Is firmer at £16 5s. to £16 10s. per ton.

Ginger – 800 bags of Sierra Leone in transit sold for 16s. 9d. per cwt.; 40 bags Bombay at 27s. 6d.

Oils (Fixed) and Spirits.—*Castor* is in fair demand at 3¼d. to 3⅝d. for Calcutta, and 3¼d. per lb. for French 1st pressure. This latter is rather firmer to arrive. *Olive*, of Spanish origin, is selling moderately, Malaga has sold in small amount at £31 10s. per tun and Seville at £30 10s. *Linseed* has experienced a series of small rises, the figure now being for Liverpool makes 18s. to 18s. 6d. per cwt. *Cottonseed* has been similarly effected, and that of Liverpool refining is now held at 17s. to 17s. 6d. per cwt. *Spirits of turpentine* since last report has risen 3s. per cwt., and is firmly held now at the high rate of 28s. per cwt.

Potash Salts.—*Bichromate*: 3¾d. per lb. *Chlorate*: 3¼d. per lb. *Potashes* are nominal at 20s. 9d. per cwt. *Pearlash* slow of sale at 37s. 6d. to 40s. per cwt. *Prussiate*: 7d. to 7¼d. per lb. *Saltpetre*: 21s. 6d. per cwt.

Quillaya Bark.—120 bales of Chilian changed hands at £17 10s. per ton.

Seeds.—*Canary seed*: Turkish is moving off regularly at 26s. 6d. to 27s. per 464 lbs., between which figures some 400 bags found buyers. *Linseed* is very strong, River Plate, 1000 bags, sold exquay at 35s. 6d. per 416 lbs. and Calcutta at 36s.

MARKET REPORT and Prices Current

Specially compiled for the Pharmaceutical Journal

The quotations here given are in all cases the lowest cash prices for bulk quantities, and often the articles quoted have to be sorted in order to suit the requirements of the retail pharmacist. The cost of freightage from the chemical and drug works to the various distributing centres must also be considered. It is important that these conditions should be borne in mind in making any comparison between the prices quoted and those of the wholesale drug trade.

LONDON REPORT.

APRIL 28, 1898.

Business has been fairly active during the past week, induced no doubt to a certain extent by the feeling that the war now in progress between the United States and Spain will probably tend to produce an advance in price of many articles, and some of those of special interest in the drug and chemical trades. The advance in value of wheat and bread, and also of coals, has been followed by a rise in Fixed Oils, Spirits, Turpentine, and of several other articles quoted in these pages. Opium and Morphia are also dearer. The chief interest has centred in the course of the Quinine market, the future of which does not appear, however, to be yet in any way definitely settled. Price of the sulphate is 2d. dearer on the week, while, on the other hand, Messrs. Howards and Sons announce small reductions in price of the salts other than Sulphate. Iodides are in active demand. Same may be said of Bromides. Quicksilver and Mercurials unchanged. Cocaine lower. Cotton Seed, Linseed, and Rape Oil, also Turpentine much dearer. Acid Tartaric and Citric steady. Cod-Liver Oil and Glycerin dull. The following are particulars of actual prices :—

ACETANILIDE—Unchanged at 1s. 3d. to 1s. 4d. per lb., according to quantity.

ACID BORACIC—Unchanged at 23s. per cwt. for *crystals*, and 25s. per cwt. for *powder*.

ACID CARBOLIC—Quiet at 6½d. per lb. for 35° to 36° C. *ice crystals* in large drums and overcasks, other qualities in proportion. *Crude* 60° F. 2s. 2d. ; 75° F., 2s. 7½d. per gallon. *Liquid* : 95 per cent. pale colour, 1s. 2d. to 1s. 3d. per gallon.

ACID CITRIC—Continues dull at 12½d. to 1s. 1d. per lb. for *foreign* and *English* crystals respectively. Makers are, however, unwilling to book orders for forward delivery.

ACID TARTARIC.—There is no change to record in this article since our last report, *English crystals* being still quoted at 1s. 1d. per lb. on the spot ; *foreign crystals* firm at 12¾d. per lb.

AMMONIA COMPOUNDS.—*Sulphate* is quiet and rather lower at £8 13s. 9d. per ton for grey, prompt, 24 per cent., London. *Bromide* steady at 2s. 2d. per lb. *Iodide* firm at 13s. 4d. per lb. *Oxalate* steady at 6d. per lb. *Sal ammoniac* : Firsts, sublimed, 35s. per cwt. ; seconds, 33s. per cwt. *Chloride*, free from metals, 98 per cent., 25s. 6d. per cwt. ; chemically pure small crystals, 32s. per cwt. *Sulpho cyanide* unchanged at 1s. 1d. to 1s. 2d. per lb.

BELLADONNA ROOT—Remains exceedingly scarce, 45s. per cwt. being asked for fair quality, with very little available ; in fact the market appears to be getting quite bare.

BLEACHING POWDER—Steady at £7 5s. per ton.

BORAX—Quiet at 14s. per cwt. for *lump*, and 14s. 6d. per cwt. for *powder* in large bulk.

BROMIDES — Are in good demand at 1s. 10d. for *Potass. Bromide*, and 2s. 2d. for *Ammon.* and *Soda Bromide*, *Bromine* being quoted 1s. 11d. per lb. in 20-case lots.

CINCHONA BARK.—Only moderate supplies were catalogued on Tuesday for the monthly auctions, amounting to 2230 packages of all descriptions, as compared with 2880 packages at the March auctions. There was good competition, the agents for the principal American Quinine manufacturers being the largest buyers, and the bulk sold at higher prices, the unit being $\frac{15}{16}$d. per lb as against about ¾d. last sale. *Ceylon* : 306 bales and 2 cases offered, and 165 bales and 2 cases sold, according to analysis. Succirubra, natural stem chips and shavings, ordinary to fair, at 1¾d. to 2¾d., ordinary renewed ditto at 2⅜d., renewed quill at 2⅝d. ; Officinalis, renewed chips at 3d. ; Ledger, fair to good stem chips at 3⅞d. to 5⅛d. *East Indian* : 1494 bales and 76 cases offered, and 1211 bales sold ; Red, stem, chips, and shavings, fair to good at 2¼d. to 3¼d., root at 2½d. to 3d., renewed chips and shavings 2½d. to 3d. ; Officinalis, chips and shavings, fair to good at 2¼d. to 3⅞d., good root at 5d., renewed chips and shavings, ordinary to fair 2⅝d. to 3⅜d., good at 4d. to 5½d. ; Ledger, stem chips, common to fair 1⅞d. to 3⅜d., fair to good at 3⅞d. to 5¼d. ; Ledger, branch, ordinary to good at 1⅞d. to 4d. ; fair renewed Hybrid, chips at 3½d. *Java* : 113 bags and 38 bales offered and sold ; Ledger stem chips, fair to good at 4½d. to 7d., ditto branch at 4⅜d. to 5¼d. *South American* : 105 bales Bolivian cultivated Calisaya quills offered and 93 bales sold at 4⅝d. to 5¼d. 41 bales Carthagena bought it. *African* : 55 bales offered and sold, ordinary Quill at 3¼d. to 3½d.

CINCHONIDINE.—To judge from the competition at the bark sales for bark containing this alkaloid the article is scarce, price is firm at 6½d. per oz. in large bulk packing.

CLOVES.—Privately *Zanzibar* are quiet, small business passing. August to October delivery, 3⅞d. ; June to August, $3\frac{25}{32}$d. At auction only 3 bales damaged *Zanzibar* offered and sold ; 8 cases *Penang* bought in at 9d. to 10d. ; 11 boxes good *Ceylon* sold at 5½d. to 6d.

COAL TAR DISTILLATION PRODUCTS.—*Toluol*, commercial, 1s. 4d. ; pure, 3s. per gal. *Benzole* : 50 per cent., 1s. 1d. per gallon ; 90 per cent., 11½d. *Crude Naphtha* : 30 per cent. at 160° C., 7d. ; *Solvent Naphtha* : 95 per cent. at 160° C., 1s. 8d. per gallon.

COCAINE.—As might have been anticipated, the pressure to sell on part of the makers of brands less in repute has led to a reduction in price of the brand most in favour, viz., *B. & S.*, for which the makers are now quoting 9s. 3d. per oz. for 100-oz. lots in bulk. It is said, however, that the position of the *crude* article by no means warrants this reduction in price.

COD-LIVER OIL—Has turned rather quiet, prices remain, however, nominally unchanged at 85s. to 95s per barrel for best new non-freezing *Norwegian* in tin-lined barrels. It is still thought by those most competent to judge that the future course of the article will probably be further in an upward direction.

CODEIA—Is unchanged at 11s. 3d. to 11s. 6d. per oz. for the *pure*, and 1s. per oz. less for the *Salts*.

CREAM OF TARTAR—Is rather lower at 74s. 6d. per cwt. for first white *crystals* on the spot, *powder* being quoted at 77s. to 78s. per cwt.

CUTCH—Remains very firm with high prices from Rangoon, but little business has been done ; good marks are scarce and in demand.

GINGER.—*Cochin* continues dull, only small supplies, rough kinds, offered and none sold at auction. Of cut kinds 73 cases sold : medium limed native 40s. to 43s., good A cut 80s. ; Calicut small 33s. 6d., medium 46s., bold and medium 68s., bold 75s., fine bold 84s. 69 bags limed *Japan* bought in at 19s. ; also 60 bags *African* at 21s. Of *Jamaica*, about 500 barrels sold, common to good common dark Rhatoon 69s. to 71s., good common 74s., low middling to middling scraped and washed 81s. 6d. to 87s. 6d., good middling to good plump 90s. to 96s. ; 3 boxes fine bold 107s. 6d.

GLYCERIN,—Has, contrary to expectation, remained quiet at about unchanged prices, viz., 52s. 6d. to 60s. per cwt., according to quantity and brand. For best white double distilled, chemically pure, 1·260 quality, of *German* make, in 56 lb. tins, 4 tins in a case. *English* being obtainable at rather below above figures.

IODIDES—Are in brisk demand at 9s. 9d. per lb. for *Potass. Iodide* in 2 cwt. lots, 13s. 4d. for *Iodoform*, and 10s. 3d. for *Soda Iodide*, *Iodine* being unchanged at 7½d. per oz.

LITHIA.—Price of the *Carbonate* remains unchanged at 10s. 8d. per lb. for 2-cwt. lots, while prices of the other salts have been advanced about 10 per cent. by the makers. Exact prices are, however, not yet stated.

MERCURIALS—Are unchanged at 2s. 2d, for *Corrosive Sublimate*, and 2s. 6d. per lb. for *Calomel* in 5-cwt. lots.

MORPHIA—Has been advanced 3d. per oz., while a further advance is spoken of as being fully justified by the present value of opium. Such further advance in the near future would therefore appear quite probable.

OILS (FIXED AND SPIRITS).—*Linseed* has advanced considerably, but closes quiet at the advance ; on the spot, pipes, London, £16 17s. 6d., barrels £17 5s. *Rape* also dearer at £24 for ordinary brown on the spot, and £25 10s. for refined on the spot. *Cotton* is much dearer, closing quiet but steady,

London Crude spot £15 10s., refined £16 10s. to £17 10s., according to make. *Olive* very firm but unchanged at £33 for Spanish or Levant. *Coconut* is unchanged at £23 for Ceylon on the spot and £27 for Cochin same position. *Palm* steady at £23. *Turpentine* has advanced rapidly, and closes in good demand at 27s. per cwt. for American on the spot. *Petroleum Oil* is firm but unchanged at 4⅛d. per gallon for Russian and 4½d. per gallon for American on the spot. *Petroleum Spirit*: American 5⅜d. per gallon, deodorised 5¾d. per gallon.

Opium—Is about 4d. per lb. dearer on the week, the market appears to be getting bare of really desirable manufacturing quality, while several months have still to elapse before the new crop can become available.

Orris Root—Is dearer, and it would be difficult to buy really good picked *Florentine* below 50s. per cwt.

Phenacetin—Is quoted 3s. 9d. to 4s. 3d. per lb., according to brand, quantity, and packing, for both *crystals* and *powder*, Bayer's make being still held for the fancy price of 14s. 3d. per lb. for bulk packing.

Phenazone.—This article, which has to a great extent superseded *Dr. Knorr's* antipyrine, with which it is to all intents and purposes absolutely identical, has been advanced to 22s. per lb. for quantity, owing it is said to a combination of the various makers who have apparently adopted this method of checking the excessive competition amongst themselves, which threatened to reduce prices to a ruinous level. It now ramains to be seen whether this advanced price will be maintained.

Potash Compounds.—*Chlorate* is quiet and rather easier at 3¼d. to 3½d. per lb. *Bromide* steady at 1s. 10d. per lb. *Iodide* firm at 9s. 9d. to 10s. 3d. per lb. *Cyanide* continues scarce on the spot, 98 per cent. cake, 1s. 2d. per lb. *Permanganate*, small crystals, 62s. 6d. per cwt.; large, 67s. 6d. per cwt. *Prussiate*: Yellow, unchanged at 6¾d. per lb.; red, 1s. 1d. to 1s. 2d. per lb. *Bicarbonate*, 30s. per cwt. for both crystal and powder. *Bichromate*, steady at 4d. per lb.

Quicksilver—Is firm at £7 1s. 3d. from first hand. Many people are expecting that the price will be advanced shortly.

Quinine.—Tuesday's bark sales went off with about 15 per cent. allowance. Price of the unit being about 1 5/8d. which looks as if we shall see still higher prices paid at the Amsterdam sales which, if it takes place, cannot fail to have its effect on the manufactured article. The chief German makers *Quinine*, wnile quoting nominally 11½d. per oz., decline to sell at this or in fact at any price, which also looks as if higher prices were probable. Sales have been made from second hand at 11¾d. per oz., and there are no longer many sellers at this figure. It is at same time, however, difficult to prognosticate with any degree of confidence the future course of an article, which so far cannot fail to have proved extremely disappointing to many holders, who bought at higher prices than are now ruling, in the confident anticipation of a further advance.

Soda Compounds.—*Crystals* unchanged at 57s. 6d. per ton *ex* ship terms. *Bromide* quiet at 2s. 2d. per lb. *Iodide* firm at 10s. 7d. per lb. *Hyposulphite* continues in good demand at 5s. 6d. to 8s. per cwt., according to brand. *Sulphite* steady at 18s. to 22s. 6d. per cwt., according to quantity and brand. *Nitrate*: Refined, £7 12s. 6d. to £8 per ton, according to qauntity. *Caustic*: 70 per cent. white, £7 10s. per ton; 60 per cent., 20s. per ton less.

Shellac.—The inquiry on the spot has been fair, resulting in moderate sales at steady prices, including *TN Orange* on the basis of 61s. per cwt. for fair cash terms. The Calcutta market is strong.

Spices (Various).—*Black Pepper*: Singa- sold at 4d., Lampong bought in at 4d., Tellicherry bought in at 4¼d.; 9 bags fine heavy bold clean Ceylon sold at 4⅝d. *White Pepper*: Only 170 bags Siam offered and bought in at 7⅞d. *Chillies* dull. Of 160 bags Japan, 120 bags sea-damaged sold without reserve, first class at 39s., sound bought in at 46s. *Cassia Lignea*: 250 boxes sold at 48s. to 51s. 6d.; 350 bales broken bought in at 34s. to 36s. *Mace* flat; 19 cases Penang bought in, pickings 1s. 6d., ordinary red 1s. 8d., except 1 case good bold which sold at 2s. 3d.; 11 packages West India sold at 1s. 5d. to 1s. 7d. *Pimento* dull; none offered at auction.

Sulphate of Copper—Is firm at £16 to £17 per ton, according to brand.

Sulphonal.—Quiet and without change, both the makers still accepting orders for limited quantity from regular customers at 7s. 3d. per lb. in bulk, for both *crystals* and *powder*.

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As might have been expected after an interval of four weeks, the quantity of drugs, etc., up at to-day's sales were considerable. Same passed off quietly, a moderate proportion of the offerings finding buyers at about rates hitherto ruling, with the exception of Rio Ipecacuanha, which sold freely at decidedly higher prices, and Cape Aloes, which were held for much higher prices, in consequence, it was stated, of the severe drought, which is reported to be prevailing at the Cape.

Aconite Root.—10 bags *Japan*, of fair quality bought in at 27s. 6d. per cwt.

Aloes.—27 kegs good *Socotrine* held for 80s. per cwt., 20 cases ditto for 75s., 1 case East Indian (in skins) fetched 75s. 1 case ordinary drossy *Cape* sold at 19s. One of the brokers announced that in consequence of very serious drought prevailing at the Cape he was instructed to hold for much higher prices, which he accordingly did, up to 27s. for good hard bright quality, and 22s. for drossy, buyers were not, however, willing to pay these figures.

Aniseeds—10 bags bought in at 20s. per cwt.

Annatto Seeds.—3 bags sold at 4¼d. per lb.

Asphalt.—28 cases *Syrian* taken out at 20s. to 31s. 6d. per cwt.; one case *Egyptian* held for 90s.

Balsam Copaiba—5 packages bought in at 1s. 8d. to 1s. 9d. per lb.

Balsam Peru.—3 cases of good quality were held for 8s. per lb.

Balsam Tolu.—30 cases of good quality all sold at 1s. 6d. per lb., which shows a lower value for the article.

Buchu Leaves.—Fine green rounds sold very cheaply at 4d. per lb., rest fetching 4¾d. to 5d., and brownish green 3¾d.

Cactus Flowers.—The 10 bags which have been so often up for sale at the drug auctions, again made their appearance, and were as usual bought in at 8d. per lb., there being apparently no buyers of the article.

Camphor.—20 cases *Japan refined* bought in at 1s. 3¼d. per lb., 1 tub Japan crude selling at 91s. per cwt.

Cardamoms.—Over 500 cases were catalogued, only a portion of which had been reached at the time our report left. The market was firm and prices steady, 4s. 3d. to 4s. 5d. being paid for fine pale *Mangalore*. For *Mysores* 4s. was paid for good bold pale, 3s. to 3s. 8d. per lb. for small to medium pale. *Seeds* sold in part at 3s. per lb., other lots being held for 3s. 3d. per lb. *Malabar* held for 2s. 10d. to 3s. 3d. per lb.

Cassia Fistula.—64 bags very wormy part sold at 4s. per cwt.

Castor Oil.—Good *Calcutta* seconds bought in at 4¼d. per lb.

Cinchona Bark.—42 serons *Crown* bark, held for 1s. 1d. per lb., only 10½d. being bid.

Cinchona Bark.—29 packages *Crown* and *Grey Bark*, sold at 8d. to 10d. *Yellow Bark*, at 7d. to 8d. per lb.

Cod-Liver Oil.—Twenty casks, good new *Norwegian*, bought in at 100s. per barrel.

Colocynth.—3 casks small pale Turkey held for 1s. 3d. per lb.

Colombo Root.—177 bags were held for 25s. per cwt. for dark sorts and 32s. for rather better quality.

Coriander Seed.—50 bags were held for 7s. 3d. per swt.

Cowage.—2 cases sold subject to approval at 1¼d. per oz.

Croton Seed.—9 bags of fair quality sold at 72s. to 82s. per cwt.

Cubebs—Thirty bags sold cheaply at 21s. to 22s. per cwt.

Cummin Seed.—55 bags of only medium quality were held for 20s. per cwt., fair *Malta* for 24s. to 25s.

Cuttle Fish.—36 mats fair pale part sold at 3½d. per lb.

Essential Oils.—1 case *Ylang Ylang*, bought in at 3s. per oz. 1 tin *Bay Oil* sold at 6s. per lb. 2 Duppers *Rose Oil*, at 2½d. per oz. 1 case *Spearmint*, bought in at 5s. 6 cases *Cinnamon*, at 1s. 6d. per oz. 3 cases *Spike Lavender*, at 2s. per lb. 1 case Dodge and Olcotts' *Oil Sassafras*, held for 1s. 8d. per lb. 1 case *Oil of Limes* sold at 4s. 1d. per lb.

Galls.—262 bags *blue* held for 55s. per cwt.

Gentian Root.—49 bags, which had more the appearance of having been chopped than of having been properly cut, were taken out at 22s. 6d. per cwt.

Guaza.—Of 26 packages, 2 robbins, fair green dusty tops, were held for 5½d. per lb., while for 2 robbins, rather more dusty, 5d. would have been accepted. Bundles, some rather woody, bought in at 9d. per lb. These figures show an advanced value for the article.

Gum Ammoniacum.—6 cases dull and dirty block bought in at 30s. per cwt.

Gum Benjamin.—30 cases fair *Palembang* held for 35s. per cwt., lower quality for 28s. Fair seconds *Sumatra* sold at

£8 15s. down to £5 12s. 6d. for medium to low *ditto*. Good *Siam* was held for £15, down to £7 for lower quality.

GUM GALBANUM. — 16 packages were bought in at 9d. for dark woody part blocky, up to 1s. 4d. per lb. for fair.

GUM GUAIACUM.—6 packages drossy block bought in at 5d. to 6d. per lb.

GUM KINO. — One case slightly blocky *Australian* bought in at 6s. per lb.

GUM MASTIC.—6 cases fair pale held for 2s. per lb.

GUM MYRRH.—One case native picked sold at 75s. per cwt., lower quality being held for 60s., and dark for 25s. per cwt.

GUM OPOPONAX. — One case containing 7 tins of fair quality held for 5s. per lb.

GUM SANDARAC.—10 casks bought in at 57s. 6d per cwt.

HONEY.—60 cases fair *Australian* part sold at 22s. 6d. per cwt. 20 cases fine *Californian* held for 36s., a bid of 30s. not being entertained. 50 cases good pale *Italian* did not sell, 35s. per cwt. being price required.

IPECACUANHA.—31 bales *Rio* sold freely at full prices, viz., 8s 5d. to 8s. 9d. per lb.; *picked* being held for 9s. 9 bales *Carthagena* all bought in, 5s. to 5s. 3d. being the price which would have been accepted. These prices show a tangible advance for *Rio*.

JALAP.—56 bales good, heavy, sold readily at 5½d., per lb. down to 3d. for damaged and mouldy.

LIME JUICE.—58 casks taken out at 8½d. per gallon.

MUSK.—3 tins old-fashioned Tonquin small to bold slightly damp, were held for 52s. 6d. per oz.

ORANGE PEEL.—15 cases good new thin cut were bought in at 7d. per lb.

ORRIS ROOT.—Fair *Florentine* was held for 43s. down to 33s. per cwt. for *sorts*.

PATCHOULI LEAVES.—17 bales of low quality bought in at 4d. per lb.

SARSAPARILLA.—24 packages *Jamaica* sold readily at 1s. 8d. to 1s. 9d. per lb. 13 bales *Lima* at 1s. 2d. to 1s. 6d.

SCAMMONY.—9 cases were all bought in at 22s. to 28s. per lb., one case being held for 30s., a bid of 28s. being declined.

SCAMMONY ROOT.—85 bags of fair quality bought in at 22s. 6d. per cwt.

SENNA.—*Tinnevelly* was represented by 300 bales, mostly of very common small description, some of which realised as low as ½d. per lb.; bulk of the ordinary small spotty sold at 2¼d. to 2½d. per lb., and for this there was good competition. For a few bales of fair green medium bold 7d. to 8d. per lb. was paid. For the *Alexandrian* variety there has been a strong demand lately, and several lots have been sold at 6d. for medium leaf, and 4d. for broken leaf of fair colour. For 2 bales of good green leaf 7d. per lb. is asked for; 22 bales *Mecca* no bid could be obtained, 2d. per lb. being the price required, but for this grade there is no demand.

TAMARINDS.—90 barrels good *West Indian* taken out at 15s. per cwt.

TONQUIN BEANS.—1 case fair frosted *Para* realised 1s. 4d. per lb.

VANILLOES.—Nearly 300 tins were offered, the demand at the opening being very slack, but later on it improved, and the bulk sold at good prices, for *Mauritius* at 18s. 6d. to 20s. 6d. per lb. for fine quality from 5½ to 8 inch. For *Bourbon* fine quality sold up to 23s. for 7½ to 8 inch. *Seychelles*: The longer beans were all taken out, buyers' ideas being below those of importers'. A few lots with cut ends, but of fine quality, sold cheaply at 14s. to 18s. 6d. per lb. for 3½ to 8 inch. *Madagascar* sold at 12s. to 14s. per lb.

WAX.—5 packages good *Jamaica* sold at £7 5s. to £7 7s. 6d. per cwt., fair *Madagascar* at £6 5s. to £6 12s. 6d., 3 packages *Australian* at £7 2s. 6d., 15 barrels *North American* being bought in at £7 5s., *Yellow Spanish* at £6 10s., *White Calcutta* at £7, fair *Morocco* at £5 to £5 10s., *China* for £6 per cwt.

YELLOW BERRIES.—11 bags bought in at 19s. to 24s. per cwt.

MANCHESTER CHEMICAL REPORT.

APRIL 27, 1898.

So far as this market is concerned, the war between Spain and the United States does not appear to have been the cause of many changes. Local-made glycerin is, however, firm, and manufacturers hold out for full prices. In Alkalies, Caustic Soda is easier, but Ammonia Alkali and Bleaching Powder continue well sold. Bleaching Powder is firm at £5 7s. 6d. per ton, soft-wood casks on rails. High strength Caustic Soda, 77 to 78 per cent., is at £8 10s. per ton on rails. More perhaps in sympathy with the rise in the metal than anything else, Sulphate of Copper has advanced to £18 10s. per ton best brands, delivered Manchester. Brown Acetate of Lime is scarce and firm at £5 12s. 6d. per ton, Welsh and American, Manchester. Bicarbonate of Soda is firm at £7 per ton., 1 cwt. kegs, on rails, and Industrial Bicarbonates (for mineral water), £5 5s. to £5 10s. per ton, kegs, on rails at works, Northwich. Coal tar products are dull, but Pitch is improving, and is quoted 18s. per ton *f.o.s.* Manchester Ship Canal. Glycerin ranges from £52 to £53 per ton for double distilled, *f.o.b.* or *f.o.r.* Manchester. Yellow Prussiate is unchanged at 6¾d. to 7d. for best Lancashire make.

Advertisements.

(Received too late for Classification).

WANTED, for a Branch Shop just opened, where there is a large and increasing population of about 7000, an energetic MANAGER. There is a good and newly-built house. Apply, stating age, salary required, references, and photo, E. C. ASHFORD, Chemist, Northampton.

PHARMACEUTICAL CHEMIST, with knowledge of analysis and preparation of fine chemicals, required for chemical works abroad. One who has passed the Major examination preferred. State qualifications and experience, and salary required, to F. I. C., care of G. H. Wilson & Sons, 6, Fenchurch Buildings, London, E.C.

EXCHANGE.

OFFERED.

Miscellaneous.

Magic Lanterns, second-hand; triples and biunials; oxyhydrogen microscope; marvellous pamphengos oil; lantern gives 14-ft. picture; 60,000 slides and effects; 4-in. 4-wick lanterns, 18s. 6d. each, bargains; illustrated list post free, 2d. Animated photographs: A splendid machine for £9 9s.—Hughes, Brewster House, 82, Mortimer Road, Kingsland, N.

Microscope in mahogany lock-up case, 1 in. and ¼ in., with all accessories; also Major Books cheap. —Hornby, Willis Road, Hillsboro, Sheffield.

For immediate disposal, part stock of a chemist's and druggist's business, together with shop bottles, jars, carboys, etc.; the stock is all sound and good, and the bottles and jars equal to new, only being re-labelled in gold a few months ago, and altogether is a good opportunity for anyone starting business. For further particulars, apply Slater & Co., High Street, Stone, Staffs.

Minor Students.—New, unsoiled, all complete for Minor. Southall's Materia Medica Cabinet, cost £2 5s.; Southall's Chemicals, cost £1 5s.; Southall's Herbarium, cost 7s. 6d. What offers?—Minor, Ashleigh, Victoria Rd., Bedford.

A Monumental Bargain.—Highly glazed, super-calenderd, 14 lb. white demy paper, 4s. 3d. per ream, six reams carriage paid: same paper, unglazed, beautifully white, 3s. 9d.—Lennox, The Powder Man, Nottingham.

Apparatus and Machinery.

Chemical Balance. Write for particulars. Maw's No. 10 Medicine Chest. Specie Jar, 9 ins. diameter, handsomely labelled. Wenham Gas Lamp, 7s. 6d.—Allen, Chemist, Plymouth. Patents half price. Write for list.

Books.

Students' and Chemists' Books offered and wanted, for cash or exchange; purchasers write for list (post free); sellers send list stating edition, date, condition, price required.—Gower, Publisher, Waterloo, Liverpool.

WANTED.

Castor Oil Tins wanted in quantities. Address, X. Y., Art Gallery, Newcastle-on-Tyne.

Tooth-brush Case in good condition. Description, dimensions, and lowest price to—Perfect & Co., Landport.

Old Platinum Utensils or Scrap, also O Electric Lamps wanted for prompt cash by P. Rowsell, 14, Walcot Square, London, S.E.

FRIDAY, APRIL 29.
SCHOOL OF PHARMACY STUDENTS' ASSOCIATION, at 5·30.
"Insectivorus Plants," by H. Payne.

SATURDAY, APRIL 30.
REYNOLDS AND BRANSON'S CRICKET CLUB v. Roundhay Rd. Med.

MONDAY, MAY 2.
SOCIETY OF CHEMICAL INDUSTRY, at 8 p.m.
"Self-intensine Refrigeration of Gases, Liquid Air, and Oxygen," by Dr. W. Hampson.

WEDNESDAY, MAY 4.
MIDLAND CHEMISTS' ASSISTANTS' ASSOCIATION, at 9.15 p.m.
Annual General Meeting.

THURSDAY, MAY 5.
CHEMICAL SOCIETY, at 8 p.m.
CHEMISTS' ASSISTANTS' ASSOCIATION, at 9 p.m.
Annual General Meeting.
LINNEAN SOCIETY OF LONDON, at 8 p.m.
MIDLAND PHARMACEUTICAL ASSOCIATION.
Annual Meeting and Dinner.

FRIDAY, MAY 6.
ROYAL INSTITUTION, at 9 p.m.
"Living Crystals," by Edward A. Minchin.

NEWS IN BRIEF

The British Pharmacopœia, 1898.—The following wholesale firms have intimated in their latest prices current that they intend to supply the new and altered preparations of the new Pharmacopœia in the execution of all orders after May 2, unless "B.P. 1895" is specified when ordering: Messrs. Allen & Hanburys, London; Messrs. Baiss Brothers & Co., London; Messrs. A. H. Cox & Co., Brighton; Messrs. Evans, Gadd & Co, Exeter; Messrs. Evans, Lescher & Webb, London; Messrs. Evans, Sons & Co., Liverpool; Messrs. Harker, Stagg & Morgan, London; Messrs. Hearon, Squire & Francis, London; Messrs. W. & R. Hatrick, Glasgow; Messrs. W. Kemp & Son, Horneastle; Messrs. Southall Bros. & Barclay, Birmingham; Messrs. Wright, Layman, & Umney, London.

The Presidents of the Institute of Chemistry of Great Britain and Ireland, the Society of Chemical Industry, and the Society of Public Analysts, and Mesdames Stevenson, Clowes, and Dyer will hold a reception at the Galleries of the Royal Institute of Painters in Water Colours, Piccadilly, on Tuesday, May 24.

The Council of the Chemical Society is to entertain at dinner on June 9 the following past Presidents, who have completed a period of fifty years' Fellowship of the Society:—Lord Playfair, Sir J. H. Gilbert, Sir E. Frankland, Professor Odling, Sir F. A. Abel, Bart., Dr. A. W. Williamson, and Dr. J. H. Gladstone.

Chemists' Assistants' Association.—At the meeting of this Association, held on Thursday, April 28, at 73, Newman Street, W., Mr. T. Morley Taylor, President, in the chair, several short papers were to have been read by members, but owing to illness and other unavoidable causes, the authors were not able to be present. In making an announcement to the above effect, the President expressed his regret at the illness of Mr. Fell, who was to have communicated one of the papers, and the meeting then resolved itself into committee to prepare for the annual meeting on May 5.

The Farbwerke vorm. Meister. Lucius & Brüning, of Hoechst o. M., Germany, and 46, St. Mary Axe, London, E.C., intimate that Messrs. Burroughs, Wellcome & Co., and Jeyes' Sanitary Compounds Company, of London, having ceased to act as their agents in future their well-known pharmaceutical products, including Dr. Knorr's Antipyrine (Lion brand) will be supplied to the trade from their London Office, 36, St. Mary-at-Hill.

Mr. H. L. Lee, who during the past two and a half years has filled the post of Lecture Assistant in the Society's School—first with Professor Dunstan, and latterly with Professor Collie—has been appointed Pharmaceutical Instructor at Rajkot, Kathiawar, Western India.

The Pfeiffer Laboratory.—The new buildings which the Princess of Wales has promised to open during July, at the London School of Medicine for Women, will be of immense value to lady students, who will find in them facilities for scientific research which it is claimed will compare favourably with those of any other medical school in the metropolis. In the plan is included a large block of laboratories, class rooms for physics, chemistry, physiology, and anatomy, and smaller apartments for the use of teachers and for private studies and investigations. The building is to be known as "The Pfeiffer," as a considerable proportion of the cost has been defrayed from the handsome legacy which the school received some years ago specially for improving its accommodation under the will of Mrs. Emily Pfeiffer. This addition is, however, but the beginning of a large scheme, to be realised in time, by which the school hopes to have a really handsome and commodious pile of buildings, and the interest of the Princess of Wales in the undertaking has been a great encouragement to all concerned. Meantime, it is interesting to note that upwards of thirty of its students received appointments in hospitals or under public bodies last year, in addition to the two ladies specially commissioned for plague duties in India.—*Daily Telegraph.*

The Glasgow Apothecaries Company intimate that in entering into a new copartnery they have given Mr. Robert M'Adam, the managing partner, a larger share, and the following travellers and heads of departments an interest in the business, viz.:—Messrs. John Walker, James Murdoch, William Maltman, David C. Houston, Colin Campbell, John Bannatyne, Stephen Young, John M'Turk, James M'Leod, and William Bowie.

Accidental Poisoning Cases.—Carbolic acid, taken in mistake for whisky, caused the death of Peter Tominey, 36, of Maryhill, on Saturday, April 20.—A doctor's daughter, Mrs. Darling, 40, the wife of a clergyman, tried to ride a bicycle, and afterwards complained of headache. Her husband recommended a seidlitz powder, so she went to her medicine chest and took a powder which, although contained in a blue paper similar to that used for seidlitz powders, proved to contain strychnine, and caused her death. A verdict of "Death from misadventure" was subsequently returned by a coroner's jury.—A liking for sherbet has resulted in the death of a young woman at Tunbridge Wells. It appears she took from a box a packet containing what she thought was sherbet, but in reality was oxalic acid in powder. "Death from misadventure" was the verdict in this case.—An overdose of laudanum taken on Easter Monday after a drinking bout caused an inquest to be held on Frederick L. George, of St. Mary's, and a verdict of "Accidental death" was returned.

Midland Pharmaceutical Association.—The members of this Society have been supplied with the annual report. The principal portion is that which refers to the work of the Trade Committee. This sets forth that the membership of the P.A.T.A. is increasing. In December last a canvass of the town was made by Mr. Glyn-Jones, Mr. Prosser, and Mr. C. Thompson, which resulted in 90 per cent. of the trade joining the Association. The influence of the members has been exerted towards getting makers of proprietary goods to place their articles on the protected list. The Committee protest strongly against individual schemes of protection, and suggest, as the best means of arriving at the personal advantage derived from the P.A.T.A. that the pharmacist should note the number of protected articles sold in his shop. The income of the Association for the past year has amounted to £50 9s. 9d., and the expenditure to £49 5s. 10d. The loss on the annual ball was £7 1s. 3d.

Mr. Thomas Padwick, pharmaceutical chemist, Redhill, having been in delicate health for some time, left Redhill for a short holiday and change of air, returning home on the Tuesday after Easter. He appeared to have greatly benefited by the change. But on Thursday evening, April 28, he went to bed about six o'clock, saying he wanted rest, and shortly afterwards was found to be suffering from an overdose of laudanum, evidently taken to produce sleep. In spite of medical attention, death occurred on Friday morning, and at a subsequent coroner's inquest the jury expressed the opinion that it was not a case of suicide, but that death was due to an overdose.

Proprietary Articles Trade Association.—Election of Council (1898).—The following is the list of successful candidates to the Manufacturers' Section: Allcock's Plaster Co., Ltd., Birkenhead; Bovril, Ltd., Farringdon Street, E.C.; Condal Water Co., Ltd., Walbrook, E.C.; David Corneille & Co., Fenchurch Avenue, E.C.; J. E. Garratt, Southwark Street, S.E.; Holloway's Wine Co., New Oxford Street, W.C.; Homocea, Ltd., Birkenhead; W. Lambert & Co., Seymour Place, W.; Thomas Powell., Ltd., Albion Place, Blackfriars, S.E.; Stephen Smith & Co., Ltd., Bow, E. To the Wholesale Section: Barclay & Sons, Ltd., 95, Farringdon Street, E.C.; W. Edwards & Sons, 157, Queen Victoria Street, E.C.; Evans, Gadd & Co, Exeter; Hirst, Brooke & Hirst, Ltd., Leeds; Lynch & Co., Ltd., 192, Aldersgate Street, E.C.; Maw, Son & Thompson, 7 to 12, Aldersgate Street, E.C.; F. Newbery & Sons, King Edward Street, E.C.; May, Roberts & Co., 9, Clerkenwell Road, E.C.; John Sanger & Sons, Winsley Street, W.; W. Sutton & Co., 76, Chiswell Street, E.C

PARTNERSHIPS DISSOLVED.

(From the London Gazette.)

P. O. Haynes & Charles T. W. Hirsch, General Medical Practitioners, Woolwich. Debts will be received and paid by C. T. W. Hirsch.

Wm. Thorne & A. J. Ruston-Harrison (trading as Strawson & Co.), Mineral Water Manufacturers, 8 and 10, Carver Street, Islington, Liverpool. Debts will be received and paid by A. J. Ruston-Harrison. The said Wm. Thorne will carry on his business at Birkenhead as heretofore.

W. Bancroft, J. T. Bancroft, & Cain Holmes (trading as C. Holmes & Co.), Mineral Water Manufacturers, Bradford. Debts will be received and paid by Cain Holmes.

Market Report and Prices Current

Specially compiled for the Pharmaceutical Journal

The quotations here given are in all cases the lowest cash prices for bulk quantities, and often the articles quoted have to be sorted in order to suit the requirements of the retail pharmacist. The cost of freightage from the chemical and drug works to the various distributing centres must also be considered. It is important that these conditions should be borne in mind in making any comparison between the prices quoted and those of the wholesale drug trade.

LONDON REPORT.

May 5, 1898.

Business has been somewhat more active during past week, although the war between the United States and Spain, while causing a better demand and higher prices for some articles which are of interest to our readers, has also not failed to injuriously affect trade in other of such articles. Opium is dearer, as is also morphia, a further advance in the latter article being considered the more probable in that it would be fully justified by the actual price of the raw drug. Codeia steady. Quinine, after undergoing certain fluctuations during the week, again dearer, the position of the article is, however, still somewhat undecided pending the result of the Amsterdam Bark Sales. Acid Citric rather dearer. Acid Tartaric and Cream of Tartar quiet. Borax and Acid Boracic steady. Shellac weak and lower. Quicksilver dearer. Mercurials unchanged. Iodides and Bromides firm and in good demand. Glycerin quiet. Cod-liver Oil dull. Gum Arabic dearer for sorts. Camphor quiet and rather easier. Orris Root very firm. Turpentine lower. Coconut Oil and Palm Oil higher. Gentian Root firmer. Cocoa Butter lower. Ipecacuanha again rather dearer. Cascara Sagrada firm and likely to advance considerably in value ere long.

The following are prices ruling for articles of chief interest:—

Acetanilide—Is rather firmer at 1s. 2d. to 1s. 3d. per lb. for quantity.

Acid Boracic.—Quiet at 23s. per cwt. for *crystals* and 25s. per cwt. for *powder*.

Acid Carbolic—Quiet at 6¼d. to 6½d. per lb. according to make for 35 to 36° C. *ice crystals* in large bulk, 39 to 40° C. 7d., and 39 to 40° C.; *detached crystals* 8d.; *crude* 60° F. 2s. 2d. per gallon, 75° F. 2s. 7d. *Liquid*: 95 per cent., of pale straw colour, 1s. 2d. to 1s. 3d. per gallon in 40-gallon casks.

Acid Citric—Is rather firmer at 12¾d. to 1s. 1d. per lb. for *crystals*, according to make.

Acid Tartaric.—*English* crystals on the spot 1s. 1d. per lb. *Foreign* 12¾d. per lb.

Ammonia Compounds.—*Sulphate* is steadier, grey prompt, 24 per cent., London being quoted £8 11s. 3d. to £8 12s. 6d. per ton. *Hull* prompt, £8 12s. 6d. *Leith*, prompt, £8 11s. 3d. *Beckton*: £8 10s. to £8 11s. 3d. *Beckton*, terms, £8 7s. 6d. *Bromide*, firm at 2s. 2d. per lb. *Iodide* firm at 14s. 6d. per lb. *Oxalate* quiet at 6d. per lb. *Sal ammoniac*: First sublimed 35s. per cwt., seconds 33s. *Chloride*: Free from metals, 98 per cent., 25s. to 26s.; chemically pure in small crystals 33s. *Sulphocyanide* quiet at 1s. 2d. per lb.

Asafetida.—During the past month 107 cases have been delivered, and none having arrived, the stocks are now very moderate. The demand for the two extremes of quality is good, but really fine is very scarce.

Atropine—Is very firm at makers' prices, say 13s. 6d. for the *Sulphate P.B.* and 15s. for the *pure* for large bulk in quantity, very little being obtainable below these figures from second hand.

Belladonna Root—Is very scarce at 45s. per cwt. for good root, with, however, very little, if any, offering.

Bleaching Powder—Steady at £7 5s. per ton on the spot.

Borax.—A fair business passing at 14s. per cwt. for *lump* and 14s. 6d. per cwt. for *powder* in large bulk.

Bromides—Firm at 1s. 10d. for *Potass. Bromide*, and 2s. 2d. for *Ammon.* and *Soda Bromide*. *Bromine*: 1s. 11d. per lb. for 20-case lots.

Calumba Root.—The deliveries last month have considerably reduced late arrivals, and prices close rather firmer at 27s. 6d. to 30s. per cwt. for dark and low sorts, and 32s. 6d. to 37s. 6d. per cwt. for ordinary bright sorts.

Camphor.—Crude remains very quiet with rather easier quotations. For arrival there are *China* sellers at 82s. 6d. per cwt.; *c.i.f.* terms, and *Japan* at 88s. per cwt. *c.i.f.*

Cascara Sagrada.—The position of this article is gaining strength, and no large quantity could be obtained without causing a very decided advance of values. Prices are quite nominal, and for small quantities only. Last crop bark is quoted 20s. per cwt., whilst good old bark cannot be obtained below 25s. per cwt., whilst in New York 30s. per cwt. has to be paid for this latter quality.

Cloves.—Privately the market for *Zanzibar* is quiet, small business done. June-August delivery at 3 7/32d. to 3 1/8d.; August-October delivery quoted 3 1/8d. At auction only 6 bales *Zanzibar* offered and sold at 3⅛d. to 3½d. 14 cases *Ceylon* bought in. Of *Penang* only 2 cases good picked sold at 10½d.

Cocaine—Is quiet, the agents for the *B & S* make, which is the brand most in favour on this market, quoting 9s. per oz. for 100 oz. lots. It is, however, rumoured that the reduction in price has been made with a view to induce the makers who had been underselling to join in a combination. If this project succeeds, it will mean higher prices for the article again as soon as an agreement has been come to amongst the makers.

Cocoa Butter.—In the monthly auctions on Tuesday, 80 cases of Cadbury's sold at an average price of 9 5/16d. per lb., being lower; the April auctions realising an average of 10½d. per lb.

Coal Tar Distillation Products.—*Toluol*: Commercial, 1s. 4d.; pure, 3s. per gallon. *Benzole*.: 50 per cent., 1s. 1d.; 90 per cent., 11½d. *Crude Naphtha*: 30 per cent. at 120° C. 6d. per gallon. *Solvent nahptha* 95 per cent. at 160° C. 1s. 7d., 90 per cent. 160° 1s. 4d., 90 per cent. at 190° C. 1s. 3d. per gallon.

Codeia—Is steady at 11s. 3d. to 11s. 6d. per oz. for the *pure*, and 1s. per oz. less for the *salts*.

Cod-Liver Oil—Is dull, price for best new non-congealing *Norwegian* in tin-lined barrels being nominally 82s. 6d. to 85s., *f.o.b.*, according to quantity and brand.

Cream of Tartar—Is quiet and rather easier at 74s. 6d. per cwt. for first white *French crystals* on the spot; powder 76s. 6d. to 78s. 6d. per cwt.

Galls.—Market continues firm. Sales of blues have been made at steady rates, 55s. to 56s. per cwt.; green are scarce; white on the spot are not offering.

Gentian Root—Is slightly firmer, and it would appear not only that bottom has been touched, but that higher prices may be looked for. Good dry red root is now quoted 20s. per cwt. *c.i.f.*, with but little offering at this price; inferior quality is offering at a somewhat lower figure.

Ginger.—*Cochin* continues dull, 673 bags rough being mostly bought in. Only 25 bags sold; dull washed rough at 24s. 6d. Of cut kinds 21 cases sold, new bold A at 82s. 6d., B at 64s., old B at 58s. Of 171 bags limed *Japan*, slightly mouldy, 51 bags sold at 18s. Over 1000 packages *Jamaica* offered, and meeting a good demand mostly sold, common to good common lean and dark Rhatoon 68s. to 73s., low middling small scraped to middling washed at 76s. to 85s., good middling to good bright 86s. 6d. to 95s., fine bright and bold 96s. to 105s.

Glycerin—Is quiet, the expectation that the war would lead to an increased demand for the *Crude*, for the purpose of dynamite manufacture, which would in turn reflect on the price of the refined article, not having so far been realised. Best *German* double-distilled chemically pure, 1.260 quality, in tins and cases, is quoted 52s. 6d. to 60s per cwt., according to quantity and brand. *English* being obtainable at somewhat below these figures.

Golden Seal Root—Is reported to be very strong in New York, 2s. 2d. per lb., *c.i.f.* terms, being the quotation at the moment, but higher prices are anticipated, as being scarce with no new arrivals expected before August next.

Grains of Paradise—Are dearer at 30s. to 32s. per cwt., as to quantity.

Gum Arabic.—The market for *Soudan* sorts is very firm, and small sales have been made up to 85s. per cwt. Picked kinds are slow of sale, quotations range from £14 for good bold pale down to £6 10s. for yellowish grains.

Gum Tragacanth—Is in steady demand, and fair sales, chiefly in the medium and lower grades, have been made at full values. *Thirds* have also been done to the extent of a few cases at £10s. 10s. per cwt., but *Seconds*, which are nominally quoted £11 10s. to £12 10s. per cwt., are for the moment neglected, and *Firsts* are firm at £13 10s. to £14 per cwt.

Hypophosphites—Are in fair demand at

Monthly Statement of Drugs, etc., Warehoused in London.—May 3, 1898.

Articles.		April, 1898.		Stocks, April 30.	
		Arrivals.	Deliveries.	1898.	1897.
Aloes (all kinds)	packages	1,159	351	5,898	4,660
Balsams ,,	,,	630	325	713	481
Cinchona Bark	,,	2,517	1,181	21,441	21,142
Quinine Sulphate	ounces	99,216	230,736	1,587,824	1,349,296
Beeswax	packages	530	393	1,562	1,594
Camphor	,,	—	1,164	10,260	11,032
Cardamoms	,,	690	316	1,544	1 049
Cochineal	,,	256	222	2,515	2,166
Calumba Root	,,	—	41	88	95
Cubebs	,,	283	4	1,908	311
Dragon's Blood	,,	4	7	26	43
Galls (all kinds)	,,	1,422	489	4,018	4,490
Gum, Ammoniacum	,,	—	4	32	33
Arabic, all kinds	,,	616	2.544	9,641	11,228
Asafœtida	,,	—	107	544	529
Benjamin	,,	631	247	2,891	2,883
Galbanum	,,	1	1	—	1
Gamboge	,,	—	30	265	163
Guaiacum	,,	—	4	69	79
Kino	,,	—	2	39	39
Gum, Mastic	packages	—	5	18	15
Myrrh	,,	—	7	466	530
Olibanum	,,	534	434	2,415	2,462
Tragacanth	,,	889	546	3,224	3,630
Ipecacuanha	,,	126	84	286	430
Jalap	,,	56	10	357	242
Nux Vomica	,,	10	54	114	576
Oils, Castor	,,	93	125	541	690
Olive	,,	381	131	1,051	863
Aniseed	,,	—	1	121	102
Cassia	,,	—	1	113	84
Rhubarb	,,	—	129	674	254
Saltpetre	tons	7,570	5,315	3,451	3,308
Sarsaparilla	packages	122	69	356	234
Senna	,,	273	432	674	1,407
Shellac	,,	7,665	4,014	60,152	48,822
Terra Japonica, Gambier Cutch	tons	385	374	1,453	1,350
	,,	153	201	1,278	1,602
Turmeric	,,	47	19	285	774

The stocks of camphor, oils of aniseed and cassia are incomplete, some warehouses not making returns.

3s. 3d. per lb. for the *Soda Potash* and *Lime Salts*, in half-ton lots.

Iodides—Are in very good demand at 9s. 9d. for *Potass. Iodide* in 2-cwt. lots, and 13s. 4d. for *Iodoform*. *Iodine* is also unchanged at 7½d. per oz.

Ipecacuanha.—A good business has been done since the auctions last week at full to rather dearer prices for *Rio*, which is now quoted at 8s. 10d. to 9s. 3d. per lb., according to quality.

Lithia.—The advances in price of the *Salts* (other than the *Carbonate*, price of which remains unchanged at 10s. 8d. per lb.), are as follows: *Citrate crysta's* 6s. 8d. per lb., *powder* 6d. per lb. more; *Benzoate* 8s. 6d.; *Bromide* 9s. 2d.; *Salicylate* 5s. 6d. *Sulphate* 9s. 4d. per lb.

Mandrake Root—Is reported to be firmer in New York, where the quotation is 2½d. per lb., *c.i.f.*, London, for autumn dug root.

Menthol—Is quiet, with very little business doing in the article. Prices remained firm at 7s. to 7s. 6d. per lb., according to quantity for spot delivery.

Mercurials—Are unchanged, in spite of the advance in price of *Quicksilver*, *Corrosive Sublimate* remaining at 2s. 2d., and *Calomel* at 2s. 6d. per lb., for half ton lots.

Morphia.—Makers appear to be still booking orders for quantity at 4s. 3d. per oz. for the *Hydrochlorate powder*, and 2d. per oz. more for *crystal*. Present price of opium would warrant higher prices for morphia; in fact, it is stated that price should really rather be 4s. 9d. per oz. than 4s. 3d.

Nitrate of Silver—Quiet at 1s. 5½d. per oz. for *crystals*, the *sticks* being dearer in proportion.

Nitrate of Soda.—Ordinary, £7 10s. to £7 12s. 6d.; refined, £8.

Oils (Essential).—*Peppermint*: English is strong at 27s. per lb. American *H.G.H.* continues firm at 5s. 7½d. to 5s. 9d. per lb., whilst fine *Wayne County* is quoted 3s. 9d. to 4s. per lb. *c.i.f.* according to holder. *Star aniseed* quiet at 6s. 4½d. to 6s. 6d. per lb. in quantity. *Cassia* is very dull and quotations are nominal. *Lemongrass* is very quiet at 4½d. to 4¾d. per oz. *Cajuput* continues firm at 4s. per bottle

Oils (Fixed) and Spirits.—*Linseed* is easier and quiet at the reduction. On the spot, pipes, London, £16 7s. 6d.; barrels, £16 15s. *Rape* unchanged at £24 for ordinary brown on the spot, and £25 10s. for refined in same position. *Cotton* is lower; London crude on the spot, £15; refined, £16 5s. to £16 15s. *Olive* firm and unchanged at £33 for both Spanish and Levant. *Coconut* is dearer and closes very firm. Ceylon on the spot £24. *Cochin* £27 10s. *Palm* dearer and very firm at £23 10s. *Turpentine*: Values have declined rapidly, closing at 25s. 9d. per cwt. for American on the spot. *Petroleum Oil*: A strong market with advancing prices, Russian 4⅜d. per gallon, American 4¾d. per gallon. *Petroleum Spirit*: American 5⅜d. per gallon, deodorised 5¾d. per gallon.

Opium—Has advanced about 6d. per lb. in the week. Good *manufacturing* stuff is scarce here, and 10s. to 10s. 3d. per lb. is asked, while in *Smyrna* it is reported that prices above this parity have been paid. The rise appears to have been caused by the unfavourable prospects of the new crop, combined with the fact that the actual stocks all over the world appear to be considerably smaller than had been believed in some quarters.

Orris Root—Is very firm, and by some importers is quoted at dearer rates. From Leghorn we have received the following quotations: *Florentine*: picked, 39s. per cwt.; sorts, 35s. 3d.; *Verona*: picked, 25s. per cwt.; sorts, 23s. per cwt., all *c.i.f.* London.

Oxalic Acid.—3½d. to 3¾d. per lb., delivered in London.

Permanganate of Potash—Quiet at 62s. 6d. per cwt. for *small crystals*, and 67s. 6d. for *large crystals*.

Phenacetine—Is steady at 3s. 9d. to 4s. 3d. per lb. for best makes, both for *crystal* and *powder*, according to quantity and brand. *Sulphonal* can still be bought from the makers in hand to mouth quantities at 7s. 3d. per lb., for both *crystal* and *powder* in bulk packing.

Phenazone.—Owing to the combination of the makers, the advanced price of 22s. per lb. is maintained; several of the manufacturers being sold out, and the article therefore decidedly scarce. *Dr. Knorr's Antipyrine*, which is chemically the same thing as *Phenazone*, is still held for 34s. per lb.

Potash Compounds.—*Chlorate* is quoted 3¼d. per lb, spot, London. *Bromide* firm at 1s. 10d. *Iodide* firm at 10s. 3d. *Cyanide* is still scarce, and for prompt delivery 1s. 3d. per lb. would have to be paid for *Cake*, and 1s. 2d. per lb. for fairly early delivery. *Permanganate* quiet at 62s. 6d. per cwt. for *small crystals*, and 5s. per cwt. more for *large crystals*. *Prussiate*: Yellow, 6¾d. to 7d. per lb.; red, 1s. 2d. *Bicarbonate*: 30s. to 32s. 6d. for *crystals* and *powder*. *Bichromate*: 4d. to 4½d. per lb.

Quicksilver.—A large business has been done by the importers, who have now raised their price to £7 7s. 6d. per bottle, secondhand holders being firm at £7 7s.

Quinine.—Makers still decline to sell or even to name a price, pending the results of the Amsterdam bark sales, from second hand sales were made early in the week at 1s. 0½d. per oz. for 1000 oz. lots. Yesterday there were, however, sellers at 1s. and even in one or two cases at 11½d. To-day the market is firmer, with few sellers below 1s. 0½d. per oz.

Scammony.—One case *Virgin* firsts *ex* last auction, and for which 28s. per lb. was then bid, has since been sold at 30s. per lb.; medium seconds sold 20s. per lb.

Seneca Root—Is rather dearer at 1s. 2d. to 1s. 3d. per lb.

Senna.—As will be seen from the stocks on May 1, which we publish to-day, those of all kinds of senna have fallen to 674 bales, as against an average of 1800 bales for the five preceding years. A small business has been done in *Tinnevelly* at full rates, whilst *Alexandrian* has been in demand at 6d. to 6½d. per lb. for leaf, 4d. to 5d. per lb. for broken leaf, and 2¾d. per lb. for siftings.

Shellac.—This article continues very quiet, and prices show no improvement. The offerings on Tuesday were only small, but the demand was even smaller, so that only about one-eighth sold at irregular prices, on an average 1s. per cwt. lower, making *TN* now 60s. to 61s. A total of 755 cases were offered and 129 cases sold. Second Orange:

Of 581 cases 96 sold, good pale *SG* in diamond cakey at 72s., fair to good bright at 61s. to 62s., ordinary reddish 59s. Garnet: Of 72 cases 17 sold, fair ruby at 60s. to 61s., common weak ditto at 58s. Button: Of 102 cases 16 sold, resinous colory firsts at 73s., blocky mixed firsts at 66s., thirds 55s , fourths 50s.

SERPENTARIA ROOT—Is dearer at 1s. 3d. per lb. All *American* roots are tending dearer.

SODA COMPOUNDS.—*Crystals*: 57s. 6d. per ton, ex ship. *Bicarbonate*: £7 5s. to £7 10s. per ton, landed terms. *Bromide*: Firm at 2s. 2d. per lb. *Iodide*: Firm at 11s. 7d. per lb. *Hyposulphite*: Steady at 6s. to 8s. per cwt., according to make and package. *Sulphite*: 20s. to 22s. 6d. per cwt. *Nitrate*: Commercial £7 12s. 6d., refined £7 15s. to £8 per ton. *Caustic*: 70 per cent., white, £7 10s.; 60 per cent., £6 10s. per ton.

SPICES (VARIOUS).—*Black Pepper* dull, and mostly bought in, Tellicherry at 4⅜d. to 4½d.; of Singapore, 20 bags sold at 3¾d. *White Pepper* is firm, but 865 bags offered, were all bought in, Penang at 6¾d., and Singapore at 7¼d. *Chillies* remain dull. Japan all bought in at 40s. to 50s. *Capsicums* 5 packages Natal sold fair 76s., ordinary weathered 61s. *Cinnamon Chips*: 14 bags broken quill sold at 10½d., and 68 bags featherings at 9½d., of coarse chips 49 bags sold at 3d. *Kola Nuts*: 1 box Grenada sold, at 4d. *Mace*: 4 cases Penang sold good bold, partly wormy 2s. 1d., low discoloured and broken pickings 1s. to 1s. 1d.; 7 packages West India sold at 1s. 6d. to 1s. 8d., ordinary and country-damaged 1s. 3d. to 1s 4d. *Nutmegs*, flat. *Pimento*: Of 246 bags offered, only 50 bags fair sold at 4⅜d.

SULPHATE OF COPPER—Is quoted on the spot at £16 10s. to £17 10s. per ton, according to brand.

TURMERIC—Is quiet but fairly firm: *Bengal* sold at 15s. per cwt., whilst *Madras*, fair to good finger, is quoted 18s. 6d. to 20s. per cwt.; *Cochin* dull, split bulbs is held for 8s. 6d. per cwt.

NEWCASTLE CHEMICAL REPORT.

MAY 4, 1898.

More business is passing in the heavier class of goods. Shipping orders are more in evidence, but prices remain much the same as last quoted, viz.:—Bleaching Powder, £6 5s. to £6 10s. Caustic Soda, 70 per cent. basis, £7 5s. to £7 10s. Soda Crystals, basis, 45s. to 52s. 6d. Soda Ash, 52 per cent., £4 5s. Alkali, 52 per cent., £5 5s. Sulphur, £4 15s. to £5 per ton.

MANCHESTER CHEMICAL REPORT.

MAY 3, 1898.

Business has been quiet on the whole, especially in heavy chemicals. Caustic Soda is again easier, and high strength (77 to 78 per cent.) is quoted £8 7s. 6d. to £8 10s. per ton on rails. Bleaching Powder is unchanged. In one or two cases, Bicarbonate of Soda is said to be higher, but there is no change to be noted in this district. Sulphate of Copper maintains the high figure of last week, and Brown Acetate, owing to probable short supplies of American, is at £6 5s. to £6 10s., sellers not being eager to part at these figures. The abnormally low price of Benzol has at last induced some movement, and some forward contracts have been made. Alum is quiet at £4 17s. 6d. to £5 per ton on rails for loose lump; £5 2s. 6d. lump in tierces, and £5 10s. ground in bags. Yellow Prussiate is almost cleared locally, and makers are asking 7¼d. per lb.

LIVERPOOL REPORT.

MAY 4, 1898.

BEESWAX.—25 sacks Chilian sold at £7 to £7 10s. per cwt.

CARNAUBA WAX.—About 20 bags of medium quality found buyers at 45s. per cwt.

GINGER.—Some 1200 bags have changed hands during the week at 16s. 9d. to 17s. per cwt.

KOLA NUTS.—25 bags sold at 1¼d. per lb.

OILS (FIXED) AND SPIRITS.—*Castor* is strong in tone with a forward tendency, and is selling freely at 3¼d. and 3⅝d. per lb. for Calcutta, and 3¼d. per lb. for French 1st pressure. *Olive*, of Spanish make, is slightly easier, and is moving off slowly; Seville, £30 10s.; Malaga, £30 10s. to £31 per tun. *Linseed* of Liverpool make is very firmly held at 18s. to 18s. 6d. per cwt. *Cottonseed*: Liverpool refined is slow of sale, but remains at recent quotations, viz., 17s. 3d. to 17s. 6d. per cwt.

SEEDS.—*Canaryseed* has revived considerably, Turkish being very much sought after, 2000 bags selling last week at 26s. 6d. to 27s. per 464 lbs.; prices now are 28s., 29s., and 30s. to 32s. according to the age of the seed, old crop 200 bags having sold at 30s., 32s. being now asked per 464 lbs. *Hempseed*: Syrian has sold for 32s. per 384 lbs. *Linseed*: 600 bags of River Plate sold at 35s. 6d. per 416 lbs.

SPIRIT OF TURPENTINE—Is tightly held for 28s. 6d. per cwt., a fair inquiry being experienced.

TARTAR—Finest cream is only in limited demand at 75s. per cwt.

DIARY FOR THE WEEK.

WEDNESDAY, MAY 11.

ROYAL SOCIETY.
Annual Conversazione.

THURSDAY, MAY 12.

ROYAL INSTITUTION, at 3 p.m.
"Heat" (Lecture I.), by the Right Hon. Lord Rayleigh.

FRIDAY, MAY 13.

ROYAL INSTITUTION, at 9 p.m.
"Recent Experiments on Certain of the Chemical Elements in Relation to Heat," by Professor W. A. Tilden.

SHEFFIELD MICROSCOPICAL SOCIETY, at 8 p.m.
Lecture by Mr. A. H. Allen.

SATURDAY, MAY 14.

REYNOLDS AND BRANSON'S CRICKET CLUB v. Bainbridge, Ltd.

EXCHANGE.

OFFERED.

Books.

Students' Books.—Attfield, B.P., Bentley, Bowyer, C. and D. Books, Diaries, Gerrard, Jago, Pereira, Remsen, Squire, Thorpe (various), Thorne, Wills (various), Wootton, and others; modern editions. Particulars free.—Gower, Publisher, Waterloo, Liverpool.

Brand New.—Carriage paid. Four magnificent 21s. volumes 'British Birds' (illustrated), and their Eggs' (coloured plates), 45s., 'Hants and Dorset County Directory' (latest 1897), 10s. 6d.—Futcher, Dentist, Talbot Road, Southsea.

Miscellaneous.

Magic Lanterns, second-hand; triples and bunials; oxyhydrogen microscope; marvellous pamphengos oil; lantern gives 14-ft. picture; 60,000 slides and effects; 4-in. 4-wick lanterns, 18s. 6d. each, bargains; illustrated list post free, 2d. Animated photographs: A splendid machine for £9 9s.—Hughes, Brewster House, 82, Mortimer Road, Kingsland, N.

Surplus stock "Bovicura," 1 doz. each 5s, 2s. 6d., and 2s. sizes for 40s.; 3 doz. Ruben's embrocation (1s. 3d.) for 21s.—Whittles, Newent, Gloucester.

What offers for 3-oz. bottle perchloride of platinum?—Simpson, Chemist, Bloxham, Banbury.

Specials.—The first twelve volumes 'Strand Magazine' quite new; bound publisher cases, £2 11s. 6d. Note.—The First 2 volumes are 21s. each at the publishers.—Pouteau, 44, Warden Road, London, N.W.

Surplus Stock.—12 Williams', 12 Carter's, 6 Cockles', 6 Holloway's, 6 each Steedman's, 1s. 1½d. and 2s. 9d., £2 17s. 6d. Cash with order, or London reference if fresh customer.—Eastman, Forest Lane, Stratford.

Celladema Embrocation, human, 12 1s. 1½d. size; ditto, horses, 3 2s. size, 3 2s. 6d. size; ointment, 4 1s. size, 3 2s. 6d. size; blister, 3 1s. 6d. size; half retail price; the lot carriage paid.—Fuller, Chemist, Norwich.

Essential Oils to dispose of cheap. About 2 lbs. Citronelle (Fisher's); 40 ozs. Lemongrass; 2 lbs. Oil Bergamot; also 20 lbs. Birchromate of Potash.—Bromide, "Pharm. Journ." Office, 5, Serle Street, London, W.C.

What offers?—37×6d. Tetlow's Swansdown, 18×1s. Gossamer; Water-bed, full size, used 3 days, equal to new.—Cocks, Stonehouse, Plymouth.

Splendid St. Bernard Bitch.—Strong, and healthy, 11 months, grand pedigree, good-tempered and affectionate; sell, or exchange saleable patents.—Busby, Chemist, Stanley Bridge Post Office, Fulham.

WANTED.

Old Platinum Utensils or Scrap, also Old Electric Lamps wanted for prompt cash by P. Rowsell, 14, Walcot Square, London, S.E.

Publications received.

PROCEEDINGS OF THE CHEMISTS' ASSISTANTS' ASSOCIATION, containing Papers and Discussions and full particulars of the meetings held during the session 1896-97.

SURGICAL TECHNICS IN HOSPITAL PRACTICE. By K. W. MONSARRAT, M.B., F.R.C.S., E. Pp. 132. Price 3s. net. Bristol: John Wright & Co. 1898. From the Publishers.

AN EPHEMERIS OF MATERIA MEDICA, PHARMACY, THERAPEUTICS, AND COLLATERAL INFORMATION. By E. R. SQUIBB, M.D., E. H. SQUIBB, S.B., M.D., C. F. SQUIBB, A.B. Volume IV., 1893 to 1897. Pp. 2100. Brooklyn, N.Y. 1897. From the Publishers.

Photographic Supplement

TO THE

PHARMACEUTICAL JOURNAL

LONDON: SATURDAY, MAY 7, 1898.

Hints for Photographic Tourists.

It is one of those unfortunate facts which come home to us as the brutal truth that our holidays are as a rule fixed for us, in so far that the exigencies of business may compel us to wander in search of rest at the time which is not the most agreeable to us. We have perchance a greater choice as to where we shall go, but even this is often a matter of necessity, for the simple reason that there may be circumstances, family circumstances, in the shape of children, who must of course go to the seaside, and, therefore, we, too, seek rest and relief on the pebbly shore, where the itinerant vendor of cakes, fruit and shell ware, not to mention the peripatetic musician, treats one to a complete rest if change can be such.

To the photographer, no matter where may be his headquarters, he may feel sure that he can find some work to do, and also at very little outlay obtain access to neighbourhoods rich in material for pictures, architectural studies or purely topographical work. The first thing to do on having decided upon headquarters is to find out what there is in the district as regards likely material. There is no difficulty in this, and at the expense of giving a gratuitous advertisement, it may be stated that in the 'Year-Book of Photography' there has been published during the last three years notes as to some hundreds of places in Great Britain under the title of "The Photographer's Gazetteer." They are brief and not, in the majority of cases, of the local guide-book order, but purely of photographic interest. Let it be understood that it is not intended, for one moment, to decry the use of a local guide-book, for that is one of the essentials, because it frequently gives one information that cannot be obtained through any other means.

Having fixed upon your headquarters, consult the "Photographic Tourists' Guide" and ascertain if there is a photographic dealer or dark room in the place you propose to visit. If you do not care to be burthened with plates write to the local dealer a week beforehand and state that you want so many dozen of So-and-So's plates of a particular size, and ask him to get them down for you. This ensures the plates being fresh.

Now to consider what you will take. It is as well to do the thing systematically, and we naturally start with the camera. Thoroughly overhaul this, examine the bellows for holes, and to do this turn back the focussing screen, cap the lens, insert a diaphragm, rack the bellows out to their fullest extension, place the head as near the back of the camera as possible, enveloping it and the camera back with the focussing cloth, and obtain the assistance of a sister, cousin, or aunt with a lighted candle, which must be held as near the bellows as possible without burning them. After a minute or two under the black cloth the eye will become accustomed to the darkness, and any light leakage will be at once detected. A small hole may be stopped by means of black court plaster or a piece of indiarubber cloth. Dust your camera out thoroughly with a stiff brush, and see that all parts work easily.

The dark slides also want wiping out, and the sliding portions, if necessary, eased by rubbing a little black lead along them. See that the hinges are not worn through and admit light. This is best tested for by placing a plate in the slide and exposing for about five minutes to diffused daylight, or for about half a minute to sunlight, the slide being of course closed. On developing it will be very easy to see whether light does make its way through anywhere.

The tripod or stand should be examined to see that the sliding portions of the legs run easily, and that any screws are not missing. The screw for the camera is best attached by means of a few inches of brass chain to one of the legs, and the legs should always be strapped together and a leather handle also attached for carrying It is an advantage to have straps for the legs sufficiently long to include an umbrella.

Lenses should be cleaned and provided with lens cases, these being preferably of stout leather or cardboard lined with wash leather, baize is an abomination, as the fluff from it gets on to the glasses, in the diaphragm slot, etc. In lieu of specially made cases, the ordinary cardboard postal tubes may be used, ends being fitted by means of discs of stout card or chip box lids. Naturally the stops, if of the Waterhouse or loose pattern, must not be omitted, and it is advisable to have them pinned together by means of a brass pin run through the tongues.

There are numerous little sundries that will be required. Instantaneous shutters, spirit level, focussing magnifier and cloth, a view meter, and, if you use isochromatic plates, the necessary colour screens. A note-book should never be forgotten, nor should maps, guides, and above all, permits to photograph in private parks, houses, etc. These last should be of course obtained beforehand, and as a rule they are readily granted, sometimes, however, on payment of a small fee, and generally more willingly if it be stated on application that you are an amateur only.

For changing plates it is always advisable to use the local dark room, but at the same time there are occasions when one may feel somewhat of the same mind as the cynical showman who, after a long yarn descriptive of what was to be seen inside his booth, wound up with "Step in, gentlemen, step in! Take my word for it, you will be highly delighted when you come out!" Then the convenience of being able to change plates at home is not to be despised. It is advisable, therefore, always to take two or three sheets of ruby paper and some half-dozen drawing pins; some number labels; a dusting brush and wrapping papers also should not be omitted.

If development is to be done, and not in the local dark room, then of course dishes, measures and chemicals will have to be taken, and in any case it is advisable to take a stock of one's own developer.

There are so many ways to carry a camera that one feels a sort of compunction in saying which is the best. Still, after many years' experience in outdoor photography and walking tours, it may be permitted to describe what is, perhaps, the most comfortable method of carrying one's baggage, the more especially as this is not a subject to be passed by as trivial, provided a camera of any size is to be carried, since even with small cameras the weight, on a good tramp, becomes burdensome.

Always divide your impedimenta into three lots, one including the camera, shutters, and lenses; another the dark slides; the

third the tripod and umbrella. A great deal depends, of course, upon the extent of the outfit, but with a whole-plate camera, six double dark slides, four lenses, and two shutters, they are divided as suggested above, and the camera packed in a water-proof canvas knapsack, which is carried on the back, the slides being relegated to a canvas case, which is carried in the hand.

Now a word or two about the knapsack. The side which is next to the back should be stiff, but the others limp and slightly expansive; whilst for the dark slides all the sides should be stiff, to protect them as much as possible from injury. The straps of the knapsack which go over the shoulder should be slipped through a broad oval piece of stiff leather, and this should be just broad enough to almost completely cover the shoulder and long enough to overlap the chest and back; then the strap cannot possibly cut. For the dark slide case the handle should be broad and of soft leather, so that it will double up and fit itself to the hand, and the edges should be shaved off, for it is wonderful how leather will cut and cramp the hand.

For small cameras and only one or two slides and one lens it is quite possible to carry the lot in one case, and this may be slung over the shoulder if the broad piece of leather be used. Never, however, should a square camera case be chosen, the long narrow ones are very much better, as they allow the arm to hang more naturally down at the side and are not always knocking against the legs.

Accidents may happen, of course; the focussing screen may be broken, and if away from any dealer, the tyro may be in a quandary as to what to do. Always, therefore, carry a sheet of stout matt celluloid, or if that is thought unnecessary, go to a glazier, and if he has any ground glass—it will probably be found that the grain is very coarse; never mind—get a piece cut to the right size and just rub a little oil or vaseline over it; this renders the grain almost invisible. But if in some out-of-the-way place where ground glass is not to be had, procure a piece of plain glass, borrow a lump of putty from your glazier, and dab it well all over the glass. This makes a fine surface for focussing on. One may, however, be in a place where the nearest glazier is four or five miles off and have nothing else. In such a case merely expose one of your plates to the bedroom candle for a few seconds and develop that till you get a general fog or deposit, then fix the plate, and thus obtain an excellent focussing screen.

The tripod screw is another thing that has sometimes a happy knack of losing itself when not chained up; frequently a bit of soft wood cut from any convenient hedge or tree may be, at a pinch, screwed home to hold the camera steady. Lens caps frequently mislay themselves, and then one must forage at the chemist's either for a big pill-box lid or else a chip box, though it is preferable to use the focussing cloth doubled three or four times.

Whatever may be the particular brand of plate you elect for use, be sure and see that they are backed. All the principal plate makers now issue their plates ready backed for a small extra charge, but if they do not it is such an easy operation, using the proper backing of caramel, that no one should now omit this.

It is, of course, an important question as to what speed of plates to use, and on this point there is no doubt that for landscape and general work the slower, ordinary or landscape plate is by far the best, and even for snapshots of not less than 1/20 to 1/30 of a second, in bright sunlight they are quite quick enough. On the other hand it is always as well to have some reserve force in hand, and therefore some extra rapid plates should always be carried, for they will come in useful for very rapid work or for dark interiors, where a slow plate would require a very long exposure. Carrying six double dark slides, if one has two extra rapid plates, that will be about right, unless of course as sometimes happens one is going to work on interiors the whole day; then carry all rapid plates.

One not insignificant point is the question of packing exposed plates, and whilst not original, the following plan is one that has proved itself over and over again. Obtain from Geo. Wheeler and Co., King Street, Manchester, some separating cardboards; these are thin pure card frames the size of the plate and just the width of the slide rebate. Also provide some long strips of paper exactly the width of the plate.

In opening a box of plates do not tear the brown paper off anyhow, but with a knife cut it all round the box at one end, thorw this end away and the box may then be slid out of the brown paper, which subsequently forms a little case for the box of exposed plates.

Number labels should always be carried; these may be obtained in perforated sheets, and the register of exposures should always be numbered consecutively right throughout the whole trip and not for each day; it is very much easier if this plan is adopted to tell when one gets home exactly what the subject is.

Now let us suppose that we have been out the whole day, made a bag, and recorded the exposures in the note-book; then when changing plates a number label corresponding with the exposure book should be stuck on the back of the plates in one corner. A plate should then be laid, film up, at one end of the long strip of paper, on the film a separator, then another plate, film downwarde, then another plate, film upwards, then a separator, then anothre plate, film downwards, and so on till all the exposed plates are lying in a heap. Now fold over and over in the paper, place back in the box, and the box in its little brown paper case, and either stick some stamp paper over the end or else score the label heavily through with a big X, which may stand for "exposed," and thus prevent one being in doubt as to whether the plates in that particular box have been exposed or not.

Finally, a few notes may be added indicating how to make holiday work satisfactory. It is always advisable to have one or two general views of the place one may be stopping in; they form lasting reminders of a pleasant holiday. But when on the search for material it is always advisable to take up one particular line of work. For instance, a study of all the churches, both exterior and interior, will be found extremely interesting, for to do this properly one must study a little architecture. There are three books which can be confidently recommended:—Parker's 'Concise Glossary to Architecture'; the 'Introduction to Gothic Architecture,' by the same author; and the 'Handbook to Gothic Architecture,' by the Rev. T. Perkins, which is written especially for photographers.

Many, naturally, will prefer to make studies of the hedgerows, wayside flowers, trees, etc., and it will be found that such studies, even if they consist of a few flowers, a branch, a single plant, will be far more interesting than wide stretches or panoramas, these latter being rarely satisfactory.

As regards exposure, the best thing is to procure an exposure meter. There are three which are satisfactory: Hurter and Driffield's Actinograph; Watkins' Exposure Meter; and Wynne's Meter. It is impossible to accurately gauge the exposure for every subject, and therefore one of the above should be used.

As regards a register of exposures, there are suitable books on the market, but one can easily be ruled by the worker himself on the following plan, examples of the register being given:—

Date.	No.	Subject.	Time.	Lens.	Stop.	Light.	Exposure	Plate	Remarks.
15/6/97.	1	Hastings Beach.	11 a.m.	8 in. Ross.	F/16	Bright Sun.	1/10 sec.	Inst. Iso.	
26/7/97.	14	Norwich Cathedral N. Aisle.	2 p.m.	6 in. W.A.	F/22	Very dark.	35 min.	Marion Instant	Very great contrasts, heavy shadows and light stone.

USEFUL WORKS ON PHOTOGRAPHY.

The following list has been submitted as being, on the whole, a more useful one than that published in the Photographic Supplement of April 2 last. The names preceded by an asterisk (*) are those of books which it is profitable for a dealer to stock.

ELEMENTARY BOOKS.

* 'Early Work in Photography,' by W. Ethelbert Henry, C.E. 1s. Cloth, 1s. 6d. Postage 2d.
* 'Photography for Amateurs,' by T. C. Hepworth. 1s. Cloth, 1s. 6d. Postage 2d.
'Modern Photography,' by W. K. Burton. 1s. Postage 2d.
* 'Everyone's Guide to Photography,' by E. J. Wall. 6d. Leather, 1s. Postage 1d.
'Practical Amateur Photography,' by C. C. Vevers. 6d. Postage 1d.

ADVANCED HANDBOOKS.

'Instruction in Photography,' by Capt. Abney. 3s. 6d. Post. 4d.
'Science and Practice of Photography,' by Chapman Jones. 2s. 6d. Postage 4d.
* 'Photography in a Nutshell,' by The Kernel. 1s. Postage 2d.
'Photography with Emulsions,' by Capt. Abney. 3s. Postage 3d.
'Practical Guide to Photography.' 2s. 6d. Postage 3d.

BOOKS ON SPECIAL SUBJECTS.

'Photo Ceramics,' by W. Ethelbert Henry. 1s. Cloth, 1s. 6d. Postage 2d.
* 'Photographic Enlargements,' by G. Wheeler. 1s. Postage 2d.
'Bromide Paper,' by Dr. E. A. Just. 1s. 6d. Postage 3d.
'The Lighting in Photographic Studios,' by P. C. Duchochois. 1s. Postage 1½d.
* 'Chemistry for Photographers,' by Chas. F. Townsend. Cloth, 1s. Postage 3d.
'Platinotype; Its Preparation and Manipulation,' by Capt. Abney and L. Clark. 2s. 6d. Postage 3d.
* 'Platinum Toning,' by A. Horsley Hinton. 1s. Postage 2d.
'Optics for Photographers,' by W. K. Burton. 1s. Postage 2d.
'The Studio and What to Do in It,' by H. P. Robinson. 2s. 6d. Postage 3d.
'Practical Photo-Micrography,' by A. Pringle. 5s. Postage 4d.
'Carbon Printing,' by E. J. Wall. 1s. Postage 2d.
'Photographic Chemistry,' by J. T. Taylor. 7s. 6d. Postage 3d.
'Cyclopædic Photography.' 12s. 6d. and 7s. 6d. Postage 6d.
'Encyclopædia of Photography,' by Walter E. Woodbury. 7s. 6d. Postage 6d.
'Dictionary of Photography,' by E. J. Wall. 7s. 6d. Postage 4d.
'Photographic Reference Book,' by W. A. Watts, M.A. 6s. Postage 4d.
'Photo Aquatint; or, Gum Bichromate Process,' by A. Maskell and R. Demachy. 1s. Postage 2d.
'The Photographic Studio,' by T. Bolas. 2s. Postage 3d.
'Animated Photography,' by Cecil Hepworth. 1s. Postage 2d.
'A History of Photography,' by W. Jerome Harrison. 1s. 6d. Postage 3d.
'The Elements of a Pictorial Photograph,' by H. P. Robinson. 3s. 6d. Postage 3d.
'Picture Making by Photography,' by H. P. Robinson. 2s. 6d. Postage 3d.
'Art Photography,' by H. P. Robinson. 1s. Postage 2d.
'Practical Essays on Art,' by John Burnet. 2s. 6d. Postage 6d.
'Pictorial Effect in Photography,' by H. P. Robinson. 3s. 6d. Postage 3d.
'Letters on Landscape Photography,' by H. P. Robinson. 1s. Postage 1d.
'The Bichromate Salts in Photography.' 1s. Postage 1d.
'The Stereoscopic Manual,' by W. I. Chadwick. 1s. Postage 2d.
'Wet Collodion Photography,' by Chas. W. Gamble. 1s. Postage 2d.
'Photo Aquatint and Photogravure,' by Thomas Huson. 2s. Postage 3d.
'Collotype and Photo Lithography,' by Dr. Julius Schnauss. 5s. Postage 4d.
'Photographic and Photo-Mechanical Printing,' by W. K. Burton. 4s. Postage 4d.
'Photo Engraving,' by H. D. Farquhar. 2s. 6d. Postage 3d.
'Photo Lithography,' by Georg Fritz. 3s. 6d. Postage 6d.
'Practical Radiography' (second edition), by A. W. Isenthal and H. Snowden Ward. 2s. 6d. Postage 3d.

LANTERN HANDBOOKS.

* 'Modern Magic Lanterns and their Management,' by R. Child Bayley. 1s. 2d.
'The Optical Lantern for Instruction and Amusement,' by Andrew Pringle. 2s. 6d. Postage 4d.

USEFUL PHOTOGRAPHIC FORMULÆ.

The following formulæ have all been tested in practice, and may be relied upon to yield satisfactory products :—

Glycin Developer.

Glycin or oxy-phenyl-glycin, $C_6H_4OH{\cdot}NH{\cdot}CH_2{\cdot}COOH$, is very slightly soluble in water, but more so in alkalies and alkaline sulphites, and it is better made up in the form of one-solution developer :—

Glycin	16 g.
Sodium Sulphite	40 g.
Sodium Carbonate	60 g.
Distilled Water	to 500 C.c.

For use dilute with three times the quantity of water.

Useful for negative and positive work.

Ortol Developer.

The latest developer is chemically a mixture of ortho-methyl-amido-phenol plus some hydroquinone. It is an extremely valuable developer, and is finding considerable favour :—

No. 1.

Ortol	15 g.
Potassium Metabisulphite	7·5 g.
Distilled Water	to 1000 C.c.

No. 2.

Sodium Carbonate	120 g.
,, Sulphite	130 g.
Distilled Water	to 1000 C.c.

For use mix in equal parts.

Useful alike for negative and positive work.

The Fixing Bath.

As a rule the amateur will be content to make up his own, but it might be useful to know that the best fixing bath for negatives, especially with pyro as a developer, is an acid one, which may be made as follows :—

Solution of Tartaric Acid, 50 per cent.	30 C.c.
,, ,, Sodium Sulphite, 25 per cent.	70 C.c.

Mix and add to

Solution of Hypo., 25 per cent.	1000 C.c.

Intensifiers.

The most satisfactory is that generally known as Monckhoven's :—

No. 1.

Mercuric Chloride	20 g.
Potassium Bromide	20 g.
Distilled Water	1000 C.c.

The negative must be thoroughly free from hypo. and soaked in the above till quite white, then well washed and immersed in the following till blackened right through, and then well washed and dried :—

Silver Nitrate	20 g.
Distilled Water	750 C.c.

Dissolve and add gradually *quant. suff.*

Potassium Cyanide	20 g.
Distilled Water	250 C.c.

This must be added and the mixture thoroughly shaken after each addition. At first a precipitate of silver cyanide is thrown down, which gradually re-dissolves in excess of potassium cyanide, but some of the flocculent cyanide should always be left floating in the bottle.

The Copper Intensifier.

This has lately been placed on the market, both as an intensifier and a reducer. It is prepared as follows :—

a.	Copper Sulphate	240 g.
	Distilled Water	500 C.c.
b.	Potassium Bromide	180 g.
	Distilled Water	500 C.c.

Mix. In this the well-washed negative should be bleached, then well washed. To intensify, the negative may be re-developed with any old developer, or for reduction only partially bleached and then refixed.

The Uranium Intensifier.

The action of this is so energetic that it is only applicable to very thin negatives.

Uranium Nitrate	5 g.
Potassium Ferricyanide	5 g.
Glacial Acetic Acid	10 g.
Distilled Water	to 500 C.c.

The negative must be thoroughly freed from hypo., and then immersed in the above solution till sufficiently dense. The colour of the image is a reddish-brown, which is far more non-actinic than it looks.

Great care must be exercised in mixing this, and it should be kept in the dark. The ferricyanide must be well rinsed in water prior to solution, or else the solution quickly spoils.

Reducers.

The best of these is undoubtedly Belitzski's ; it keeps well in the dark, and may be used over and over again till the solution turns yellow, and does not require the negative to be freed from hypo.

Potassium Ferric Oxalate	20 g.
Sodium Sulphite	20 g.
Distilled Water	250 C.c.

Dissolve, and add

Oxalic Acid (crystal)	7.5 g.

and shake till the blood-red solution turns green, decant from any undissolved acid, and filter, and add

Hypo	125 g.
Distilled Water	to make 1000 C.c.

This is applicable to negatives, transparencies, and bromide papers.

Varnishes.

Amateurs are not fond of varnishing, but the advantages are decidedly great as regards the permanency of the negatives. One of the greatest objections to the use of varnish is the necessity of heating the negative. Therefore, a cold varnish is preferable.

Gold Size Varnish.

Japanners' Gold Size (best) } Equal parts.
Benzole. }

This is to be applied cold, and sets in half an hour to a very hard resistant film.

Zapon Varnish.

Thin Transparent Celluloid	20 g.
Acetone	300 C.c.
Amyl Acetate	200 C.c.

The objection to this is the unpleasant smell and the time the varnish takes to thoroughly harden.

Film Varnish.

As the basis of all films is celluloid it is obvious that some varnish without a celluloid solvent as the vehicle must be used.

Bleached or pale Shellac (powdered)	125 g.
Liq. Ammonia fort	250 C.c.
Absolute Alcohol	250 C.c.

Macerate for 48 hours and then digest in a water bath till the shellac has dissolved, and add.

Distilled water	to 1000 C.c.

Filter.

This may be applied to the wet or dry films, and the best way is to put sufficient varnish in a dish and bodily immerse the films, and then hang up to dry.

Ordinary Negative Varnish.

Pale Yellow Shellac	150 g.
Sandarac	18 g.
Castor Oil	1 C.c.
Absolute Alcohol (or old Methylated)	1000 C.c.

The negative must be heated before this is applied.

Crystal Varnish (for transparencies).

Gum Dammar	50 g.
Benzole	1000 C.c.

This can be used cold. It is not so resistant as those given above.

Toning Baths.

For the old albumenised paper it is usual to employ neutral or alkaline baths, and acetate, phosphate, tungstate, or borate of soda are generally used. A typical formula is :—

Gold Chloride	0·4 g.
Sodium Acetate	16 g.
Distilled Water	to 1000 C.c.

Gelatino-Chloride or P.O.P. Toning Baths.

The best formula is the following ; it is suitable for all kinds of papers, though with some it yields finer tones than others—

Gold Chloride	1 g.
Potassium Sulphocyanide	2 g.
Distilled Water	180 C.c.

Dissolve and heat to the boiling point for 5 minutes, and add distilled water to make 200 C.c. For use mix 1 part of this with 15 parts of water.

Combined Toning and Fixing Baths.

Amateurs will have these, but their use should be discouraged as much as possible, but the following is a simple formula :—

No. 1.

Lead Nitrate	10 g.
Hypo	200 g.
Distilled Water	1000 C.c.

No. 2.

Chloride of Gold	10 g.
Distilled Water to	100 C.c.

This solution must be absolutely free from acid.

Just before use mix 5 parts of No. 2 with 1000 parts of No. 1. The prints must be bathed in a 1 per cent. solution of bicarbonate of soda, well washed, and then immersed in the toning bath.

A Combined Toning Bath Without Lead.

Hypo	240 g.
Ammonium Sulphocyanide	24 g.
Sodium Acetate (fused)	48 g.
Distilled Water to	1000 C.c.

To this just before use add 1 gramme of neutral chloride of gold.

Platinum Toning Baths.

The tones obtained on gelatino and collodio chloride papers with platinum are much in favour at the present time. The tones tend from warm sepia to brownish black. The most satisfactory is—

Potassium Chloroplatinite	2 g.
Dilute Phosphoric Acid	120 g.
Distilled Water to	1000 C.c.

This bath may be made up in concentrated form, the total bulk being made up to 200 C.c.

For black tones the procedure is somewhat more complicated, but so many amateurs want black tones on these papers that a set of baths that would give these ought to sell well.

No. 1.—A.

Sodium Acetate	10 g.
Borax	8 g.
Distilled Water to	100 C.c.

No. 1.—B.

Gold Chloride	1 g.
Distilled Water to	10 C.c.

For use mix 10 C.c. of A. and 0·2 C.c. of B, and water to 100 C.c.

No. 2.

Acid Phosph. Dil.	25 C.c.
Distilled Water to	100 C.c.
Potassium Chloroplatinite	2 g.

For use mix 1 part with 9 parts of water.

No. 3.

Ammonium Sulphocyanide	100 g.
Chloride of gold (neutral)	2 g.
Distilled Water to	1000 C.c.

Directions.—Print rather deeply and wash the prints in two changes of water for fifteen minutes. Immerse the washed prints in the gold bath No. 1 till they assume a brown tone, and then rinse in water and transfer to the platinum bath No. 2, in which they should be left till they assume a violet tone. Wash for ten minutes, and transfer to a 10 per cent. solution of hypo., in which they should be left for ten minutes, then well washed in four or five changes of water for twenty minutes, and if the tone is satisfactory (and it will be brownish), they may be mounted. If black, blue-black, or grey tones are required, wash the prints for five minutes only after fixing, and transfer to No. 3 solution, and in this they may be left till the desired tone is attained.

Developer for P.O.P.

It is not generally known that gelatino or collodio-chloride paper can be developed, and in the winter time or in summer, when a large number of prints have to be obtained. This is a great advantage. The paper should only be faintly printed, just sufficient to show all the details, and then developed with the following :—

No. 1.

Hydroquinone	10 g.
Alcohol	100 g.

No. 2.

Sodium Sulphite	100 g.
Citric Acid	5 g.
Distilled Water to	500 C.c.

For use mix 50 parts of No. 1, 50 parts of No. 2, and 1000 parts of water. Development will be complete in from 10 to 15 minutes, and the prints should be transferred to a 5 per cent. solution of salt, well washed, and then washed in the combined toning and fixing bath.

Mountants.

The following is a satisfactory mountant for all kinds of prints.

White Dextrin	75 g.
Alum (powdered)	4 g.
White Sugar	15 g.
Distilled Water	120 C.c.

Dissolve by heat, and when cool add

Alcohol Sol. Thymol (10 per cent.)	6 C.c.

Liquid Mountant.

Soft Gelatin	40 g.
Distilled Water	120 C.c.

Allow to soak for twenty-four hours and add

Chloral Hydrate	20 g.

Heat on a water bath till liquid or for about an hour, and then neutralise with a few drops of solution of carbonate of soda.

ROYAL PHOTOGRAPHIC SOCIETY'S INTERNATIONAL EXHIBITION.

The exhibition opened at the Crystal Palace on Monday, April 25, by H.R.H. the Prince of Wales was a decided success as an exhibition of everything appertaining to photography from the earliest photographs and apparatus down to the very latest developments in processes and materials. The general arrangement of the exhibition was good, but visitors, especially those strange to the Crystal Palace, at first experienced considerable difficulty in finding the whereabouts of the different sections, notwithstanding the possession of an excellent work of art in the form of a catalogue containing a plan of the exhibition, with a numbered list of exhibits. However, the situation once mastered, the visitor soon forgot the slight annoyance at being unable to immediately find the section required, and became absorbed in the extremely interesting Historical Collection, which consisted of photographs of well-known photographers who have crossed the border-line, to whom much of the present position of photography is due; early photographs and apparatus, including "the first camera photograph," taken by Nicephore Niepce in 1824, photo-etched plates and heliographic prints of some two years later; illustrations of the Daguerreotype, Talbotype, or Calotype processes, wet collodion processes, collodion emulsion, introduced in 1864 by Bolton and Sayce, and the gelatine-bromide process, which was well illustrated by several of the earliest negatives made in 1871 by Dr. Maddox. The various methods of carbon printing were shown, and the developments in photographic cameras, photographic engraving in intaglio, photo-lithography, collotype and photo-typographic engraving in relief. The section devoted to lenses was a fine exposition of the progress made in that direction, comprising as it did specimens of the earliest types of lenses down to the latest anastigmat lens.—Photography in its Scientific Applications was the next section that demanded attention. This section comprised engineering, astronomical, spectroscope, geological, meteorological, zoological, botanical, military, and X ray photography; photographic recording instruments and examples of the art of photo-micrography.—Photography in Colours was the title of the section that perhaps attracted the greatest number of visitors, and they were not disappointed, as the exhibit included specimens of the best work done by the various workers in this direction.—Other sections dealt with Photography as a Science, and General Technical Photography and Process Work.—The North and South Naves of the Palace were occupied by the stalls of exhibitors of apparatus and material for photographic and photo-mechanical processes. The space at disposal will not allow of a detailed description of the fifty or sixty exhibits, but brief reference may be made to one or two new articles that have not as yet become universally known.

The very latest addition to the stock of Messrs. Ross, Ltd., 111, New Bond Street, W., is the "Eclipse" Patent Arc Lamp, which promises to supersede all others of its kind. It is an electric lamp and has a specially good lateral motion, while the arc is always presented to the optic centre. There is no current in the lamp, consequently it can be handled with perfect impunity, there being no danger of getting a shock. It is exceedingly well made and is of solid construction, beautifully finished, and priced at £4 10*s*., subject to good discount. Another new thing is an Enlarging Lantern, having a remarkably smooth action, the tubes moving in and out with perfect freedom. It has been designed to meet the requirements of all climates, so that extreme heat or extreme cold do not affect the tubes in the slightest degree; consequently they preserve the easy motion so necessary if good results are required. The apparatus is very rigid in the front, and, whilst bearing a general resemblance to other instruments for the same purpose, differs from them in every essential detail, both optically and mechanically. An oil lamp giving a flame of great actinic power, and fitted with a patent lighting arrangement, is supplied with the instrument, but either an incandescent gas lamp or a limelight jet may be fitted to the apparatus. Ross' New Patent Science Lantern received much attention from those interested in scientific demonstration work. It is a high-class instrument, double fronted, each end carrying a triple condenser. One front is for parallel beam work, and will carry a microscope, polariscope, or any other desired optical arrangement. The other front takes slides, tanks, diagrams, etc., and may be used for either horizontal or vertical projection. The body of the instrument is built on a large and deep ring, working in a frame which is mounted on four stout pillars fixed to a circular base.—An interesting improvement in hand cameras is Ross' Portable Twin-lens Camera, being a new patent folding model, much more compact than the old pattern. Amongst lenses the New Planar is the latest production of Messrs. Ross. It is very rapid, and yields sharply-defined pictures; the rapidity varies from F/3·6 to F/6, according to the size and application of the lens, while the angle embraced by it varies from 62° to 72°. The Planars are superior in precision to the Anastigmats hitherto made, and are pre-eminently adapted for all kinds of copying processes, for the most rapid instantaneous exposures out of doors, and also for photo-micrographic enlargements and reductions, kinematograph pictures, etc.

The stall of Messrs. Geo. Houghton & Son, 88 and 89, High Holborn, W.C., was evidently one of the most attractive in the exhibition, the attraction being the many novelties in hand cameras, etc., and practical demonstrations of a new process—the "Radiotint"—for colouring photographs, which, judging from the results obtained, should prove a boon to photographers. This novel and charming process consists of three primary coloured liquids and a colourless basis liquid, which yield all possible gradations of tone. The colours are transparent, and, it is claimed, are absolutely permanent and cannot be washed away, nor are they liable to smudge when handled or affected in any way if the photograph be burnished after treatment. The liquids are immediately blotted off on application, the colours only applying themselves in intensity according to the original tone of the surface, the effect of application being instantaneous. Practically speaking, the process is simply a series of washings, and except for detail there is very little brush work.—Houghton's Patent Studio Shutter is specially constructed to work inside the camera, and owing to its shape, *i.e.*, square, and the opening being perfectly central, with a minimum of space for the working parts, the smallest size, giving an aperture of 3 in. square, can be fitted inside any ½-plate studio camera. The principle of working is entirely new, and should prove an advance on other kinds of studio shutters. It is perfectly silent in operating, and is fitted with pneumatic ball and tube with tap.—The "Victo" ½-plate camera set was greatly admired. It has a wide angle movement and double dark slide, rapid rectilinear achromatic lens, with Iris diaphragms and removable hood, is fitted with Thornton-Pickard shutter, and is sold complete with three-fold tripod stand at £3 10*s*.

Mr. J. E. Lockyer, chemist, 87, Evelyn Street, Deptford, S.E., exhibited his noted hydroquinone developer, also specimens of all chemicals used in photography and several specialties in the form of hand cameras, the principal being Lockyer's "Diamond" Camera, which can easily be carried in the pocket, and takes pictures $2\frac{1}{8}$ by $1\frac{5}{8}$ inches. It is on the magazine principle, holds six plates, and has two view finders. In striking contrast to this small camera stood the "Mammoth" process camera exhibited by Messrs. Penrose and Co., Upper Baker Street, W.C. This camera is believed to be the largest made for process work, and will take a plate 6 feet by 5 feet, for line work and ordinary copying. The back part is intended to be built into the partition wall of a dark room, which would form the dark slide. The inside of the camera forms a little room about 7 feet by 3 feet, in which two persons can stand and watch the operation of focussing the image and exposure. The full extension of the camera is 12 feet, and the lens fitted to it is of the symmetrical type, specially made for copying purposes by Messrs Ross, Ltd. It works at F/11, and has an equivalent focus of 60 inches.

Messrs. Salmon & Son, 169, Hampstead Road, N.W., exhibited their Patent Portable Magnesium Ribbon Lighting Apparatus for Portraiture and a New Dish Rocker, so constructed that several dishes may be rocked simultaneously, while it can be made stationary at will, forming a rigid table. Their Adjustable Vignetter, which was recently mentioned in the Journal (see p. 339), was greatly admired. It has been highly recommended in the photographic press, and certainly the results obtained justify the praise bestowed.

Numerous novelties were shown by other exhibitors, particulars of which are given in the catalogue of the Exhibition, a truly wonderful production, well worth the price charged (1*s*.), containing as it does information of excellent quality on various subjects, together with a host of remarkably fine illustrations. Of books and periodicals relating to photography there is a fine array, the stalls occupying nearly the whole of the North Nave, and altogether the Exhibition which is still open, is a great success.

PHOTOGRAPHING IN PUBLIC BUILDINGS, PARKS, OPEN SPACES, ETC.

As a rule, permission is readily given to photograph in public buildings, parks, open spaces, etc. When making written application, it is advisable to enclose a stamped addressed envelope.

In the Provinces.

CATHEDRALS.—Apply to the Deans.

CHURCHES.—Apply to the Vicars.

RUINS OF ABBEYS AND CASTLES.—Apply to the Stewards.

In London and Vicinity.

BATTERSEA PARK.—Apply to the Chief Officer, London County Council, Spring Gardens, London, S.W., as also for permission in the following cases :—Clissold Park, Finsbury Park, Victoria Park, Hackney Marsh, Dulwich Park, Blackheath, Plumstead Common, Battersea Park, Ravenscourt Park, Hammersmith, Waterlow Park, Albert Embankment Gardens, Hampstead Heath, Parliament Hill, Victoria Embankment Gardens, Brockwell Park, Kennington Park, Clapham Common, Chelsea Embankment Gardens, Streatham Common, Tooting Common, Wandsworth Common, Wormwood Scrubbs.

BETHNAL GREEN MUSEUM, E., for National Portraits.—Apply to the Curator, 20, Great George Street, Westminster, S.W. Objects belonging to the Science and Art Department same as for South Kensington.

BOTANICAL GARDENS, REGENT'S PARK.—Apply to the Secretary, The Gardens, Regent's Park.

BRITISH MUSEUM.—Apply to the Principal Librarian, British Museum, Great Russell Street, W.C.

BURNHAM BEECHES.—No restriction.

BUSHEY PARK.—See under "Parks."

CRYSTAL PALACE.—Messrs. Negretti and Zambra have exclusive rights.

EPPING FOREST, Wanstead Park, Burnham Beeches (Slough), Coulsdon Common, Highgate Wood, Queen's Park, Kilburn, West Wickham Common, St. Paul's Churchyard.—Apply to the Town Clerk, Guildhall, London, E.C.

FINSBURY PARK.—Apply to the County Council as above.

HOUSES OF PARLIAMENT.—Apply to the Secretary, the Lord Great Chamberlain's Office, House of Lords, S.W.

IMPERIAL INSTITUTE.—Apply to the Secretary.

KEW GARDENS.—Apply to the Director. The privilege is not available on Sundays, Christmas Day, Good Friday, or Bank Holidays.

NATIONAL GALLERY.—Apply to the Director. Permission is only granted to professional photographers.

PARKS.—St. James's Park, Green Park, Hyde Park, Kensington Gardens, Regent's Park, Greenwich Park, Richmond Park, Bushey Park, Hampton Court Park.—Apply to the Secretary, H.M. Office of Works, 12, Whitehall Place, S.W.

PUBLIC RECORD OFFICE.—Apply to the Secretary, Public Record Office, Chancery Lane, E.C.

ST. PAUL'S CATHEDRAL.—Apply to the Dean.

SOUTH KENSINGTON MUSEUM.—Apply to the Secretary, Science and Art Department, London, S.W.

TOWER OF LONDON.—Apply to the Constable of the Tower.

VICTORIA PARK.—Apply to the County Council.

VIRGINIA WATER.—Apply to Capt. Walter Campbell, Holly Grove, Windsor Park.

WANSTEAD PARK.—Apply to the Town Clerk, Guildhall, London, E.C.

WESTMINSTER ABBEY.—A form of recommendation can be obtained from the Chapter Clerk, the Sanctuary, Westminster, S.W. ; it must be signed by a member of Parliament, of the Royal Academy, a barrister or clergyman, and then sent to the Chapter Clerk as above.

WINDSOR GREEN PARK.—Apply to Capt. Walter Campbell, Holly Grove, Windsor Park.

ZOOLOGICAL GARDENS, REGENT'S PARK.—Apply to the Secretary, Zoological Society, 3, Hanover Square, London, W.

NEW IDEAS AND TRADE NOTES

PORTABLE MAGNESIUM LIGHTING APPARATUS.

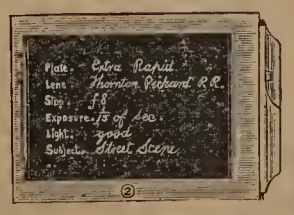
This apparatus, constructed by SALMON & SON, 169, Hampstead Road, N.W., which is being exhibited with their other novelties (Patent Vignetter and Dish Rocker) at the Photographic Exhibition, Crystal Palace, Stall No. 8, consists of specially constructed brass spirit lamps, and a series of arms, at the end of each of which two or more charges of magnesium ribbon are clipped. These are held together by a metal sheath, and can be fired simultaneously or consecutively, being actuated pneumatically by a rubber tube and ball, which brings the magnesium ribbon into contact with the flame of the spirit lamps. The whole is contained in a portable polished mahogany cabinet, 25 by 20 by 9 inches, with a door at the back for charging and recharging. There is a sliding panel front and corrugated glass light diffuser, also in a sliding frame, the whole forming a compact, well-made and elegant adjunct to the studio, and so constructed for portability that it can be set up where desired in less than five minutes, being entirely self-contained. The price of the apparatus is £10 10s. The telescopic chimney packs with the tripod stand.

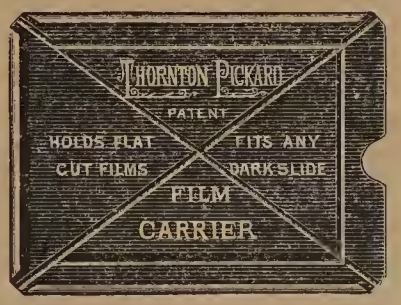
NEW PHOTOGRAPHIC PRICE-LIST.

MESSRS. BARCLAY & SONS, LTD., 95, Farringdon Street, London, E.C., send a new photographic price-list. The list is got up on the same lines as previously—that is to say, all the prices quoted are retail, so that chemists can show or give copies to their customers, and the trade discounts allowed are indicated by letters. The list is considerably enlarged, but there are no specially new features, with the exception of the list of chemicals, in which, in addition to prices per ounce and pound, a column is devoted to prices per kilo. Prices are quoted of measures graduated to cubic centimetres, also quotations for metric weights, which should be appreciated in places where those weights are used. Every chemist should possess a copy of this price-list, which is arranged alphabetically, and is therefore convenient and easy for reference. The well known Barclay's 50s. hand camera continues to be a great success, and dealers cannot do better than stock it.

THORNTON-PICKARD NOVELTIES.

THE THORNTON-PICKARD MANUFACTURING COMPANY, LTD., Altrincham, send a copy of the 1898 catalogue of cameras, shutters, and other specialties. The cameras are suitable for every imaginable class of work, as are also the various patterns of shutters, from studio work to the most extra-rapid instantaneous. The catalogue gives several good picture illustrations of work done with these shutters. A Patent Plate holder is now made with aluminium shutters which draw right out, and has an improved light trap, which effectually prevents any possibility of light reaching the plate when the shutter of the plate holder is drawn right out. These plate holders are not only suitable for the firm's own cameras but may be fitted to any other maker's cameras. They are very cheap indeed, ranging from 7s. in the quarter-plate size. A Film Carrier made by the firm combines the utmost stiffness and lightness possible, and is one of the best film carriers on the market. It is made of extremely thin sheet metal, strength and rigidity being obtained by indented ribs or corrugations that run in various directions. The film is simply pushed into the grooves formed by the three turned edges, then the carrier is placed in the dark slide just as though it were a plate. A notch at the end is provided, so that the film can be easily gripped by the finger and thumb for removal. The new Aluminium Shutter is made on the same principle as the firm's well-known Standard pattern shutters, but is cheaper to produce, and has been introduced to meet the demand for a cheaper article where purchasers cannot afford to pay the price of the better shutters.





AN EXCELLENT DARK ROOM LAMP.

THE Phœnix Dark-Room Lamp, made by Messrs. REYNOLDS & BRANSON, Leeds, is about as complete an arrangement for use with gas as an illuminant as could possibly be devised. It is rather less than a foot high by eight inches wide, and has a double casing, which secures a cool exterior and good ventilation, besides preventing any smell. But the most novel point about the lamp is the tap, which is a very ingenious contrivance, enabling the operator to obtain actinic or non-actinic light at will. By turning it to A, white light is obtained at the jet E; on turning it to C, non-actinic light proceeds from D; whilst placing the tap midway, at B, results in both jets being turned down to the non-luminous point. The price of the lamp is 15s., postage 1s. extra.

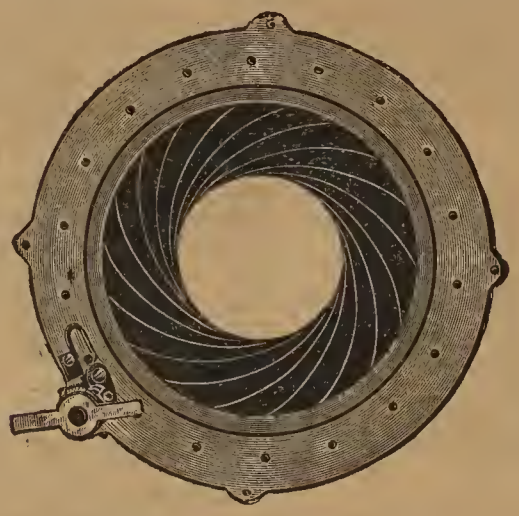
CHEMICALS FOR PHOTOGRAPHY.

MESSRS. HARRINGTON BROTHERS, 4, Oliver's Yard, City Road, London, E.C., send their wholesale price-list of chemicals for photography and radiography or Köntgen's experiments. Prices are quoted for chemicals for all the various photographic and photo-mechanical processes, and special terms for quantities of salts of the rare metals used for incandescent light purposes. The firm prepare and bottle photographic solutions of all kinds to suit the requirements of dealers, the greatest accuracy and secrecy being guaranteed in their preparation. For the convenience of

dealers photographic chemicals are put up in neatly-capped white glass bottles of all sizes, and labelled with dealers' own labels or with plain labels, as required, special prices being quoted on application. The complete list of chemicals for scientific and technical purposes will be sent to any photographic dealer upon application.

MESSRS. W. BUTCHER & SON'S NOVELTIES.

Messrs. W. Butcher and Son, Blackheath, S.E., send their new catalogue of cameras and apparatus, in which particulars are given of their new "Swift" Roller-Blind Shutters, all of which are fitted complete with speed indicator to show the relative speed at which the shutter is working, that is, between 1/15th and 1/90th of a second. These shutters are beautifully made and finished,



whilst their performance is excellent. The Universal Lens Adapter is another excellent piece of apparatus, although perhaps not in every-day demand. The ring is made in aluminium, with steel leaves, and is adjusted by means of a thumb screw on the slide, which is fitted with a racket, holding the lens very firmly until the screw is unwound. It takes lenses from 1 inch to 2½ inches diameter. A good line for chemists to stock is the 21s. ¼-plate outfit, consisting of camera, dark slide, lens, shutter, and stand. There are also several good lines of hand cameras ranging from 8s. up to £2 2s.

TABLES OF DISTANCES AT AND BEYOND WHICH ALL OBJECTS ARE IN FOCUS.*

Sir D. Salomon's Table.

Focus of Lens in Inches.	Ratios marked on Stops.													
	f/7	*f*/8	*f*/9	*f*/10	*f*/11	*f*/12	*f*/13	*f*/14	*f*/15	*f*/16	*f*/17	*f*/18	*f*/19	*f*/20
	Number of feet after which all is in focus.													
4	19	17	15	14	13	12	11	10	9	9	8	8	7	7
4¼	21	19	17	15	14	12	11	11	10	10	9	9	8	7
4½	25	22	19	17	16	15	13	13	12	11	10	10	9	9
4¾	27	23	21	19	18	16	15	14	13	12	12	11	10	10
5	30	27	24	21	19	18	17	15	14	14	13	12	11	10
5¼	33	29	25	23	21	20	18	17	16	15	14	13	13	12
5½	37	31	29	26	23	22	20	19	17	16	15	15	14	13
5¾	39	34	31	28	26	24	22	20	18	18	17	16	15	14
6	43	38	33	31	28	26	24	22	21	20	18	17	16	15
6¼	47	41	37	33	30	28	26	24	22	20	20	19	18	17
6½	50	45	40	36	33	29	28	26	24	23	21	20	19	18
6¾	55	48	43	39	36	32	30	28	25	24	22	22	21	20
7	58	52	45	42	38	35	31	30	28	26	25	23	22	21

Dr. J. J. Higgins's Table.

Equivalent Focus.	*f*/5	*f*/6	*f*/7	*f*/8	*f*/9	*f*/10	*f*/11	*f*/12	*f*/13	*f*/14	*f*/15
5 inches	42	35	30	26	23	21	19	17½	16	15	14
5½ ,,	50½	42	36	32	28	25	23	21	19	18	17
6 ,,	60	50	43	38	34	30	27	25	23	21	20
6½ ,,	70½	59	50	44	39	35	32	29½	27	25	23½
7 ,,	82	68	59	51	45	41	39	34	31	29½	27

Calculated for a Confusion Disc of less than 1/100 of an inch.

* From the 'British Journal Photographic Almanac.'

TABLE SHOWING DISPLACEMENT ON GROUND GLASS OF OBJECTS IN MOTION.*

BY HENRY L. TOLMAN.

LENS SIX INCHES EQUIVALENT FOCUS, GROUND GLASS AT PRINCIPAL FOCUS OF LENS.

Miles per hour.	Feet per second.	Distance on Ground Glass, in Inches, with Object 30 Feet away.	Same with Object 60 Feet away.	Same with Object 120 Feet away.
1	1½	·29	·15	073
2	3	·59	·29	·147
3	4½	·88	·44	·220
4	6	1·17	·59	·293
5	7½	1·47	·73	·367
6	9	1·76	·88	·440
7	10½	2 05	1·03	·513
8	12	2·35	1·17	·587
9	13	2·64	1·32	·660
10	14½	2·93	1 47	·733
11	16	3·23	1·61	·807
12	17½	3·52	1·76	·880
13	19	3·81	1·91	·953
14	20½	4·11	2 05	1·027
15	22	4·40	2·20	1·100
20	29	5·87	2 93	1·467
25	37	7·33	3·67	1·833
30	44	8·80	4·40	2·200
35	51	10·27	5 13	2·567
40	59	11·73	5·97	2 933
45	66	13·20	6·60	3·3 0
50	73	14·67	7 33	3·667
55	80	16·13	8·06	4 033
60	88	17·60	8·80	4·400
75	110	22·00	11·00	5 500
100	147	29·33	14·67	7·333
125	183	36·57	18·33	9·167
150	220	44·00	22·00	11·000

DR. SCOTT'S TABLE OF COMPARATIVE EXPOSURES.†

The following table, compiled by Dr. J. A. Scott, shows the comparative value of daylight at different hours of the day and seasons of the year, and is intended for use in conjunction with Burton's table.

TABLE OF COMPARATIVE EXPOSURES.

Hour of Day. A.M.	Hour of Day. P.M.	June.	May, July.	April, Aug.	Mar., Sept.	Feb., Oct.	Jan., Nov.	Dec.
12		1	1	1¼	1½	2	3½	4
11	1	1	1	1¼	1½	2½	4	5
10	2	1	1	1¼	1¾	3	5	6
9	3	1	1¼	1½	2	4	*12	*16
8	4	1½	1½	2	3	*10		
7	5	2	2½	3	*6			
6	6	2½	*3	*6				
5	7	*5	*6					
4	8	*12						

* The accuracy of these figures would be affected by a yellow sunset.

EXPOSURE TABLE FOR VARIOUS SUBJECTS,†

WITH VARIOUS APERTURES FOR JUNE, FROM 10 TO 2, WITH CLEAR SKY AND EXTRA RAPID PLATES.

BY W. K. BURTON. IMPROVED BY DR. EDER.

Aperture of Lens.	Sea and Sky.	Landscapes. Open Landscape.	Landscape, with heavy shadows or trees in foreground.	Under Trees.	Interiors. Bright Interiors.	Dark Interiors.	Portraits. In bright diffused light in the open air.	In well-lighted Studio.	In an Ordinary Room.
f-5·6	1/400′	1/120′	1/20′	0′ 4″	0′ 4″	0hr. 1′	1/12′	3/8′	0′ 1½″
f-8	1/200	1/84	1/10	0 8	0 8	0 2	1/6	3/4	0 3
f-11·3	1/100	1/32	1/5	0 16	0 16	0 4	1/3	1 1/2	0 6
f-16	1/50	1/16	2/5	0 32	0 32	0 8	2/3	3	0 12
f-22·6	1/25	1/8	4/5	1 4	1 4	0 16	1 1/3	6	0 24
f-32	1/12	1/4	1 1/2	2 8	2 8	0 32	2 2/3	12	0 48
f-45	1/6	1/2	3	4 16	4 16	1 0	5	24	1 36
f-64	1/3	1	6	8 32	8 32	2 0	10	48	3 12

* From the 'Photographic Times.'
† From the 'Year Book of Photography.'

THE PHARMACIST AS A PHOTOGRAPHIC DEALER.

In continuation of previous articles dealing with the preparations which may be put up ready for sale, we now come to varnishes, etc.

The ordinary amateur is not, as a rule, an expert at varnishing in the ordinary method; that is to say, by heating the negative and flowing a thin varnish over it. In doing this he, as a rule, either pours as much up his sleeve and on the floor as remains on the negative. Still, to make these notes complete, a formula is included for the ordinary negative varnish, which is generally an alcoholic solution of shellac or shellac and sandarac.

I.

Orange Shellac	4 ozs.
Canada Balsam	60 grs.
Oil of Lavender	1 oz.
Methylated Spirit	16 ozs.

II.

Shellac	4 ozs.
Sandarac	12 ozs.
Venice Turpentine	4 fl. ozs.
Methylated Spirit	1 gallon.

There is not much to choose between these so far as efficacy is concerned, nor do they need much comment as to their manufacture; but should, however, there be found any difficulty in clearing them, the best thing to do is to shake a little pumice powder up in the bottles and allow to settle, and then filter. The old methylated spirit must be used, not the new mixture. The directions for using these varnishes are the same in both cases, viz., "Warm the negative in front of the fire till as hot as the hand can comfortably bear, then flow over with varnish and drain the excess into the stock bottle."

Cold varnishes are as a rule much preferred by amateurs, as they can be applied with a brush, such as a varnish mop or flat camel's-hair brush. Cold varnishes are of two principal kinds, either an aqueous solution of bleached shellac in carbonate or borate of soda, or else an ammoniacal spirit varnish. Of the two the latter is to be preferred, but neither of these gives so much protection to the negative as the so-called "zaponlack" or zapon varnish, which is practically a solution of celluloid.

Aqueous Shellac Varnish.

White Shellac	80 grs.
Borax	20 grs.
Water	2¼ ozs.

Dissolve the borax in the water with the aid of heat, and add the shellac in coarse powder and boil and stir till dissolved, then filter. This varnish is very suitable for celluloid films, which should be dipped bodily into it, and then hung up to dry.

Ammoniacal Varnish.

Ammonia-Alcohol (Absolute)	2¼ ozs.
Shellac, Pale Orange	100 grs.

Allow to soak with occasional agitation for twenty-four hours, and then heat carefully and gently on a water bath. This gives a good resistant film, but the generality of these varnishes now on the market are made by merely reducing the quantity of solvent in the ordinary negative varnish, and adding sufficient liq. ammon. ft. ·880 to give a clear solution.

Zapon or celluloid varnish can be made by dissolving pyroxylin in methylated spirit to which a little camphor has been added, in acetone, etc. The following is a good formula:—

Amyl Acetate	30 drachms.
Benzole	30 ,,
Acetone	16 ,,
Pyroxyline	125 grs.

Another good formula is:—

Pyroxyline	150 grs.
Acetone	2¼ ozs.

Allow to stand for an hour and add—

Amyl Acetate	4½ ozs.
Benzole	4½ ozs.

Shake well, allow to stand with occasional shaking for twelve hours, and then filter. If celluloid is used instead of the pyroxylin there is no need for filtration.

A patent was taken out in 1893 for the following:—

Methyl Alcohol or Acetone	15 gallons.
Petroleum Naphtha	50 ,,
Liquid Ketone	35 ,,
Pyroxylin	25 lbs.

or—

Liquid Ketone	50 gallons.
Petroleum Naphtha	50 ,,
Collodion	25 lbs.

Celluloid itself makes an excellent varnish, and may replace the pyroxylin in the above formulæ, though somewhat less has to be

used. Small waste pieces of transparent celluloid may be obtained sometimes, but if the varnish is to be prepared in any quantity it should be bought in the sheet.

The disadvantage of the above varnishes is the long time they take to dry, and the, to some people, extremely obnoxious smell of the amyl acetate, whilst even a short inhalation of the amyl fumes may cause nausea and headache, so that the following is preferable :—

Sandarac	120 grs.
Benzole	1 oz.
Acetone	1 oz.
Absolute alcohol	½ oz.

The sandarac should be covered with the alcohol, then left for about twelve hours, and the benzole and acetone added and allowed to stand with occasional agitation for at least a week, and then filtered. Whilst this takes some time to make, a much quicker and better method is to dissolve the sandarac in the alcohol as far as possible in a water bath, and then add the acetone ; continue the heat for a short time, and then add the benzole ; remove from the fire and allow to stand, and, if necessary, filter. Of course, great care has to be taken not to allow the spirituous vapours to catch fire.

Although not so much used by amateurs, still retouching varnish can be put up, and the following will be found satisfactory :—

Gum Dammar	100 grs.
Canada Balsam	50 ,,
Turpentine	10 ozs.

Directions for use : Moisten the end of the finger with the varnish and rub with a circular motion over the film of the negative.

A black varnish for the interior of cameras, dark slides, etc., is one that is likely to sell, and as it is essential that this should be without gloss, the following will be found to answer all requirements :—

Water	1 oz.
Borax	15 grs.
Shellac	30 ,,
Glycerin	15 ,,
Dissolve by boiling and add Aniline Black	60 ,,

Matt varnish is frequently used to coat the backs of negatives, so as to enable a little re-touching to be done on the same or to prevent one part printing too much. A good formula for this is :—.

Ether	10 ozs.
Sandarac	1 oz.
Gum Dammar	160 grs.
Dissolve and add Benzole	5 ozs.

For ordinary work a plain matt varnish is all that is required, but in special cases it may be necessary to colour it, and then this may be done either by using asphalt or some of the aniline colours, such as chrysoidine, aurantia, uranine, or fuchsine. The exact quantity is to a great extent a matter of taste, or rather requirements, as some require a pale varnish and others a deep coloured one. It must not be forgotten that the film of varnish is, when dry, very thin, and therefore the varnish must be fairly deeply coloured to give any protection at all ; it is preferable to use fuchsine and aurantia, about 5 grs. of each to the ounce, and to allow the varnish to macerate for a week or so with occasional agitation.

Lainer, of Vienna, suggests the following as improvements upon the above.

Sandarac	50 grs.
Ether	1 oz.

Dissolve and add.

Toluol	2½ drachms.

Another useful preparation which has had a fairly good sale, but which has to some extent been discounted now by the plate makers issuing plates already backed is "Backing" or "Antihalation" paste. This is a mixture of caramel and gum arabic, which is applied to the back of dry plates to prevent the occurrence of "halation," a defect which we need not enter into now. Caramel or saccharum ustum, as obtained from the wholesale house, is totally unsuitable, as it consists of a mixture of caramel, carameline and caramelane, and it is always slightly hygroscopic and never dries. It can be prepared for photographic use by pouring into twice its volume of methylated spirit, stirring well, decanting from the precipitate as closely as possible, and pouring the precipitate out into a dish and allowing to evaporate, and then dissolving in sufficient water with gum arabic powder to make a stiff paste. Far preferable to this, however, is the caramel powder as used by brewers, which can be obtained from Lichtenstein and Co., of the Silver Town Chemical Works, Stepney, E. An ounce of this with ½ oz. of powdered gum arabic made into a paste with water forms an efficient backing, which very quickly dries and does not require removal from the back of the plate prior to development.

We now come to the question of mountants for prints. The most general is a solution of gelatin mixed with methylated spirit, which, however, has the disadvantage of always requiring heating before use. Such a mountant is made as follows :—

Soft Gelatin	200 grs.
Distilled Water	6 ozs.

Allow to soak for an hour, then melt by the aid of a water bath, and add in small quantities at a time whilst stirring—

Methylated Spirit	2 ozs.
Carbolic Acid or Thymol	*q.s.*

A better formula is—

Arrowroot	150 grs.
Soft Gelatin	150 grs.
Distilled Water	3 ozs.

Allow the gelatin to soak for some hours, pour off the water and dissolve in it the arrowroot by boiling, add the gelatin, and continue the heat and stirring till dissolved. When cool, add—

Methylated Spirit	2½ drachms.
Carbolic Acid	3 minims.

The best mountant is, however, made with white dextrin, as follows :—

White Dextrin	280 grs.
White Sugar	60 ,,
Alum	16 ,,
Boiling Water	1 oz.
Carbolic Acid, 10 per cent. sol.	20 minims.

Rub the three powders together and then add the water, heat for about five minutes, and allow to cool, then either squeeze through fine linen, such as nainsook, or else rub up in a mortar and bottle. It is, of course, advisable to add a little antiseptic, and this may be either a little alcoholic solution of thymol or carbolic acid ; though many use salicylic acid and oil of wintergreen or cassia to cover, or try and cover, the characteristic smell of the dextrine. This requires no heating, and should rub up under the brush into a perfectly smooth unctuous film.

Indiarubber solution is sometimes used as a mountant, and to make this, about 10 grs. of pure masticated rubber should be dissolved in an ounce of benzole.

PHOTOGRAPHIC NOTES.

Diamido-resorcin as a Developer.

Diamido-resorcin is a new developer for photographic purposes brought into the market by Grandjean Zimermann and Co., of Brugg, Switzerland. The following mixture is used as a bath : Water, 100 ; anhydrous sodium sulphite, 3 ; diamido-resorcin, 1. The latter must only be added immediately before use or a concentrated stock solution may be kept.—*Pharm. Cent.*, xxxix., 85.

Recovery of Silver.

To recover silver from photographic baths in which it exists as the soluble silver sodium thiosulphate, boil first with ammonium sulphide, thus precipitating the metal as sulphide ; this is then collected, washed, dried, and reduced to the metallic state by heating with charcoal.—*Sci. Amer.*, lxxviii., 19.

Developing with Glycin.

Glycin is the hydrochloride of *p*-oxyphenol-amido-acetic acid. According to Hübl, it is best used by preparing a concentrated solution for permanent use. Twenty-five grammes sodium sulphite are dissolved in 40 C.c. of hot water, 10 grammes glycin added, heated to boiling, and then 50 grammes potassium carbonate are added. For a normal or short exposure, 1 part of this solution is diluted with 20 parts of water (temperature, 20 to 25° C.), and, if necessary, a little caustic soda solution, 1 to 10, is added. When developing plates of doubtful exposure, 1 part of the solution is diluted with 20 parts of water, or when exposing plates the sensitiveness of which are quite uncertain, 1 part of the solution is diluted with 80 parts of water. One to 2 C.c. of potassium bromide solution are added to 1 litre of the fluid, and the developer is cooled to 10° C. by ice. The development takes a very long time, but this method allows almost any errors in exposure to be corrected.—*Chem. Zeit. Repert.*, xxii., after *Wiener photo Bl.*, 5, 3.

Photographic Tourists' Guide.

IN the following list an asterisk (*) preceding the name of a town indicates inability to find that any chemist in the place has a dark-room, though there may be one or more who stock photographic materials. Where there is a dark-room, the fact is indicated by a capital "D" following the name and address, and except where the dark-room is at an hotel, it may mostly be taken for granted that plates and other photographic materials are stocked. The dark-rooms can, in some cases, be used for developing as well as changing, and even where there is not a dark-room, it is usually possible to get plates changed.

Melksham (Wilts).

J. E. Bush, Market Place D.

Melksham is an ancient little town situated in the Avon valley, about twelve miles from Bath, and seven from Devizes. It has a very interesting church, with a very beautiful reredos in alabaster representing the Nativity. Three miles distant, on the road to Chippenham, is the quaint and ancient village of Lacock, with its beautiful and perfect abbey, the birth-place of Talbot-type and the seat of C. H. Talbot, Esq., son of the eminent chemist. Visitors can see over the Abbey on the payment of 6d., which goes to the church restoration fund

Middlesborough (Yorks.)

R. Hall, Morton Rd.
P. J. Harrington, Newport Rd.
Middleton & Co., Linthorpe Rd. D.
J. C. Robson, 37, Linthorpe Rd. D.

Middlesborough is on the Tees, and has some very good rustic scenery. The whole Cleveland district is interesting. There are ship-building yards, docks, the South Gare breakwater, nearly 2½ miles long, and many large chemical and other works, besides other objects.

Middleton (Lancs).

S. W. Evans, 27, Long St. D.

Middleton has an old church, 1120, very richly carved on the south side of the building, with a quaint looking wooden steeple. Under the steeple is a curious Norman arch. The interior contains a fine old screen. "The Old Boar's Head," and a drinking fountain are worth taking. Hopwood Hall is near, and has some views about it.

Middlewich (Cheshire).

F. Brauer, Lower St. D.

Middlewich is an old-fashioned market town on the river Dane.

*Midhurst (Sussex).

F. Coze, Eastbourne Rd. D.

Midhurst is on the Rother. Cowdray House, built about 1530, is a beautiful ruin.

Milnrow (Lancs).

W. Nall, 41, Dale St. D.

Milnrow, near Rochdale, presents no object of interest. It is too smoky and barren.

Mirfield (Yorks).

C. Crook, Easthorpe. D.

Mirfield is in the midst of woodland scenery. Robin Hood's grave and Roe-head House, the school attended by Charlotte Bronte, are among the objects of interest.

*Mohill (Ireland).

Burns's Commercial Hotel. D.

Mohill is near Dromod, on the Cavan and Leitrim Railway.

Mold (Flints).

D. Hughes, 7, High St. D.

Mold is surrounded by some of the grandest scenery of North Wales. H. P. Robinson took most of his best pictures in this district.

*Monmouth (Mon.).

A. Collingdon, Angel Hotel. D.

Monmouth's chief features are John of Gaunt's Castle, in ruins; the parish church, fourteenth century, with graceful spire 200, feet high; the bridge over the Monnow, 1272, with its "Welsh Gate," and near it a small Norman chapel; the temple-crowned Kymin, 800 feet high; and the Buckstone, a rocking stone.

Montrose (Forfar).

A. Davidson, 172, High St. D.

Montrose is a very old town. The chief points of interest to the camerist are the fine tower and spire of parish church, Suspension Bridge, Scurdyness Lighthouse, Lunatic Asylum, the Docks, and river mouth, the latter especially during the herring fishing. In the immediate neighbourhood are Rossie, Dunninald, and Lunan Castles, and a variety of sea and cliff scenery.

Morecambe (Lancs).

G. P. Parker, 4, Winterdyke Ter. D.

Morecambe presents many good views. The West End pier and promenade, the town from the bay and piers, sea-scapes with yachts, snapshots on sands and the old stone jetty. Heysham is a quaint and picturesque village two miles distant.

Moretonhampstead (Devon).

C. E. Evans, Forder St. D.

Moretonhampstead has some varied scenery around it. It is near Dartmoor.

*Nairn (Scotland).

Photographer on Station Rd. D.
Chemist in High St.

Nairn presents good pictures. There is a view of the High Street from the Free Church, of the town and river from the railway bridge, also above Cawdor Road. Snapshots at pier and on golf links. Cawdor Castle, grounds, and glen, five miles off.

Nantwich (Cheshire).

B. Woolstencroft, 14, Hospital St. D.

Nantwich is on the Weaver, and has some quaint old timber houses, a fine cruciform church, Early English to Perpendicular, with central octagonal tower, 110 feet high, a Gothic town-hall, and other objects.

*Neath (Glamorgan).

J. G. Isaac, New St.

Neath Abbey ruins and the remains of an ancient castle may be noticed, but they are sadly decayed and begrimed by smoke and coal dust. Extensive copper and tin-plate works and iron-foundries are in the district.

*Nelson (Lancs).

S. Jessop, 96, Manchester Rd.

Nelson is not far from Burnley. It is in a manufacturing district, but is of no remarkable interest.

Newark (Notts).

J. H. Smith, 9, Bridge St. D.

Newark Castle is a fine old ruin by the side of the river Trent. Many very pretty pictures may be obtained by boating up the river. Herds of cattle, in the summer time, cooling themselves in the water. The old church, with its steeple, which can be seen miles away.

New Basford (Notts).

F. C. Coates, 56, Rawson St. D.

New Basford is a suburb of Nottingham, in and around which are many good subjects for the photographer.

*Newburgh (Fife).

A. W. Shirras.

Newburgh is on the River Tay, amidst beautiful scenery. Near it is the Benedictine Abbey of Lindores, circa 1196, also the famous Cross Macduff.

*Newbury (Berks).

Fielder & Co., 2 & 3, Northbrook St.
Hickman & Metcalf, Market Place.

Newbury abounds with views for photographers, the scenery around being charming. The old Donnington Castle (famous in the civil wars of Charles I.'s reign) is quite near, also Highclere Castle, the seat of the Earl of Carnarvon. The roads around Newbury are very good, and cycling photographers would do well to stay in the town for a few days if in the neighbourhood.

Newcastle-on-Tyne (Northumberland).

P. Hall, 17, Pilgrim St. D.
Mawson & Swan, 11, Mosley St. D.
F. Park, 25, Collingwood St. D.
J. Watson, 34, Grainger St. D.
Wilkinson and Simpson, Ltd., 24, Newgate St. D.

Newcastle has, in the old Castle, the most perfect example of a Norman fortress in the country. The Black Gate should be noticed. St. Nicholas Cathedral, built 1206, possesses a beautiful and unique steeple. Jesmond Dene is a lovely park. The view of the old Mill is almost perfect. The High-level Bridge and the Swing Bridge make a fine picture. There is much shipping on the river, and plenty of good scenery round about.

*Newmarket (Cambs).

H. R. Sherborn. D.

Newmarket is the "racing capital" of England. It contains an unusual number of hotels and fine private houses, belonging to the patrons of the turf. During race-time the snapshot man may be very busy.

New Mills (Derbyshire).

A. Livesley & Son. D.

New Mills rises from the right bank of the River Guyt to the height of several hundred feet, and extends along the crags and turnpike road. There is much good work to be done in the Peak district.

Newport (Isle of Wight).

Timothy White Co., 122, High St. D.

Newport is in the centre of the island, and is within a quarter of an hour's walk of the historic castle of Carisbrooke. The village of Carisbrooke, the old church, and the convent are worth taking, and many other pretty pictures may be obtained in the neighbourhood.

Newport (Mon.).

Garrett & Atkins, 33, Commercial St. D.
A. G. Williams, 102, Chepstow Rd. D.

Newport abounds with good subjects in its vicinity. St. Woolos' Church, Stow Hill, built in the sixth century, with fine Norman architecture of west-end and tower, stands on a steep hill. Permission of Vicar required by photographers. The river front of the old Castle is good. Christ Church, two and a half miles away, is a good specimen of Norman work, and there is an old house at the corner of the churchyard. Tintern Abbey is distant twenty-two miles.

*Newport Pagnell (Bucks).

F. W. Taylor, 36, High St.

Tourists cycling to the North will be well repaid by leaving the Holyhead Road at Hockliffe, and riding *via* Northampton, passing through Woburn and Newport Pagnell. A fine view will be obtained of Woburn Park and the abbey, the seat of the Duke of Bedford. Newport Pagnell is an ancient market town within easy riding distance of Bedford and Northampton. The Parish Church is well worth a visit, and many interesting views may be obtained in the town and district.

Newton-le-Willows (Lancs.).

A. Peake, High St.

Newton-le-Willows is situated near to Warrington, and is a good centre for camerists who are desirous of "doing" the ship canal and the scenery on the Cheshire side of the boundary line.

Newry (Ireland).

S. Connor & Sons, Apothecaries Hall. D.

Newry is a seaport in Counties Down and Armagh, at the head of Carlingford Lough.

New Southgate (Middlesex).

J. H. Cuff, The Pharmacy. D.

New Southgate is six and a half miles north of London, and there is pretty country in its neighbourhood. Alexandra Palace and Park are not far from it.

Newton Abbot (Devon).

G. A. Barnes, 14, Courtenay St. D.

Newton Abbot is a very good centre for tourists, it being a junction. There is no better scenery in England than round Newton Abbot. Ford House, a good Tudor building, has lodged both Charles I. and William of Orange.

Newtown (Montgomery).

E. Owen, 48, Broad St. D.

Newtown is on the Severn and Montgomery Canal. It has not much to interest photographers, there are only a few local views.

*Northampton (Northampton)

F. Kirby, 114, Abington St.
F. Wright, 58, Abington St. D.

Northampton has amongst its objects of interest Queen Eleanor's Cross; St. Sepulchre's Church, Norman and Decorated, one of the few remaining round churches in England; St. Peter's Church, Norman; a fine town hall; a county hall, with a good decorated ceiling.

*North Shields (North'd).

W. G. Irving, 102, Bedford St.

North Shields has plenty of scenery in its neighbourhood, the sea-side, Tynemouth, Cullercoats, and Whitley. There are good views to be obtained in Northumberland Park. The Fish Quay, the herring fleet entering and leaving the harbour, and a river view with training ship, etc., are worth plates.

Northwich (Cheshire).

J. W. Deakin, 36, Witton St. D

Northwich is on the river Weaver, and the old Watling Street. Many of the dwelling houses are of an antique type.

Norwich (Norfolk).

W. T. Dawson, 76, Prince of Wales's Rd. D.
Fuller and Co., Rampant Horse St.

Norwich Cathedral and ancient churches and other buildings are noteworthy. Many quaint bits of old domestic architecture exist in the district of Coslany. There are remains of a Roman camp at Caistor St. Edmund, 3 miles south. The Broads are easily accessible.

Norwood (Surrey).

J. G. Atkinson, 25, Westow Hill.
J. E. Jewell, 30, Church Rd. D.
H. H. Mason, Broadway. D.
T. R. Prime, 88, Westow Hill.

Norwood, West (Surrey).

H. H. Mason, Broadway. D.

Norwood has pretty hill country around it, and is close to the Crystal Palace.

*Nottingham (Nottingham).

H. W. Cowley, 18, Alfreton Rd.
Gray & Selby, 27, Pelham St. D.
Guy and Co., 6, High St. D.
Shepperley & Co., 58, Long Row.
J. Taylor, 11, Bridlesmith Gate. D.

Nottingham Castle from the Boulevard should be taken in the early morning, 7 o'clock. Market Place, with Exchange, 8. Guildhall and Law Courts, 8.30. University College, 9. Free Museum, 9.30. School of Art. 10. Arboretum, Pond. Aviary, Chinese Bell, etc., 10.30. Rock Cemetery, with Robin Hood's Caves, 12. Trent Bridge, Colwick Park, Hall, and Lake should also be taken.

*Nuneaton (Warwick).

Illiffe & Son, 29, Market Pl.
H. Lester & Son, 1, Bridge St.

Nuneaton has a good Gothic church, and some remains of a twelfth-century nunnery, with a modern church built thereon.

*Nunhead (Surrey).

C. J. G. Bunker, Stuart Rd.

Nunhead is on the outskirts of South London, with much pretty scenery a little beyond.

*Oakham (Rutland).

Crown Hotel. D.

Oakham Castle is in ruins, except the hall, which is used for county business. According to an old custom, every peer passing the castle had to give a horseshoe, to be nailed to the gate of the castle, or placed in some part of the building, these present a very interesting feature in the place. The parish church is a fine building with a lofty spire. The old stocks in the market place, and the old school in the Churchyard are worth taking. Many pretty photographs may be obtained at the village of Burley-on-the-Hill

Oban (Argyll).

S. Lawrence, 101, George St. D.

Oban and its neigbourhood teem with subjects of interest. There are ruins of castles, ancient burying-places, rivers, glens, waterfalls, mountains, yachts and steamers—in fact, everything in the way of sea or landscape. The islands of Staffa and Iona are easily accessible, and they are unique, both on account of their historical associations and remains and of their natural formation.

*Oldbury (Worcester).

F. J. Keene, Market Pl.

Oldbury, which is near Birmingham, has itself nothing particular of interest, except the ruins of Dudley Castle, three miles away.

*Oldham (Lancs).

J. and J. Thompson & Co., Ltd., 192, Manchester St.
C. G. Wood & Co., 30, High St.

Oldham is a large industrial town with huge works and factories. The Alexandra Park covers 72 acres.

*Ottery St. Mary (Devon).

H. D. Badcock, Broad St.

Ottery St. Mary collegiate church is a magnificent building, a reduced copy of the cathedral of Exeter, these two being the only possessors of transeptal towers in England.

Oxford (Oxford).

J. A. R. Burbank, 116, Walton St. D.
C. Clayton, 158 and 160, Cowley Rd.
G. C Druce, 118, High Street. D.
J. Squire, 41, Queen St. D.

Oxford has everything to interest photographers; the Colleges, Cathedral, Churches, and splendid river scenery. Lodgings are cheap and good in vacation.

*Oxton (Cheshire).

Burroughs & Co., 29, Christchurch Rd.

Oxton is a suburb of Birkenhead, which see.

*Paignton (Devon).

F Sarson, 2, Palace Avenue.

Paignton is near Torquay, where there are dark rooms belonging to several of the chemists. There are many beautiful views around.

*Paisley (Renfrew).

R. Love & Co., 103, High St. D.

Paisley Abbey is the only item of interest to the photographer. The building dates from the fourth century. The chief external feature is the west front. In the north transept there is a beautiful window 35 feet high.

Parkstone (Dorset).

J. H. Morris, Tennyson Bldgs., Upper Parkstone. D.

Parkstone is between Poole and Bournemouth.

Peckham (Surrey).

M. Howell & Son, 81, High St. D.

Peckham has a large and influential photographic society, "The South London P.S." The Rye may give some snap-shot pictures.

*Peebles (Tweeddale).

Lintine Hotel. D.

Peebles presents the following items of interest: Ruins of the Cross Church; the bridge over the Tweed, several centuries old; Chambers' Institute, in the courtyard of which stands the shaft of the Old Cross of Peebles; Neidpath Castle, one mile away, strikingly situated on the rock; Black Dwarf's Cottage, four and a half miles, and Stobo Castle, six miles.

*Pembroke (Pembroke).

R. H. Trewceks, Main St.

Pembroke Castle is a very imposing ruin, with a Norman keep, 75 feet high, and 52 fect in diameter. Beneath is a huge natural cavern, 70 by 50 feet. Monkton Priory is another interesting structure. At Pembroke Dock, two and a half miles N.W., is the naval dockyard and arsenal.

Pendleton (Lancs).

G. J. Blore, 281, Broad St. D.
J. L. Smith, 180, High Street.

Pendleton is a north-western suburb of Manchester, and is a continuation of the main street of Salford.

Penrith (Cumberland).

J. Cowper, 50, King St.
T. Edmondson, 6, Corn Market. D.

Penrith is the principal entrance to the lovely scenery of the Lake District, which is too well known to need comment.

Penzance (Cornwall).

A. H. Buckett, 22, Market Pl. D.
N. H. Symons, 1, Market Pl. D.

Penzance has scenery of the most beautiful character, both landscape and seascape. In the town may be noted Quay Street and Church, 7 a.m.; Market Jew Street and Town Hall, 10 a.m., but not on market days; Esplanade and Harbour, morning and afternoon.

Pershore (Worcester).

W. Dowty, High St. D.

Pershore has an abbey in the town and plenty of interesting places in the neighbourhood. The road to Worcester, nine miles, is splendid.

*Perth (Perth).

J. Campbell, 41, George St. D.
G. Grieve, 128, High St. D.

Perth (general view) can be best taken from the railway viaduct. The chief items of interest are the ancient church of St. John, statues of Sir Walter Scott and the Prince Consort, the Marshall monument, the house of the "Fair Maid" in Curfew Row, Scone Palace, two and a half miles off, Hunting Tower, Kinfauns and Methvens Castles, still further away.

Peterborough (Northampton).

J. W. Bodger, 18, Cowgate. D.
T. J. Calcutt, 46, Narrow St. D.
H. E. Noble, Midgate Bldgs., New Rd. D.
Sturton & Sons, 42, Bridge St. D.

Peterborough has, in addition to its cathedral, a fair surrounding neighbourhood for views, including the Fenland scenery. Crowland Abbey, Thorney Abbey, Sandringham, Hunstanton Hall, and Castle Rising are accessible.

*Pitlochry (Perth).

P. Cameron. D.

Pitlochry provides several good views, including the Pass of Killiecrankie, three miles away.

Plaistow (Essex).

W. R. Barnes, 10, Terrace Rd. D.

Plaistow is five miles from London. It has nothing of importance in its immediate neighbourhood.

Plymouth (Devon).

J. H Bailey, 77, Old Town St. D.
Plymouth Co-operative Drug Co., 20, Cornwall St. D.
S. B. Turney & Sons, 183, Union St. D.

Plymouth is a remarkably good centre for photographic work, both seascape and landscape. The rivers Tamar and Plym are rich in picturesque scenery. The shipping in the Sound and the wild grandeur of Dartmoor are additional attractions.

*Pontypridd (Glamorgan).

T. Forrest & Son, 14, Market St. D.

Pont-y-Prydd means Bridge of Beauty, referring to the remarkable bridge over the River Taff, consisting of an arch of singular elegance. There are many items of interest to photographers to be found about the place.

Port Erin (Isle of Man).

R. K. Kermode. D.

Port Erin has, as its principal attraction to amateurs, the bold headland Bradda Head, the coast generally being very grand and rugged. One mile north-east is a Runic monumental cross.

Portmadoc (Carnarvon).

T. Jenkins, 142, High St.
D. Morris, 73, High St. D.

Portmadoc is the terminus of the Festiniog Railway, the pioneer narrow gauge railway. Some of the most beautiful of the Welsh Mountain scenery is to be found here.

*Portpatrick (Wigtown).

J. M. Brownlee. D.

Portpatrick has a round tower, date 1622. Picturesque views of the town and ruins of harbour may be obtained. The rock scenery on the coast is magnificent and easily reached. There are many interesting places in the neighbourhood. Snapshots of waves can be got on this coast, even in summer weather, the swell on the shore being at all times heavy.

Port St. Mary (Isle of Man).

R. K. Kermode. D.

Port St. Mary is a growing watering place. There are magnificent cliffs along the coast, and the scenery generally is wild and beautiful.

*Portsea (Hants).

G. Donaldson, 122, Queen St.

Portsea is close to Portsmouth.

*Portsmouth (Hants).

R. Holttum, 84, High St.

Portsmouth:—There are forts, ships of the Royal Navy in the harbour, the splendid new Town Hall of Portsmouth, and other objects of interest. Snapshot work may be done in abundance in the neighbourhood, especially on Southsea beach, and the Canoe Lake, where children sail their model yachts.

Preston (Lancs).

W. J. T. Jackson, 55. Fishergate.
W. Newsham, 119, Moor Lane. D.
T. Patterson, 99, Ribbleton Lane.
G. Sharples, 7, Fishergate. D.

Preston has docks, the river, public buildings, and parks.

*Putney (Surrey).

S. J. Poole, 116, Upper Richmond Rd. D.

Putney is on the Thames, six miles from Waterloo.

*Rainham (Kent).

C. T. Pyke, High St.

Rainham is near Sittingbourne, on the great Dover road.

Ramsgate (Kent).

Arden & Minnikin, 58, High St.
E. Baily, 9, Queen St. D.
Pavey & Co., 104, High St. D.

Ramsgate is a very favourite sea-side resort, and offers many attractions to photographers. Plenty of shipping may be seen passing. The harbour is a good place. There are historic remains in the neighbourhood. Sandwich, seven miles distant, is a quaint old place, with a very ancient church and houses.

Rawtenstall (Lancs).

J. Taylor, Albion House. D.

Rawtenstall can boast of but little to interest photographers.

Reading (Berks).

F. C Emberton, 39, Friar St. D.
F. Tunbridge, 39, Castle St.

Reading is a good centre for photographers. It has an abbey in ruins, time of Edward IV., fine churches, and quaint houses. Strathfieldsaye, Silchester, and Eversley are accessible. There are many interesting places, both up and down the River Thames.

Redcar (Yorks).

T. F. Walker, 61, High St. D.

Redcar is considered by medical men to have the most bracing air of any watering-place on the north-east coast. Its sands are unrivalled, stretching for about ten miles in extent, and firm enough to cycle on. The sea bathing is excellent. Kirkleatham Museum, Wilton Castle, and other places of interest to photographers are inland.

Redhill (Surrey).

T. Padwick, Station Rd. D.

Redhill is in the midst of some of the prettiest country in the South of England. Reigate is close by.

Redruth (Cornwall).

W. M. Martin, Fore Street. D.

Redruth is a place of great antiquity, and contains many druidical remains. Good marine views are within easy distance.

*Reigate (Surrey).

M. M. Woodward, 53, London Rd.

Reigate parish church contains the tomb of Howard of Effingham, the defeater of the Spanish Armada. There are good village views, and in the neighbourhood, woodland and heath scenery.

*Rhayader (Radnor).

R. W. Jones, East St. D.

Rhayader is a small town on the River Wye.

Rhyl (Flint).

G. R. Lawrence, 20, High St. D.
E. L. Pugh, 52, High St. D.

Rhyl is probably the best centre from which to "do" North Wales. The principal objects of interest to photographers are Rhuddlaw Castle, St. Asaph Cathedral, Cefn Caves, Bodelwyddan Marble Church, and Dyserth waterfall, all of which are in the immediate neighbourhood. In addition to these the amateur will find plenty of beach scenes and shipping, whilst in the Vale of Clwyd are innumerable bits of the most charming scenery. The Irish Mail, which passes at noon, is a favourite snapshot.

Richmond (Surrey).

R. Blanchford, 34, Hill Rise. D.
J. Parrott, 50, Friars' Stile Rd. D.

Richmond is famous for unrivalled scenery and views suitable as photo subjects. The park is a perfect feast for the camera; the view from the terrace near the "Star and Garter" is lovely, especially towards sunset. Up and down the river good bits may be had. Kew Gardens are not far; permission to be obtained from the Director.

Richmond (Yorks).

Walton & Co. D.

Richmond is a really good centre for amateur photographers. The natural scenery is fine, and many beautiful pictures may be taken. There are also the ruins of a Norman Castle and Easby Abbey.

Ripley (Derby).

J. Wain, High St. D.

Ripley is ten miles from Derby, and has silk lace manufactories and large neighbouring collieries and ironworks.

Ripon (Yorks).

H. B. Rudd, 29, Westgate. D.

Ripon presents the following objects of interest:—The Cathedral (permission for the interior from the Dean); the Market Square, especially on Thursdays, when the open market is held; the old church of St. Mary's, and, not least, Fountains Abbey, the most complete Cistercian abbey in Yorkshire (admittance 1s., photography is allowed). The district around is full of work. Masham, Tanfield, and Aldborough all within easy reach. The country, which is well wooded and watered by several rivers, offers scope for the landscape photographer.

* Ripponden (Yorks).

L. A. Cocker, Central Pharmacy.

Ripponden is on the Rybourne, which is crossed by two stone bridges. The church is of the Tuscan order, with a tower.

Rochdale (Lancs).

Atkins & Co., 93, Yorkshire St. D.
J. W. Bamford (exors. of), 242, Yorkshire St. D.
E. J. Green, 24, High St. D.
J. Monk-Jones, 78, Yorkshire St. D.
J. J. Thomas & Son, 24, Yorkshire St.

Rochdale, although possessing some fine buildings, is beautiful only in site. The parish church, St. Chad's, which is on an eminence approached by a flight of 122 steps, dates from the 12th century, but is mainly Perpendicular in style. The town hall is a good building.

Rochester (Kent).

J. S. Hewitt, 97, Eastgate.
F. J. Muskett, Guildhall Pharmacy, D.
C. F. Wyatt, 24, High St. D.

Rochester is well placed for photographic work. In addition to the Castle and Cathedral, the river, and the neighbouring dockyard, there is plenty of good country in the neighbourhood.

Rock Ferry (Cheshire).

J. Dutton & Son, 502, New Chester Rd. D.

Rock Ferry is a suburb of Birkenhead, and is near to the entrance of the Manchester Ship Canal.

*Rodley (Yorks).

H. Crossley. D.

Rodley is near Leeds.

Romford (Essex).

J. W. Lasham, High St., D., and Victoria Rd. D.

Romford is in the neighbourhood of Havering atte Bower, of which the village green, the stocks, and the whipping post are interesting. There are many pretty rural spots and village churches round.

*Romsey (Hants).

T. Milnthorpe, 7, Market Place. D.
White Hart Hotel. D.

Romsey Abbey may be photographed by permission of the clergyman in charge. It is a fine cruciform structure, but with Transition, Early English, and Decorated features.

*Roscrea (Ireland).

W. H. Bourke, Castle St.

Roscrea is a very ancient market town in Tipperary. Considerable remains of a castle, a lofty round tower, and the ruins of two abbeys exist.

Ross (Hereford).

T. Matthews, "Man of Ross" House. D.
A. Porter, High St.

Ross has grand scenery on the banks of the Wye. There are several objects of interest in the town. Tintern Abbey and other places may be easily reached.

*Rotherham (Yorks).

H. & W. Green, 13, College St.
J. Leadbeater, 5 & 7, Frederick St. D.

Rotherham's chief glory is its magnificent cruciform church, Perpendicular in style, with crooketted spire and fine west front. There are other important buildings, and two parks. Roche Abbey, a ruin, eight miles E S E, was a Cistercian foundation; eight miles N.E. is Conisborough Castle.

Rothesay (I. of Bute).

W. B. Jamieson, 64, Montague St. D.
P. Leith, 43, Victoria St. D.

Rothesay presents a wide and varied field for lovers of either landscape or marine scenery. Fine paddle steamers and yachts may be seen in the bay. Fishing boats, fishermen and fishwives, make very good pictures. There are old castles and country churches. At Ettrick Bay fine sunsets can be seen.

*Royston (Herts).

F. R. Hinkins, Hill Side. D.

Royston is situated in a bleak country, at the intersection of Ickneldway and the Ermine Street.

*Rugby.

R. Taylor, 20, Sheep St.
Eagle Hotel. D.

Rugby School and Close, the parish church of St. Andrew, and pretty villages and country round are worth attention. It is within a drive of Stratford-on-Avon, Coventry, and Kenilworth.

Runcorn (Cheshire).

J. H. Weston, Devonshire Bldgs. D.

Runcorn Bridge, the old parish church, the Ship Canal, Norton Priory, and the remains of Halton Castle are the principal attractions.

Ryde (Isle of Wight).

J. E. Frost. 27, Union St.
T. Smith, Top of Union St. D.
W. Smith, 21, High St. D.

Ryde Pier, the principal route from the mainland, presents a very busy spectacle during the season. The beauties of the island do not need description.

*Saffron Walden (Essex).

W. Hobbs, Gold St. D.
Rose and Crown Hotel. D.

Saffron Walden has the remains of a Norman Castle, and, crowning a hill, a stately Perpendicular church, with a spire 108 feet high, and brasses and monuments. Audley End is a magnificent mansion 1½ miles south-west.

St. Albans (Herts).

W. Duplock, 1, Holywell Hill. D.
J. Willan, 2, Holywell Hill.

St. Albans Abbey Church may be photographed by permission of the Rector. "The Fighting Cocks," near the river, is the oldest licensed house in the kingdom. Pretty views can be got along the side of the river Ver, on the way to St. Michael's. Portions of the wall of the Roman city, Verulam, will be seen in the fields on the left. London Colney is a pretty village about four miles distant.

St. Andrews (Fife).

W. R. Kermath, Greyfriars' Garden. D.
Smith & Govan, 109, South St. D.

St. Andrews University; ecclesiastical ruins; a historic castle ruin at the sea side; and the famous golf-links, are among the items of interest.

St. Anne's-on-Sea (Lancs).

T. A. Stead, St. Anne's Rd. West. D.

St. Anne's has a lifeboat memorial on the South Promenade, lighthouse on Sand-hills, and the church, which, although modern, is worth a plate or two. Snapshots of farming occupations and good pictures of quaint old thatched houses can be had.

*St. Asaph (Flint).

Kimmel Hotel. D.

St. Asaph is a little cathedral city. The cathedral is the smallest in the kingdom, rebuilt after 1284, and is mainly Decorated in style.

*St. Bees (Cumberland).

R. W. Broomfield, Main St.

St. Bees is a good centre for the Lake district. St. Bees Head is composed of masses of red sandstone, the cliffs are bold, and there is a fine beach. Calder Abbey is in the neighbourhood.

*St. Columb (Cornwall).

E. Griffiths, Union Sq.

St. Columb Major is situated on the summit of an eminence, supposed to have been a Danish fortification. Two miles south-east is Castle an Dinas, a large elliptical encampment. A mile and a half further there is a fine cromlech. Three miles to the north-east are nine upright stones, called the "Nine Maidens." St. Columb Minor, five miles W. by S., has fine lofty cliffs.

*St. David's (Pembroke).

A. David, The Square.

St. David's Cathedral, St. Mary's College, and the Bishop's Palace, are the principal objects. There is a village cross, which should be taken at noon. The coast scenery from Caerdwy, along the cliffs to Ramsey Sound, is grand. Magnificent sunsets may be seen from Whitesound Bay and St. David's Head. *Genre* studies are numerous.

St. Helens (Lancs).

J. C. Cotton.
J. G. Wallbridge, 52, Liverpool Rd. D.

St. Helens is in a very busy part of Lancashire. It is a great seat of glass manufacture, and has a handsome town hall, with a public library.

St. Heliers (Jersey).

J. T. Baker, 27, Halkett Place.
F. De Faye, 21, David Place.
Drug Stores, 18, Burrard St.
T. J. Le Seelleur, 17½, Beresford St. D.
C. Le Sueur, Charing Cross.

St. Heliers is the port of entry for Jersey, an island which has many beautiful places in it. Hand camera should be taken on coach, as the stops at some lovely cliff scenery are very short.

*St. Ives (Cornwall).

W. Trevorrow, Tregenna Pl. D.

St. Ives is a fishing town, beautifully situated on the west shore of a bay. It has a 15th century granite church, with an ancient cross. On a hill, 500 feet high, is a pyramid, erected 1782.

St Leonards-on-S. (Sussex).

E. H Hasselby, Eversfield Pl
Jameson & Curtis, 5, Grand Parade.
T. W. Jones, 71, Bohemia Rd.

St. Leonards and Hastings have a great deal to interest photographers. Battle Abbey, Bodiam, Hurstmonceux, and other castles are within easy reach.

*Stowmarket (Suffolk).

T. Simpson & Son, Market Pl.

Stowmarket Church is a fine flint-work structure, and contains some interesting monuments.

*Sale (Cheshire).

A. Smith, School Rd.

Sale has nothing special of interest, it being on the great Cheshire plain.

Salford (Lancs).

J. Massey, 362, Regent Rd. D.

Salford adjoins Manchester. It has a fine park—Peel Park, with museum and library in it.

Salisbury (Wilts).

Atkins & Son, Market Pl. D.
W. S. Blinkhorn, The Canal. D.

Salisbury Cathedral will furnish a good many plates. The interior of the church of St. Thomas of Canterbury, is worth a plate. Stonehenge, about nine or ten miles away, is best about mid-day. Many picturesque bits may be obtained in the neighbourhood of Salisbury.

*Sandgate (Kent).

W. H. Jacob, 3, High St. D.

Sandgate is a small watering place on the south coast. The castle dates from 1539. Near by is Shorncliffe Camp.

*Sandown (I. of Wight).

J. Dore, 27, High St. D.
Hotels (several). D.

Sandown is a watering place. The pier, town, and parade are all worth notice. Shanklin Chine is not far away.

Scarborough (Yorks).

H. Chapman, 52, Newborough, and 76, Falsgrave Rd. D.
G. Coverdale, 46, Westborough, and 9, Gladstone Rd. D.
J. M. Crosby, Ltd. D.
E. Parker, 29, Ramshill Rd. D.
J. Whitfield, 113, Westborough, and The Spa. D.

Scarborough has some of the finest coast scenery in England. Inland, there are, northward, vast tracts of moorland; westward, some beautiful valleys; to the south, the Wold Hills. Shipping in the harbour, and plenty of snapshot work. Forge Valley is very beautiful.

*Sedbergh (Yorks).

Taylor & Co., Main St.

Sedbergh has plenty of good scenery. The church is Norman. The grammar school dates from 1551.

Settle (Yorks).

J. W. Shepherd, Market Pl. D.

Settle is on the Ribble, at the base of Castleberg Cliff, 300 feet high. It has around it waterfalls, glens, rocks, caves, and mountain scenery.

Sevenoaks (Kent).

R. Barrat, 2, The Terrace, St. John's Hill.
E. Pain, 52, High St. D.

Sevenoaks.—Knole House dates back to 1456. The best view is the north-west front after 12 mid-day. There are fine views in the Park, 1000 acres in extent, and well stocked with deer. Otford Castle, 1200, is three miles north. Ightam Mote, 1340, should not be missed on any account. Ightham Church and very quaint village may also be noted.

*Shanklin (Isle of Wight).

T. L. Waterman, High St. D.

Shanklin Village is old. There are also the beach, cliffs, parade, pier, and old church. On Shanklin Chine a dozen plates would not be wasted. After a rainfall some pretty photos may be obtained of the waterfall.

Sheerness (Kent).

J. E. Hudson, 71, High St. D.

Sheerness is a strongly fortified seaport and naval dockyard on the Isle of Sheppey. The sea-bathing is excellent, and there is good country within reach.

Sheffield (Yorks).

J. P. Gambling, 641, London Rd., Heeley. D.
J. Gardner, 485, Glossop Rd., Broomhill.
J. Preston, 56, Fargate, and 33, Church St. D.

Sheffield has a fine Parish Church, new Town Hall, Mappin Art Gallery, Ruskin Museum, Queen Mary's Tower, and Sheffield Manor. Weston Park and Endcliffe Woods afford good views. Chatsworth and Derbyshire scenery are within easy reach.

*Sherborne (Dorset).

W. M. Chaffin, Cheap St. D.

Sherborne is a pleasant, old-fashioned town in the vale of Blackmore, with a noble cruciform minster, full of beauty and historic associations. Sherborne Castle is a ruin.

*Shipley (Yorks).

A. Dobson, 8, Saltaire Rd. D.

Shipley is on the river Aire, in the West Riding, and ten miles from Leeds.

*Shrewsbury (Shropshire).

Adnitt & Naunton, The Square. D.
R. L. Bartlett, 38, Castle St. D.
J. Dellaporta & Co. D.
Hickin & Pyefinch, Mardol Head.

Shrewsbury, with its steep, narrow streets, and its wealth of black and white half-timbered houses, is picturesque, as very few English towns are. It has a good many objects worth taking, including the Norman Castle, churches, and the School. At Haughmond Abbey, four miles distant, there is a good view.

*Sidcup (Kent).

A. Dewey. D.

Sidcup is in a charming district, eleven miles from London.

Sidmouth (Devon).

H. B. Penberthy, Market Pl. D.

Sidmouth has plenty of fine scenery. It is a favourite watering place, fourteen miles from Exeter.

*Silloth (Cumberland).

H. J. Smith, Esk St.

Silloth is a seaport and watering place on the Solway Firth. It has shipping, but not much of anything else to interest.

*Sittingbourne (Kent).

London Photo Co., 21, Station St. D.

Sittingbourne, in olden days, was a great halting place for Canterbury Pilgrims and for kings and others on their way to the Continent. The church contains some curious ancient monuments.

Sleaford (Lincolnshire).

W. Spyvee, 36, Southgate. D.

Sleaford has principally churches as its objects of interest. The tower of the parish church was erected about 1150.

Slough (Bucks).

Griffith & Walden, High St. D.

Slough has Stoke Pogis, Burnham Beeches, and Windsor in its neighbourhood.

*Smethwick (Stafford).

H. G. Betts, Six Ways.

Smethwick is near Birmingham. It is noted principally for its manufactures.

*Solihull (Warwick).

E. Trinder, High St.

Solihull is a suburb of Birmingham. The church is a fine building, both inside and out.

Southampton (Hants).

W. Bates & Co., 50, Oxford St. D.
H. A. Carter, 56, London Rd. D.
W. Martin, 112, High St. D.

Southampton is a capital centre for photographers. In the town itself are many examples of architecture of olden times, Many snapshots may be obtained in the Docks. In the Solent there is plenty of yachting. Netley and Beaulieu Abbeys and the New Forest should also be visited.

Southend-on-Sea (Essex).

G. R. Dawson, 42, High St. D.

Southend has old churches, a ruined castle, and pretty country round about.

Southport (Lancs.).

H. Ball, 121, Lord St. D.
J. R. Cave, 52, Nevill St. D.
B. Wyles, 56, Hoghton St., and 10, Liverpool Rd., Birkdale. D.

Southport has very extensive sands and sand-dunes, favourable for sunset and other atmospheric effects. The esplanade commands views of the Welsh and Cumberland mountains. Good snapshots can be obtained on the shore and on the Marine Lake. In Hesketh Park the Carpet Gardens make rather a unique picture at 3 p.m. Some fine lake views can be secured at Churchtown. Ormskirk is an old-fashioned town in the neighbourhood.

Southsea (Hants).

H. C. Haggis & Co., 65, Russell St., Southsea, and 187, Arundel St., Landport. D.
T. Postlethwaite, 131, Fawcett Rd. D.

Southsea Castle and beach, Eastney barracks, forts, etc., and Portsmouth dockyard and shipping, are noteworthy.

South Shields (Durham).

W. Dennis, 38, Ocean Rd.
A. Mays, 3, Market Place. D.
B. Williamson & Co, 17, Market Place.

South Shields is a seaside town with a beautiful pier and parks. There is fine rock scenery along the coast and plenty of shipping.

*Southwark (Surrey).

C. J. G. Bunker, 135, Gt. Dover St.

Southwark, or "The Borough," is a portion of London on the southern side of the Thames. St. Saviour's Church is a fine building.

*Southwell (Notts).

A. J. Loughton, Market Place. D.

Southwell, on the ancient Ermine Street, has a stately cruciform minster, which, with its three towers, resembles York on a smaller scale, and dates from 1110 to 1300. There are picturesque ruins of the palace of the Archbishops of York, *circa* 1360.

*Southwold (Suffolk).

W. J. Hanner, Market Pl.
J. Martyn, 94, High St. D.

Southwold Church is a fine old building with splendid porches and magnificent interior. The town stocks are in a remarkably fine state of preservation. There is a large ancient pump in the centre of the curious old market place. There is plenty of material for good work in the neighbourhood.

Spalding (Lincs).

E. W. Bell, High Bridge.
M. Shadford, The Limes. D.

Spalding is in the midst of typical fenland scenery. There are magnificent churches in the neighbourhood, also Croyland Abbey, and the Three-way Bridge.

*Spilsby (Lincs.).

J. J. Rainey, Church St.

Spilsby is on the edge of the Wolds, and in Tennyson-land. There are monuments to the Willoughby family in the church, and a bronze statue of Sir John Franklin in the market-place.

Stafford (Stafford).

J. & H. A. Averill, Market Sq. D.

Stafford has picturesque scenery around it, with fine old churches, castle, and ruins.

Stalybridge (Cheshire).

D. Innes, 47, Melbourne St. D.

Stalybridge is on the River Tame, in a lovely mountainous country.

Stamford (Lincs).

F. Dickinson, 13, St. Mary's St. D.
C. Fields, 66, Scotgate. D.

Stamford has good roads and scenery. There are six churches of great historic interest. Close by is Burghley House. There are also interesting antiquarian remains.

Steyning (Sussex).

A. Smart, High St. D.

Steyning is a quaint old market town. It has a fine Norman church and is in the centre of lovely scenery. Bramber and Beeding, about one mile distant on the River Adur, should be visited.

*Stirling (Scotland).

T. Walker, Albert Pl.

Stirling Castle should be taken from the north. The old bridge over the River Forth, the Wallace and Martyrs' monuments, and Cambuskenneth Abbey may be particularised, but a whole day or more might be devoted to the objects of interest in and around Stirling.

Stockport (Cheshire).

J. C. Arnfield, 7 & 9, Lower Hillgate. D.
J. W. Buckley, 73, Shawheath. D.
B. N. Cooper, 54, Chestergate.

Stockport has a very fine district outside. The town is built on the slopes of a narrow gorge, where the Tame and the Goyt unite to form the Mersey.

Stockton-on-Tees (Durham).

Brayshay & Son, 38, High St.
W. Clarke, 153, High St. D.
F. A. Graham, Norton Rd.
T. W. Sudlow, 158, High St.

Stockton has an extensive park, and good scenery around it. Ship-building yards, blast-furnaces, foundries, engine works, potteries and ironworks are the mainstay of the place.

Stoke-upon-Trent (Staffs).

J. H. Adams & Co., High St. D.

Stoke is a modern place of no special interest. Trentham, which is interesting, is about three miles away.

*Stonehaven (Kincardine).

J. Wood & Co., 9, Market Sq.

Stonehaven is a fashionable seaside resort. The old town is very quaint and beautiful. There are magnificent rock-scenery and sea pieces. The harbour in the fishing season is an ideal place for snapshot work. Within a mile are the ruins of Dunottar Castle, celebrated in 'Old Mortality.' There is beautiful river scenery on the Carron and Cowie. Machalls, 4 miles distant, is noted for its wild grandeur, the sea dashing into chasms and rising into spray in stormy weather.

*Stornoway (Ross).

S. Lawrence, 29, Cromwell St.

Stornoway has not much of interest except the fisher people and the castle, a building in the Tudor style, built on elevated ground at the east end of the bay.

Stourbridge (Worcester).

F. W. Biggs, 151, High St. D.

Stourbridge is near the Clent Hills and Kinver Edge, both of them very popular pleasure resorts.

Photographic Tourists' Guide.

IN the following list an asterisk (*) preceding the name of a town indicates inability to find that any chemist in the place has a dark-room, though there may be one or more who stock photographic materials. Where there is a dark-room, the fact is indicated by a capital "D" following the name and address, and except where the dark-room is at an hotel, it may mostly be taken for granted that plates and other photographic materials are stocked. The dark-rooms can, in some cases, be used for developing as well as changing, and even where there is not a dark-room, it is usually possible to get plates changed.

St. Mary Church (Devon).

T. S. Waymouth, opposite the Church. D.

St. Mary Church is near Torquay. The scenery is very fine, and there are many picturesque bits.

Southborough (Kent).

B. Chatterton, 92, London Rd. D.

Southborough is in the midst of rural, quaint, and picturesque spots, such as the "Garden of England" only can produce. Numerous "seats" and places of interest in immediate neighbourhood, and its proximity to Tunbridge Wells is an additional attraction.

*Stranraer (Wigtown).

George Hotel. D.

Stranraer has not much attraction in itself. Castle Kennedy, three miles distant, is an ivy-clad ruin, built early in the sixteenth century. The surrounding grounds are well laid out, and though artificial the effects are very striking, not the least so being that of light and shade on the variously disposed terraces.

Stratford-on-Avon (Warwick)

R. Hawkes, 33, High St. D.

Stratford is full of interest, and may be made the headquarters of good work for a week at least. The Church, Shakespeare's House, Anne Hathaway's Cottage, and many quaint old houses are the principal features, but Warwick, Coventry, Kenilworth, Stoneleigh Abbey and Park, and many other places should be visited.

Streatham (Surrey).

J. J. Laws, 6, Commercial Ter. D.

Streatham has beautiful country, richly wooded, around it. Tooting Common is near. There is also an old church.

Stretford (Lancs).

S. Broadbent, 1177, Chester Rd. D.

Stretford is a suburb of Manchester.

Stroud (Gloucester).

S. J. Coley, 57, High St. D.
D. Smith, Market Pl. D.

Stroud stands in a charming valley in the midst of a most beautiful country. Stroud water is noted for its great use in dyeing scarlet and other grain colours.

Sunderland (Durham).

H. A. Brown, Roker.
A. D. Purse, 15, Salem St.
J. Walton & Son, High St. D.

Sunderland consists of Monkwearmouth and Bishopwearmouth. It has specimens of Saxon and Norman architecture. Pictures may be obtained on the river, in the ship-building yards, and at the seaside. Roker is a popular watering-place close to Monkwearmouth.

Surbiton (Surrey).

J. P. Jackson, 68, Brighton Rd. D.
C. Lowe & Co., 1, Claremont Rd. D.

Surbiton is a suburb of Kingston-on-Thames. Hampton Court Palace and Bushey Park are near.

*Swanage (Dorset).

W. Pouney, High St. D.

Swanage is on the Isle of Purbeck, where there is plenty of rugged coast scenery. It is easily accessible by steamer from Bournemouth.

Swansea (Glamorgan).

J. T. Davies, 13, Walter Rd.
N. M. Grose, 8, Temple St.
J. G. Isaac, Castle Sq.
H. H. Parlby, 9, Cradock St. D.

Swansea is surrounded by magnificent scenery. There are some waterfalls in the neighbourhood. It has a large harbour and docks.

Swindon (Wilts).

S. Daniel, 36, Regent St. D.
J. Green & Son, Wood St. D.

Swindon (Old) is a rather picturesque place, situated in the midst of quiet country scenery. New Swindon is mainly noted for the engineering works of the G.W. Railway.

*Tan-y-Bwlch (Merioneth).

Oakeley Arms Hotel. D.

Tan-y-Bwlch is on the Festiniog Railway, between Blaenau Festiniog and Penrhyn-deudraeth, in the neighbourhood of waterfalls and mountains.

*Tarporley (Cheshire).

A. V. Aston, The Terrace.

Tarporley has in its neighbourhood the ruins of Beeston Castle. Other views may also be obtained.

*Taunton (Somerset).

J. Chaffin & Sons, 65, East St. D.
Gregory & Wrenn, 15, East St.
A. J. Smith, 47, North St.

Taunton is a well-built town in the fair and fertile valley of the Tone. The great hall of the castle is fitted up as a museum. The church of St. Mary Magdalene has a noble Perpendicular tower, 153 feet high. The shire-hall is Elizabethan.

Tavistock (Devon).

H. T. Doble & Son, 49, Brook St. D.
T. E. Pearce, 1, West St. D.

Tavistock is well situated for the man who wishes to get a representative lot of "Devon Scenery" negatives. Dartmoor is on one side and the lovely valleys of the Tamar and Tavy are on the other. There are old Abbey buildings and a fine old church in the town.

*Taynuilt (Argyll).

S. Lawrence, near the Station.

Taynuilt stands at the base of Ben Cruachan (3670 feet high) and is about three miles from the old Bridge of Awe, which figures so prominently in Scott's 'Highland Widow.' Inverawe is the mansion house from which Argyll set out to plunder "the bonny house o' Airlie."

*Teignmouth (Devon).

Valentine & Sons, 9, Somerset Place. D.

Teignmouth and vicinity are rich in photographic attractions, among which may be mentioned the red sandstone irregular coast line and cliffs. At high tide the estuary of the Teign offers endless facilities for photographs of yachts, coasting traders, fishing boats, and fishermen, etc. The bridge over the Teign is the longest wooden bridge in England, and is over half a mile in length. The hills to the back of the town rise to the height of about 800 feet.

Tenbury (Worcester).

J. Slade, Teme St. D.

Tenbury is on the Teme, and has a charming neighbourhood and very pretty river scenery. It has also a spa, and St. Michael's College.

Tewkesbury (Gloucester).

A. Enoch, 124, High St. D.
L. L. Stroud, 131, High St. D.

Tewkesbury Abbey, of Norman architecture, with fine west front and massive central tower, and a great number of old timbered houses in the town, form the chief attractions. Telford's iron bridge over the Severn has a span of 176 feet.

*Thame (Oxon).

H. W. G. Morris, High St.

Thame is a market town of Roman origin, with a large, handsome, cruciform church. The scenery round is noted for picturesque beauty and richness.

*Thirsk (Yorks).

J. R. Clarke, Ingramgate. D.
C. M. R. Knaggs, Royal Oak Hotel

Thirsk is in the North Riding, in the vale of Mowbray on the Cod Beck. It has a fine Perpendicular church.

Thornaby-on-Tees (Yorks).

T. A. Ronchetti, 40, Mandale Rd. D.

Thornaby was formerly called South Stockton. There are several places of interest within a few miles.

Thornhill (Dumfries).

J. Fingland, 101, South Drumlanrig St. D.

Thornhill is a large and beautiful village situated in the centre of the finest scenery of Nithsdale. In the vicinity are Drumlanrig Castle, a seat of the Duke of Buccleuch; Closeburn Castle, the oldest inhabited house in Scotland; the fine ruin of Morton Castle; Crichope Linn, etc., etc.

Tillicoultry (Clackmannan).

T. Hetherington, High St. D.

Tillicoultry is a manufacturing village, the houses of which are mostly built of whinstone. Stirling Castle and town are nine miles westward.

Todmorden (Lancs).

H. B. Pare, 6, Water St. D.

Todmorden is on the border of Lancashire and Yorkshire, prettily situated among the hills on the Calder. It has a classical Town Hall, in front of which is a bronze statue of John Fielden, by Foley.

Tonbridge (Kent).

F. G. Abel, 124, High St. D.
H. R. Beckett, 5, Quarry Hill Rd. D.
S. F. Wardley, 132, High St. D.

Tonbridge Castle, by the River Medway, is worth notice. The Grammar School occupies handsome buildings, erected in 1865.

*Torcross (Devon).

W. Vickery, Torcross Hotel. D.

Torcross is on the coast near the Start Point, and not far from Dartmouth. Kingsbridge is the nearest station, reached by coach.

Torquay (Devon).

W. Bathe & Co., 24, Fleet St. D.
J. W. Cocks, 1, Madeira Pl. D.
F. March, Holloway's Stores, 31, Fleet St. D.
J. Taylor, 15, Lucius St. D.

Torquay is surrounded by marine and other scenery of exceptional beauty. There are many picturesque bits. The river Dart is within easy distance. Kent's Cavern is a mile distant.

Totnes (Devon).

W. E. Curtis, 37, Fore St. D.

Totnes is on the slope of a steep hill on the right bank of the Dart. Its old church, castle, and Butter Walk are worth notice. Bury Castle is another object of interest.

*Tring (Herts).

G. E. Jeffery, High St.

Tring Park, built by Wren for Henry Guy, is the seat of Lord Rothschild. The church is a handsome embattled structure, with a large tower.

Trowbridge (Wilts).

J. H. Aplin, 6, Silver St. D.

Trowbridge is situated on a rocky hill near the river Biss. The church, Perpendicular, 1475, has a spire 150 feet high.

*Truro (Cornwall).

T. B. Percy, 11, River St.
F. H. Tims, Cathedral Lane. D.

Truro River has beautiful scenery on its banks. The new cathedral is a fine building, an Early English granite structure, which incorporates a portion of the old parish church. The Cornish coast, rugged and grand, is accessible.

Tunbridge Wells (Kent).

Dunkley & Rogers, 55, High St. D.
H. S. Pearmund, 48, High St. D.
B. Whitrow, 15, St. John's Rd. D.

Tunbridge Wells is on the border of Kent and Sussex, and is a splendid centre for amateur photographers.

Among objects worth notice are:—Ye Pantyles Promenade, in the morning; Toad Rock, Loaf Rock, and High Rocks, at any time; panorama of town from the common, in the morning; cattle studies on the common, at any time; Bayham Abbey, six miles away, Mondays and Wednesdays; Penshurst Place, a perfect example of a wealthy gentleman's house of the time of Edward III., open three days weekly in the summer, also six miles distant.

Twickenham (Middlesex).

H. F. Peake, The Green. D.

Twickenham is on the north bank of the Thames, near Richmond and Teddington. Strawberry Hill is here.

Tynemouth (Northumberland).

T. O. Mawson, 12, Percy Park Rd. D.

Tynemouth is the chief watering-place of Northumberland. The Sands, Aquarium, Skating Rink, St. George's Church, and Cullercoats Village in the distance should be taken at 10 a.m. Among other objects of interest are Lord Collingwood's Monument and Spanish Battery; the Castle Yard, Old Abbey and Lighthouse, East Aspect, with Tynemouth Village in the background.

Uckfield (Sussex).

E. H. Farr, High St. D.

Uckfield is eight miles from Lewes, and has pretty scenery around it, but no special object of interest in itself.

Ulverston (Lancs).

H. W. Mackereth, Market Pl. D.
W. Porter, Queen St. D.

Ulverston is centrally situated for visitors to the English Lake District, being nine miles from the foot of Windermere, and also nine miles from Coniston Lake the home of Ruskin; it is only one mile from Morecambe Bay and nine from the Northern Brighton, namely, Grange-over-Sands. The famous Conishead Priory, now a Hydropathic Establishment, is two miles out of town, and Holker Hall (the seat of Mr. Victor Cavendish) about seven miles away. Ulverston is also the Railway Junction for Windermere.

Upper Bangor (Carnarvon).

H. R. Jones, 29, Holyhead Rd. D.

Upper Bangor has grand and beautiful scenery around it. The Cathedral of Bangor and the University College of North Wales are worthy of notice.

*Uppingham (Rutland).

W. J. W. Stocks, High St. D.

Uppingham School, founded 1584, is the principal feature of the place. It has a good schoolroom and decorated chapel, built in 1863, from designs by Street.

Uttoxeter (Stafford).

A. Parker, High St. D.

Uttoxeter has good woodland scenery close at hand. Alton Towers and Dovedale are within easy distance.

Uxbridge (Middlesex).

Rayner & Son, 39, High St. D.

Uxbridge has in its neighbourhood, along the River Colne, some splendid scenery and some of the most ancient of churches in the surrounding district, such as Hughenden and Hanfield.

Ventnor (Isle of Wight).

W. H. Littlefield, 30, High St. D.
C. A. Smith, 3, High St. D.

Ventnor is a charming town situate in the centre of the romantic scenery of the Undercliff. From the pier, and also from the cliffs, excellent and picturesque views of the town, east and west, may be obtained in morning and afternoon. The park affords some pretty bits. Just past the entrance from the seaside to the Park, there is a picturesque waterfall, generally overlooked. Steephill Castle affords a pretty object amongst the trees, and Steephill Cove should not be missed. There are numerous other places, all forming good subjects for the camera; and, for instantaneous work, the small yachts, passing ships, etc., are good.

Wakefield (Yorks).

J. L. Chaplin & Son, 55, Corn Market. D.

Wakefield Cathedral should be photographed from a neighbouring middle or top window, owing to the height of its spire. A good view of the interior would be best taken in the afternoon. On the eight-arch bridge over the Calder is an interesting chapel founded in 1357. The town-hall, erected in 1880, is a fine building in the French Renaissance style.

Walker-on-Tyne (Northumberland).

J. Brown, Byker St.

Walker is about three miles east of Newcastle. The great Roman wall terminates about half a mile east of the village.

Wallingford (Berks).

H. T. Holme, Market Place. D.

Wallingford is on the Thames, and has a very fine river view. It has also Roman earthworks, a fragment of a Norman Castle, and some old churches.

Walsall (Stafford).

Major, Ltd, 25, Park St. D.

Walsall is an easy railway journey from Lichfield Cathedral and district, where there are many beauties to attract the photographer.

*Walsingham (Norfolk).

A. Pickard, High St. D.

Walsingham has some ruins of an Augustinian priory, founded, according to tradition, in 1016. The town is situated in a vale, surrounded by bold heights presenting diversified scenery.

Waltham Abbey (Essex).

J. A. Marshall & Son, High Bridge St. D.

Waltham Abbey is noted for its historic old abbey, the supposed burial place of King Harold, adjacent to which is a very old bridge, known as Harold's Bridge, said to have been built by the King of that name; there is also a remarkably fine gateway in the immediate vicinity. Waltham Cross (one mile distant), takes its name from the cross erected there by King Edward I. in memory of his wife Eleanor, whose body rested there on its way to London. The old Temple Bar is pleasantly situated in Lady Meux's beautiful park.

*Walthamstow (Essex).

E. H. Hamilton, 19, St. James' St.

Walthamstow.—Some views can be obtained on the River Lea. Higham's Park is about two miles distant, and Epping Forest, by road or rail, is easily accessible.

Walton-on-Thames (Surrey).

F. Cherry, 3, The Broadway. D.

Walton Church has some interesting monuments. The country around is pretty.

*Walton-on-Naze (Essex).

Azulay's Studio, High St. D.

Walton Hall, the Tower on the Naze, the tidal wheel-mill, backwaters with windmill, and the coastguard with lifeboat station, all make good pictures.

*Wandsworth (Surrey).

T. T. Hora, 346, York Rd.

Wandsworth is four miles from London, at the junction of the River Wandle with the Thames.

*Warminster (Wilts).

Bath Arms Hotel. D.

Warminster is an ancient market town on the west border of Salisbury Plain. Longleat, four and a half miles south-west, is one of the noblest Elizabethan mansions in the Kingdom, with a fine collection of portraits and a magnificent park.

Warrington (Lancs).

M. Eckersley, 33, Bridge St. D.
Hill & Co., 62, Buttermarket St. D.
F. W. Knowles, 77, Bridge St. D.
J. Rymer Young, 40, Sankey St. D.

Warrington is in close proximity to the Manchester Ship Canal, Docks, and Locks. The town itself possesses a few old buildings, and an ancient church with a fine interior. Warrington is surrounded by pretty country, especially on the Cheshire side, and is near to several old villages and churches, country seats, etc., and offers good scope for landscape work.

*Warwick (Warwick).

Mrs. Halbeard, Woolpack Hotel. D.

Warwick offers subjects for at least three plates in its streets. A charming peep of the castle and river may be had from the bridge on the high road. St. Mary's Church has a Norman crypt, the superb Beauchamp Chapel (1464), and a wealth of interesting monuments. There is also Guy's Cliff, with its bewitching old mill amid sylvan surroundings, and bonny little bits on the high road to Kenilworth Castle.

Waterford (Ireland).

J. Carew, 46, John's Hill. D.
Poole's Co-operative Stores, 134, Quay. D.

Waterford is on the river Suir. It has several old ruins of abbeys and castles, and there are also seaside resorts within a short distance. Cyclists will find some very good roads in this district.

*Watford (Herts).

W. Coles, 60, Queen's Road. D.
E. Martindale, 211, High St. D.

Watford is a market town on the Colne. The Perpendicular Church contains some interesting monuments of the Earls of Essex, whose seat, Cassiobury, is close to the town.

Wellingborough (North'mt'n)

F. Simco, 23, Market St. D.

Wellingborough is on a declivity near the confluence of the Ise with the Nen, ten miles from Northampton. It has an imposing Parish Church, with elegant spire, and other public buildings.

Wellington (Salop).

James Bates, Ltd., Chemists. D.

Wellington, as a centre of pictorial interest, can scarcely be beaten. It has some splendid landscapes and numerous ruins, while the mountain scenery is very fine. The winding path of the Wrekin is simply studded with beauty spots.

*Wellington (Somerset).

W. Gregory, Fore St.

Wellington is seven miles from Taunton, near the Tone and the foot of the Black Downs (900 feet high), on the summit of which is a Wellington obelisk. In the church, which has an embattled tower, there is a Jacobean monument to Chief-Justice Popham.

*Wells (Somerset).

E. Norton, 15, High St.

Wells Cathedral, completed in 1239; the Chain Gate, at the entrance to the Vicar's Close; St. Cuthbert's Church, with one of the finest towers in the county; and the interior of the Chapter House, are all good objects. Wookey Hold, with views on the River Axe, two miles distant, Glastonbury, six miles, and the Cheddar Cliffs, eight miles, should be visited.

Weston-s.-Mare (Somerset).

S. Lupton, 5, Bristol Rd. D.
H. C. Parkes, 34, Upper Church Rd. D.

Weston is on the Bristol channel, and affords very fine scenery, both marine and landscape; it is within easy reach of the North Devon Towns. There are several fine buildings and cathedrals in the immediate neighbourhood. The sands will give plenty of employment to the hand-camera man.

*Weybridge (Surrey).

Boyce & Kennett, Church St.
Surrey Chemists' Co.

Weybridge is at the junction of the Wey and the Thames. It has in its vicinity many elegant seats, notably Oatlands, occupying the brow of an eminence near a fine sweep of the Thames.

Weymouth (Dorset).

A. H. Roberts, The Westham Pharmacy. D.
Targett & Wiseman, Bridge Pharmacy. D.

Weymouth is pleasantly situated on the shore of a fine open bay, and has some good marine views and grand landscape and bold coast scenery. The Isle of Portland and Chesil Beach are close by.

Whaley Bridge (Cheshire).

A. Livesley & Son, Chemists. D.

Whaley Bridge is near Stockport, and within easy distance of several pretty spots in Cheshire and Derbyshire.

Whitby (Yorks).

J. Brooks, 15, Flowergate. D.
Craven Bros., Skinner St. D.
J. Frank, Bridge St.
W. Ruff, West Cliff Pharmacy. D.

Whitby is a charming place for amateur or professional photographers on tour; the town is quaint and most interesting, and together with the harbour provides good work for the artistic camerist, while the landscape views in the surrounding country are abundant and unsurpassed.

Whitehaven (Cumberland).

F. B. Bennett, 37, King St. D.
G. C. Gass, 11, King St. D.
W. F. and H. Hunter, 5, Roper St. D.
F. T. Patman, King St.
Wilson and Kitchin, 27, King St. D.

Whitehaven is within easy distance of some of the finest lake and mountain scenery of Cumberland. It possesses a handsome pier, and in the neighbourhood are the ruins of an abbey, containing one of the best examples of a Norman arch in England.

*Widnes (Lancs).

J. W. Towers. D.

Widnes is principally noted for its iron foundries, copper-smelting works, and manufactures of soda, soap, etc. It is connected with Runcorn by a handsome railway bridge over the Mersey.

Wigan (Lancs).

W. Aspinall, 109, Scholes.
J. H. Atherton, 33, Newmarket.
A. H. Benson, 10, Darlington St. D.
Winstanley & Fairhurst, 9, Market St. D.

Wigan has not many objects of interest to photographers within the

town itself, but near to it is Haigh Park, the seat of the Earl of Crawford, President of the Royal Photographic Society, permission to photograph being obtained from the estate office. Lathom Hall, the seat of the Earl of Lathom, is also near.

*Wincanton (Somerset).

E. Goodfellow, 47, High St. D.
W. W. Harris, 12, North St. D.

Wincanton Town Hall and Market Square; the Parish Church (east) and ivy-covered cottages; also a south view; Balsan House, by permission; the Carmelite Priory Church, and some old thatched cottages should be photographed. Some old carving in the north porch of the parish church is well worth a plate. Many fine pictures on the Blackmoor Vale are obtainable, and the view from Bratton St. Maur Church is grand.

Winchester (Hants).

W. D. Gibb, 31, High St. D.

Winchester Cathedral can be photographed by permission of the Dean. In addition there are the municipal buildings; the Great Hall of Winchester Castle; the West Gate from High Street; a general view of the city from St. Giles' Hill; a view alongside the River Itchin, including the tower of the chapel of Winchester College; the Buttercross, and many other objects. St. Cross, which is beautifully situated a mile and a quarter away, should be visited. It was founded in 1132.

Windermere (Westmoreland).

R. H. Barker, Chemist (near Railway Station). D.

Windermere is in the midst of some of the most lovely lake and mountain scenery in England; the waterfalls also make pretty pictures, while the yacht races which occasionally take place there afford opportunities for snapshot work.

Windsor (Berks).

J. D. Harmer, 2, St. Mark's Rd. D.

Windsor Castle from the Brocas, including part of the Thames, and the Castle from the Home Park, are good. Permission to photograph within the Castle gates must be obtained from the Board of Works, and no view within the Cloisters or St. George's Chapel may be taken without special leave from the Dean. Eton Chapel, from the North Terrace of the Castle, makes a lovely picture. The tourist ought to visit Burnham Beeches and Virginia Water with his camera.

Wisbech (Cambs.).

M. Hill, 52, Norfolk St. East.
J. T. Maxey, 8, High St. D.
W. T. Oldham & Son, Market Pl. D.

Wisbech is in a neighbourhood which provides a variety of entertainment for tourists. The roads are good for cycling; the fen and marshland churches give particularly fine examples of Norman architecture for the photographer; there is also good fishing for sportsmen, while farmhouse lodging is remarkably cheap.

*Witham (Essex).

R. P. Green, Chemist.

Witham Parish Church dates from 1327, the Transition south door, however, being of the twelfth century. There are many old monuments inside the church.

Witney (Oxon).

J. T. Davy, 49, Market Sq. D.

Witney, on the Windrush, has good landscape and architectural views. The church is a fine cruciform, thirteenth-century structure, which was restored in 1867. The Market Cross was erected in 1683.

Wolverhampton (Stafford).

Reade Bros. & Co., Ltd., Victoria St.
F. J. Gibson, 93, Darlington St. D.

Wolverhampton and neighbourhood are rich in suitable subjects of a varied character. The old church, St. Peter's, is of great architectural beauty, and was founded more than nine hundred years ago. The Art Gallery and School of Art is a fine building. Interesting and amusing snapshots may be obtained in the wholesale open-air market.

Woodbridge (Suffolk).

Betts & Son, Thoroughfare. D.
E. J. Eaton, Church St. D.
A. Gall.

Woodbridge is on the tidal river Deben, and snapshots of shipping may be had. St. Mary's Church is a fine flint building. There is a Market Cross, and there are excellent views in the neighbourhood.

Woodford Green (Essex).

B. Broome, High St. D.

Woodford Green is on the outskirts of Epping Forest, the southern extremity.

*Wood Green (Middlesex).

G. Daniel, Chemist.

Wood Green is in the North London postal district, and is near the Alexandra Palace. The Wood Green cycle track affords many opportunities for snapshots during the racing season.

Woolston (Hants).

J. Pell, Victoria Rd. D.

Woolston is a suburb of Southampton. Not far away, at Netley, is the Royal Victoria Hospital. Netley Abbey, a Cistercian foundation of the time of Henry III., is in ruins.

*Woolwich (Kent).

B. H. Harwood, 69, New Rd.
A. J. Wing, 69, Powis St.

Woolwich is in the London, S.E., postal district, and is chiefly noted for its arsenal and dockyard. Interesting pictures may occasionally be obtained on the river, also at Bostal Woods and Heath.

Worcester (Worcester).

G. Acton & Son, Corn Market. D.
W. T. Horniblow, 33, Sidbury. D.
J. A. Steward, 27, High St.

Worcester Cathedral is worth photographing, but permission for interior work must be obtained from the canon in residence. There are also several old houses in New Street and Friar Street; the Commandery in Sidbury and an old house in Trinity. The River Severn provides some good views.

Worthing (Sussex).

A. B. Cortis, 30, South St. D.

Worthing sands and pier provide interesting snapshots. Within easy reach are Bramber, Chanctonbury King, Angmering, Goring Woods (one of the loveliest spots in Sussex), and many other places worth visiting. As a centre for the photographic cyclist Worthing can hardly be surpassed, for the roads in all directions are good.

*Wotton-under-Edge (Glos.).

A. Dunn.

Wotton is situated beneath a range of well-wooded hills. Its church is a handsome structure, and contains some curious sepulchral memorials.

Wrexham (Denbigh).

C. G. Caldecott, Regent St. D.
Francis & Co., 53, Hope St. D.

Wrexham has several old parish churches. It is called sometimes the metropolis of North Wales, and is situated in the heart of a mining district.

*Wymondham (Norfolk).

King's Head Hotel. D.

Wymondham has an example of "Magpie" architecture in the "Green Dragon." There is an abbey, of which both interior and exterior views are worth taking, an ancient cross, and an avenue of Scotch firs in the churchyard. The streets are very old-fashioned, and several good views in them can be obtained. Attleborough Church, five and a half miles distant, is worth a visit for its north porch and rood-screen.

*Yarmouth (I. of Wight).

Richardson & Son, High St.

Yarmouth has a fine monument, and there is a good specimen of the Stuart arms on the Castle. The scenery is splendid. The Needles are not far away.

Yarmouth, Great (Norfolk).

E. J. Pratt, 10, Regent St. D.

Yarmouth is a very popular seaside resort. The scene on the sands is very lively, and many good shapshots may be obtained. The Nelson monument is a fluted column, 130 feet high. The harbour and fishing fleet afford good scope to the photo-man. St. Nicholas Church is a fine building, one of the largest in the Kingdom; it was founded in the time of William Rufus. Up the Yare the Broads may be reached.

Yeovil (Somerset).

Gatward & Wright, 13, High St. D.
A. Newton, 75, Hendford. D.

Yeovil exhibits some fine specimens of church architecture, and there are picturesque ruins and beautiful scenery in the vicinity.

*York (Yorks).

J. M. Smith, 13, High Ousegate. D.
J. Winship, 36, Petergate.

York Minster is among the most magnificent of the English cathedrals. The walls of the city, mainly of the time of Edward III., are pierced by picturesque gates, locally called Bars, of which Boothan Bar and Micklegate Bar are especially well preserved. The castle, with Clifford's Tower, is situated close to the river. The fine Gothic structure of the guildhall belongs to the fifteenth century. The old ruins of St. Mary's Abbey are also very fine.

*Youghal (Cork).

Devonshire Arms Hotel. D.
Thomas & Sons, Rhine Studio. D.

Youghal is an old town at the mouth of the Blackwater. The objects which should be photographed are the Church of St. Mary, the North Abbey, Sir Walter Raleigh's house, the "watergate" and the "clockgate," the old town walls, some old doorways and windows in the town, and harbour views. The scenery is very good.

SUPPLEMENTARY LIST.

*Abergavenny (Monmouth).

H. Shackleton, 26, High St.

Abergavenny is situated on the river Usk, midway between Newport and Brecon. It is noted for some of the finest mountain scenery in South Wales.

Bagshot (Surrey).

H. H. Copestake, High Street. D.

Bagshot Heath, at one time famous for the numerous highway robberies committed on it, lies about ten miles from Windsor, and is still a good neighbourhood for "snap-shot" work.

Castletown (Isle of Man).

R. K. Kermode, Chemist.

Castletown is a seaport and former capital of the isle. Castle Rushen, now a prison, occupies the site of a Danish fortress of the tenth century. A small building still exists, in which the House of Keys met for 170 years. King William's College is near.

Enfield (Middlesex.)

Wilson & Davies, Enfield Lock.
F. Goldby, The Enfield Pharmacy. D.
Wilson & Davies, Enfield Wash.

Enfield. There are a number of very pretty views to be obtained on the river and in the country lanes in the neighbourhood. The old Temple Bar, Queen Eleanor's Cross, and Waltham Abbey are worth noticing.

Enniskillen (Fermanagh).

Adamson & Co., Ltd., Chemists. D.

Enniskillen is in a district singularly beautiful. It is built upon an island on the river, near to Lough Erne, and is a well-known military station. The town and its environs teem with historic associations, and no part of Ireland is more deserving of a visit than this district.

Everton (Lancs).

G. M. Sleggs, 44, Robson St. D.

Everton is a suburb of Liverpool.

*Fulham (Middlesex).

C. J. G. Bunker, 151, Lillie Rd.

Fulham on the Thames, has been the residence of the Bishops of London since 1141. The present palace is about a century old. The church is ancient, and contains the tombs of many of the Bishops.

Greenwich (Kent).

Leo Atkinson & Co., 193, Greenwich Rd. D.

Greenwich Park, the Observatory, Royal Naval College, the river, and Eltham Palace are amongst the chief places of interest at Greenwich.

Hackney (London N.E.).

W. Sharman, 186, Mare St. D.
G. J. Thomas & Co., 411, Mare St. D.

Hackney has lost much of the picturesqueness of former times, but there are still a few old buildings, notably the old church tower, which is left standing alone. The town hall is a fine building. Bordering on South Hackney is the Victoria Park.

*Hayfield (Derby).

A. Livesley & Son.

Hayfield is situated in the Peak district, which abounds in opportunities for the devotee of the camera.

Highbury (London N.).

J. Basdon-Smith, 51, Holloway Rd. D.

Highbury has in its neighbourhood the Metropolitan Cattle Market, which presents a very busy spectacle in the early morning on market days.

Kirkdale (Lancs).

G. M. Sleggs, 106, Walton Rd. D.

Kirkdale is a suburb of Liverpool.

Lewes (Sussex).

J. C. Lloyd, Town Hall Pharmacy D.

Lewes is the county town. The chief objects of interest are the ruins of the priory and castle. It is a good centre for the south coast, eastward to Eastbourne and Hastings; westward to Brighton and Portsmouth, and northward to the beautiful Sussex and Surrey country.

*Shoreditch (London N.E.).

G. Pasco & Son, 57, Hackney Rd.

Shoreditch church has a stately portico and a beautiful spire. The town hall is a good building. There are also old-fashioned almshouses, and the elaborate buildings erected by Baroness Burdett Coutts, and known as Columbia Market.

Messrs. Raimes, Clark & Co., Edinburgh, have published a list of preparations which were not in the B.P. 1885, but are official in the B.P. 1898, and those of which the composition or strength has been altered. It contains concise information regarding the variations in strength of the galenical preparations, enabling the reader to see at a glance what the changes are, and in each case the wholesale price of the preparation is appended.

Plymouth, Devonport, Stonehouse and District Chemists' Association (Junior Section).—Examinations in pharmacy and materia medica were held on Wednesday, the 4th inst., for prizes kindly offered by Messrs. J. Cocks (President), R. F. Roper, and J. K. Bond, B.A., B.Sc. The questions were set by Messrs. J. D. Turney, O. A. Reade, and J. R. Johnson. Mr. Lamble kindly assisted in carrying out the arrangements.—*Annual Outing*: The Annual Outing Committee met on Monday, the 9th inst. Messrs. C. J. Park and A. D. Breeze were elected Secretaries conjointly. It was decided to hold the annual outing on Wednesday, June 8, proceeding by train to Yealmpton, driving through Membland Drive, to the picturesque and interesting seat of Lord Revelstoke. Tickets, 6s. 6d. each.

A Milk Dealer was fined 40s., with £2 2s. costs, at the Marylebone Police Court, on Wednesday, May 11, for adding 1 oz. of boracic acid to 17 gallons of milk.

Several Doctors were charged at a Justice of the Peace Court, held at Elgin on Friday, May 6, with selling patent medicines without a licence. The Inland Revenue authorities prosecuted, and fines of 10s. or seven days were imposed.

Glycerin Adulterated with Glucose Syrup was sold by a grocer at Bramley, who, on his appearance at the Rotherham, West Riding, Police Court, on Monday, April 26, stated that the glycerin was served out as received from a wholesale chemist at Rotherham. A fine of 10s. and 19s. costs was inflicted, the magistrate remarking that it was a new form of adulteration.

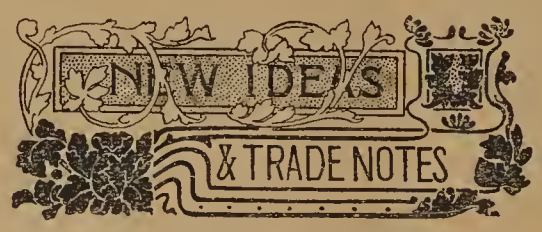
Mr. Joseph Ward, Pharmaceutical Chemist, 39, Eastgate Street, Gloucester, has been added to the Commission of the Peace for the City.

The Tzar of all the Russias is President of the Siberian Railway Committee, and takes the liveliest personal interest in the undertaking, and lately he commissioned Dr. Piassetsky to take a kinematographic picture of the whole of the line as far as it was completed. The result was very successful, and the Tzar was enabled to see precisely the same views as if he had made the journey by train.

The Fabwerke vorm. Meister, Lucius & Brüning ask us to state that their products will henceforth be supplied to the trade from the London premises, 46, St. Mary Axe, E.C., and not from 36, St. Mary-at-Hill, as stated last week.

Royal Institution.—A general monthly meeting of the members of the Royal Institution was held on the 9th inst., Sir James Crichton-Browne, M.D., F.R.S., Treasurer and Vice-President, presiding, and the following Vice-Presidents for the ensuing year were announced:—Sir William Crookes, Sir Edward Frankland, Sir William Huggins, Dr. Ludwig Mond, the Hon. Sir James Stirling, Sir H. Thompson, Sir James Crichton-Browne (Treasurer), and Sir Frederick Bramwell (Hon. Secretary). The Right Hon. Lord Rayleigh was re-elected Professor of Natural Philosophy in the Royal Institution.

Mr. H. Wippell Gadd, of Exeter, has undertaken the compilation of a pocket synopsis (of 160 pages) to the new British Pharmacopœia, with concise notes on the changes, particulars of new preparations, tables of doses, strengths, etc. The work is now in course of preparation, and it is hoped to have the book published on May 14, the publishers being Messrs. Baillière, Tindall & Cox, of 20, King William Street, Strand, W.C.



JOLLES' FERROMETER.

C. Reichert, of Vienna, has introduced two new forms of apparatus which should at the present time be worthy of notice when so much more attention is paid to the state of the blood in healthy and morbid conditions. Dr. Jolles' Ferrometer is used to determine the amount of iron in the blood, and it has the advantage that a very small quantity, viz, 0·05 C.c., of blood being required. This quantity is drawn by a special scalpel and pipette, is incinerated in a platinum crucible, and the ash heated with 0·1 G. of acid sulphate of potash, and the resulting flux dissolved in distilled water and placed in a small cylindrical vessel, another of precisely the same bore and capacity being filled with a special comparison liquid, and to each is added 1 Cm. of dilute hydrochloric acid and 4 C.c. of solution of ammonium sulphocyanide. The two cylinders are then placed in a colorimeter, which might be described as a wide microscope tube with a reflecting mirror underneath, and sufficient of the comparison liquid carefully drawn off into a graduated vessel till the two colours exactly match, and from a table issued with the instrument the number of grammes of iron per litre of blood may be read off. The operation is simple and the results to be relied upon. The instrument, complete with all accessories, costs £8, a simpler form costing £5 15s., whilst a still simpler set costs £4.

A NEW HÆMOGLOBINOMETER.

A new hæmoglobinometer has also been introduced by Herr Reichert, which is in appearance somewhat similar to a microscope foot and stage, and on the latter a cell is filled with blood of a known degree of concentration, and compared with glass wedges graded to match known strengths, and from the readings thus obtained and a calibrating table the amount of real hæmoglobin can be very readily calculated. The advantage of this new instrument, which is an improvement of the old Fleischl hæmometer devised by Professor Mesicher, of Bâle, consists chiefly in the fact that not only normal hæmoglobin can be readily read off as on the old hæmoglobinometer, but also the percentage of real hæmoglobin by means of the table added. The price of the instrument (complete) is £5 3s.

CREPE BANDAGES.

Messrs. Tremeer & Co., of Barnstaple, quote elastic bandages (*crêpe velpeau*) containing no indiarubber. These bandages are remarkably light, a bandage 6 yards long by $2\frac{3}{4}$ wide weighing only $1\frac{1}{4}$ ounce; they cost only about one-third the price of rubber bandages, elastic stockings, or webs; they may be washed as often as required without their elastic qualities being impaired; and they are very cool in wear, and such is their elasticity that they can be put at any required tension and will follow a swelling up or down. The bandages are sold in 5-yard lengths, 2, $2\frac{1}{2}$, 3, and 8 inches wide.

NEWCASTLE CHEMICAL REPORT.

May 11, 1898.

Rather more business is passing in heavy goods for the Baltic ports, owing to the now free navigation to many of the upper ports. Soda Crystals are more inquired after for home ports; prices, however, are unchanged, and are quoted as follow:—Bleaching Powder, £6 5s. to £6 10s.; Caustic Soda, 70 per cent. basis, £7 5s. to £7 10s.; Soda Crystals, basis, 45s. to 52s. 6d.; Soda Ash, 52 per cent., £4 5s. Alkali, 52 per cent., £5 5s. Sulphur, £4 15s. to £5 per ton.

MANCHESTER CHEMICAL REPORT.

May 11, 1898.

The Board of Trade returns for the past month do not point to any improvement in regard to the chemical trade, and so far as exports to the United States are concerned, they are distinctly discouraging, the quantity of Alkali being only 4692 tons as against 12,948 tons, corresponding period of last pear. Generally, Alkali shows a decrease of 40·4 per cent., and Bleach 0·5. A fairly good feeling, however, prevails in this district, and Bleaching Powder is firm, as is also Bicarbonate of Soda. Sulphate of Copper is steady at £17 to £17 10s. for best brands, delivered Manchester, but the quantity in second hands appears to materially affect the price. Brown Acetate of Lime is scarce, and makers will not offer under £6 5s. to £6 10s., Manchester. Glauber Salts are scarce and firm at 35s. per ton, *f.a.s.* Ship Canal, or on rails here.

PARLIAMENTARY NOTES.

The Select Committee on the Science and Art Museums has published a first report, in which it is urged that the first item of reform should be the removal of the Jermyn Street collection of geological exhibits to South Kensington. The Members of the Committee are agreed that the chief desiderata are (1) efficient management; (2) economic administration; (3) room for future development; and (4) proper arrangement of material with a view to enchancing its educational value. All these virtues are expected to arise by reserving the space available on the eastern side of Exhibition Road for art, and that on the western side for science. The whole of the science collections, the Science Library, and schools (except the Royal College of Science) are, therefore, to be provided for on the western side, and the "precious stones" of the Royal School of Mines are recommended for removal to the science side of the Kensington Museums, where they may be more profitably displayed and more economically maintained.

Registration of Trade Marks is the subject upon which Mr. Cawley (Prestwich, Lancs.) interrogated the President of the Board of Trade on the 6th inst. It appears that a recent case before Mr. Justice Romer revealed what had long been patent to the initiated, namely, that there were a number of smart persons in existence who carried on a fairly profitable business by trafficking in trade marks. That is to say, they registered marks solely for the purpose of subsequently wresting money from those who desired to register similar marks for *bonâ-fide* trading purposes. Mr. Ritchie, in reply, was good enough to say that the practice complained of was "open to objection," but he was advised that the present law, which gives any aggrieved person power to apply for the removal of the *mala-fide* mark from the Register, furnished an adequate remedy. It may be adequate, but it is expensive as well as troublesome, and occupies time—all of which considerations tend to operate in favour of the trafficker.

Private Members are beginning to kick at the hopelessnes of amateur legislation. The privilege accorded to members under the rules of the House of dealing out verbal damnation to one another's Bills is so largely exercised now-a-days that non-official business is well-nigh impossible. It was only a week ago that some of the less stoical victims protested against the disgraceful waste of time and energy in putting Bills on the order paper and having them regularly slaughtered by the weapon "I object." Sir T. Esmonde (Kerry W.) and Mr. Duncombe (Egremont) have both asked Mr. Balfour to consider whether a satisfactory remedy could not be devised whereby private members' Bills might be rescued from this hopeless impasse. The leader of the House, however, whilst admitting the existence of the disease, could not think of any remedy, and asked the House to bear the ills they have rather than interfere with the 12 o'clock rule and introduce evils they know not of. Sir T. Esmonde subsequently urged the appointment of a small committee to inquire into the procedure, and hinted that a modification of the Standing Orders might be advantageous. He was met with the reply that the investigation was of too immense a range to be advantageously embarked upon at present. The position is, therefore, unchanged, and A will continue to block B's Bills and B to revenge himself on A's proposals, whilst the member for Mid Cork will stop everything out of respect for the memory of his dear friend, Joseph Biggar!

A Select Committee on Telephones has been constituted with the following duties:—To inquire and report whether the telephone service ought to be undertaken by the municipal and other authorities, regard being had to local finance; and, if so, to define the relative powers and jurisdictions of the local and municipal authorities. The minutes of evidence of the 1895 Committee on the Telephone Service, and the report of the Commission and the evidence taken at the recent Glasgow inquiry on the subject, are to be placed at the disposal of the new Committee. The members are Messrs. Bartley (N. Islington), Griffith-Boscawen (Tonbridge), Cawley (S.E. Lancs.), Cohen (E. Islington), Colville (N.E. Lanark), Firbank (E. Hull), Fry (N. Bristol), Hanbury (Preston), J. Redmond (Waterford), J. Stuart (Hoxton), Tully (S. Leitrim), and Nicol (Argyll), with Sir H. Bullard (Norwich), Sir R. Hanson (City), Sir H. Howorth (S. Salford), Sir J. Joicey (Chester-le-Street), and Sir J. Woodhouse (Huddersfield).

The Disposal and Treatment of Sewage is to occupy the attention of a Royal Commission, consisting of Lord Iddesleigh, Sir R. Thorne Thorne, Professor Michael Foster, Professor W. Ramsay (the new Honorary Member of the Society), Major General Phipps Carey, Dr. J. B. Russell, Col. T. W. Harding, Mr. T. W. Killick, and Mr. C. P. Cotton. The Commission is to find out: (1) methods of treating and disposing of sewage (including liquid manufacturing refuse), legally, economically, and healthfully; (2) what rules in relation to the nature or volume of sewage, or the population to be served, or other varying circumstances should determine the particular method to be adopted; and (3) to make what recommendations they think desirable.

ANALYTICAL NOTES.

Distinction Between the Blood of Birds and Mammals.—The blood of birds is much richer in phosphorus than that of mammals, so that a chemical determination of this substance is capable of distinguishing the two. Woltering and Maas determine the proportion of phosphorus contained in the corpuscles. The procedure adopted is as follows:—0·01 gramme of blood is put into a small test-tube with a little 3 per cent. acetic acid, boiled, and centrifugated, the fluid poured off, and the process repeated. After drying, the residue is calcined with a little nitre, then dissolved in a little water, and the phosphoric acid determined in the usual manner with molybdate solution; 0·005 gramme of fowl's blood gave a distinct reaction, but the reaction did not occur with the blood of cattle.—*Pharm. Centralh.*, xxxviii., 515.

Pyridine as a Reagent for Blood.—The fact that pyridine gives a marked colour reaction with the colouring matter of blood is made use of by Donogany for the detection of that substance in the clinical examination of excretions, etc. In examining urine 10 C.c. are taken and mixed with 1 C.c. of ammonium sulphydrate and a little pyridine. If blood be present a more or less intense orange-red colour is developed. Excrement, sputum, or vomit is treated with a 20 per cent. solution of caustic soda and filtered. If necessary a little ammonium sulphydrate is added, and a trace of pyridine, when the red colour will appear if blood be present.—*Pharm. Centr.*, xxxviii., 473.

Detection of Blood Marks.—Schaer gives the following process for detecting blood stains on cloth. Put a very small piece of the cloth to be examined into a porcelain dish and moisten it with a drop of acetic acid it order to hasten the solution. Subsequently add a few drops of chloral hydrate and guaiacum resin solution, and stir a little until the colouring matter of the blood is dissolved. Put the clear solution thus obtained into a small test tube, cover with hydrogen peroxide, when the well-known blue coloration will be obtained at the point of contact.—*Ph. Ztg.*, xlii., 66.

Determination of Camphor in Spirit of Camphor.—Eschenburg determines the amount of camphor in an alcoholic solution thus:—50 grammes spirit of camphor were mixed with 200 grammes water, and 45 grammes benzene added of the sp. gr. of 0·716. The camphor dissolved immediately, and the solution had a sp. gr. of 0·739 at 13°, exactly the same as that of a 10 per cent. solution of camphor in benzene. The experiment was repeated with petroleum ether of the sp. gr. 0·651, the result being the same. The solution of camphor obtained had a sp. gr. of 0·673 at 15°, showing again an increase of 0 022. As this operation can be easily carried out in a medicine bottle, it deserves attention.—*Zeit. d. Allg. oest. Apoth. Ver.*, li., 668.

Testing Guaiacetin.—Guaiacetin is a white odourless powder which, according to Seigert, is acetic ester of pyrocatechol. The test for purity is as follows:—5 grammes are dissolved in 15 parts of water. The solution, which should be clear and neutral, is mixed with dilute sulphuric acid until completely precipitated. The separated acid is then shaken out with ether, the ethereal layer separated, washed with water, then evaporated. The residual guaiacetic acid is carefully dried and the melting-point taken, which should be between 130°-131° C. if the preparation is pure. If the acid is heated for some time to 140°-150° C. water separates, and the lactone of the acid is formed, having its melting-point at 56° C.—*Pharm. Zeit.*, xlii., 380.

MARKET REPORT and Prices Current

Specially compiled for the Pharmaceutical Journal

The quotations here given are in all cases the lowest cash prices for bulk quantities, and often the articles quoted have to be sorted in order to suit the requirements of the retail pharmacist. The cost of freightage from the chemical and drug works to the various distributing centres must also be considered. It is important that these conditions should be borne in mind in making any comparison between the prices quoted and those of the wholesale drug trade.

LONDON REPORT.

MAY 12, 1896.

Business has been quiet during past week, and there are few changes of importance to chronicle. Quicksilver is again dearer; there is, however, so far, no change in makers' prices for Mercurials. Quinine is dull, being offered from second hand, below maker's advanced prices. Opium is dearer, while Morphia has also moved upward to a slight extent, although so far by no means in proportion to the enhanced cost of the raw drug. Ipecacuanha is very firm, but buyers are so far not prepared to follow holders ideas. Acid Citric is firm on the spot, makers declining to sell forward. Phenacetin and Sulphonal unchanged, the latter article is, however, expected to advance. A rise is also looked for in American Oil of Peppermint, Cod-liver Oil dull. Glycerin quiet. Acid Carbolic rather more active. Belladonna Root very scarce and dear. Acid Tartaric and Cream of Tartar quiet. Cascara Sagrada firm, with a rising tendency. The following are prices actually ruling for articles of chief interest:—

ACETANILED—Is steady at 1s. 3d. to 1s. 4d. per lb. according to quantity and packing.

ACID BORACIC—Steady at 23s. per cwt. for *crystals*, and 25s. per cwt. for *powder* in large bulk.

ACID CARBOLIC.—Demand has been rather more active at 6¼d. to 6½d. per lb. for 35 to 36° C. *ice crystals* in bulk; other qualities and packing in proportion. *Crude*: 60° F., 2s. per gallon; 75° F., 2s. 6d. *Liquid*: 95 per cent., of pale straw colour, 1s. 2d. to 1s. 3d. per gallon in 40-gallon casks.

ACID CITRIC—Is very strong at 12¾d. to 1s. 1d. per lb. according to make, makers declining to sell for forward delivery.

ACID OXALIC—Is steady at 3⅝d. per lb. on the spot.

ACID TARTARIC.—*English* on the spot is quoted 1s. 1d. per lb. *Foreign* 12¾d. per lb.

AMMONIA COMPOUNDS.—*Sulphate* is dearer but closes quiet at £8 16s. 3d. per ton for grey prompt, London; Hull, £8 16s. 3d. per ton; Leith, £8 15s. per ton. *Bromide* steady at 2s. 2d. per lb. *Iodide* unchanged at 14s. 6d. per lb. *Oxalate* steady at 6d. per lb. *Sal Ammoniac* unchanged; sublimed firsts, 35s. per cwt.; seconds, 33s. per cwt. *Sulyhocyanide* quiet at 1s. 2d. per lb. *Chloride*: Free from metals, 98 per cent., 25s. to 26s. per cwt.: chemically pure, small crystals, 33s. per cwt.

ANTIMONY.—Price of *crude* has advanced considerably in sympathy with the higher prices of other metals. On the spot *Japan* is quoted 22s. per cwt., while for May-June shipment 21s. is asked.

ASAFŒTIDA.—A further business has been done for American account up to 62s. 6d. per cwt., and there are several enquiries on the market. Desirable quality is very scarce.

BELLADONNA ROOT is very scare and dear. None is offering on the spot, while to come forward 42s. 6d. to 45s. per cwt. *c.i.f.* is asked for fair to good root.

BLEACHING POWDER—Firm at £7 5s. per ton on the spot.

BORAX—Remains unchanged at 14s. per cwt. for lump, and 14s. 6d. for powder in large bulk.

BROMIDES—Are in brisk demand at 1s. 10d. for *Potass. Bromide*, *Bromine* being unchanged at 1s. 11d. per lb. for 20-case lots.

CAMPHOR—Is a very quiet market for *crude* on the spot, but for arrival *Japan* is quoted higher at 90s., *c.i.f.*, for May to June shipment; *China* same shipment is quoted 83s. 6d., *c.i.f.*, sellers.

CLOVES.—Privately *Zanzibar* are easy, and only moderate business passing. June to August delivery 3⅛d., August to October 4d. At auction 144 bales *Zanzibar* offered and 67 bales sold, good at 3⅞d., with one lot at 4d. 11 cases *Penang* bought in at 9d. 35 bales *Clove stems* sold at 1¾d.

COCAINE—Is apparently again on the move upwards, and while some of the makers have so far received no instructions, others, who were lately quoting as low as 9s. for 100-oz. lots in bulk, now ask 9s. 9d. per oz., stating, with a view, perhaps, of inducing business, that there is probability of a further advance.

COAL TAR DISTILLATION PRODUCTS.—*Toluol*: Commercial, 1s. 4d.; pure, 3s. per gallon. *Benzole*: 50 per cent., 1s. 3d. per gallon; 90 per cent., 1s. 2d. per gallon. *Crude Naphtha*: 30 per cent., at 120° C., 6d. per gallon. *Solvent naphtha*: 95 per cent., at 160° C., 1s. 8d. per gallon.

CODEIA—Is steady at 11s. 3d. to 11s. 6d. per oz. for quantity.

COD-LIVER OIL—Remains very quiet in spite of the apparently favourable statistical position of the article. Price for best non-congealing *Norwegian* oil in tin-lined barrels is nominally 82s. 6d. per barrel *f.o.b.* There is, however, practically nothing doing in the article at the moment.

CORIANDER SEED—Is in good supply, and the usual American demand is lacking, hence prices are by no means firm, and it would be possible to buy good *Morocco* at about 7s. 6d. per cwt.

CREAM OF TARTAR—Is very dull and inclined to be lower, although the Spanish exchange for the moment seems to have touched bottem. First white *crystals* on the spot are quoted 74s. 6d per cwt., whilst for new *B.P. crystals* 80s. per cwt. is asked. Ordinary *powder* is quoted 77s. to 78s. per cwt.; *B.P. powder*, 82s. 6d. per cwt.

GINGER.—*Cochin* continues dull, and of 477 bags rough only 29 bags sold; of cut kinds 93 cases ordinary roughly-cut sold firmly, A at 80s., C at 32s. 6d. to 44s. 160 bags limed *Japan* sold at 15s. to 17s. *Jamaica* met an active demand, and 644 barrels and 42 half-barrels all sold, realising rather higher prices: Common, 75s. 6d. to 77s.; low middling and small scraped, 80s. 6d. to 84s 6d.; middling to good middling, 85s. to 90s.; good and fine bright, 93s. 6d. to 100s.; fine and selected bright bold, partly in half-barrels, 105s. to 127s. 6d.

GLYCERIN—Is quiet at 52s. 6d. to 57s. 6d. per cwt., according to brand and quantity, for *German* white double distilled chemically pure, 1260 quality, in tins and cases, other qualities and packing in proportion. *English* can, however, be bought below these prices.

INSECT FLOWERS.—Open flowers are rather easier at 45s. per cwt.; half-open, 75s. per cwt.; and closed, 120s. per cwt. *c.i.f.*, London. Stocks are fairly large in Trieste.

IODIDES—In very active demand, prices being 9s. 9d. per lb. for *Potass. Iodide*, and 7½d. per oz. for *Iodine*, prices of other *Iodine* preparations being also unchanged.

IPECACUANHA.—Business has been done this week at 9s. per lb. for fair *Rio* for shipment to New York, whence the demand continues very active. For *Carthagena*, the supply of which is large, there is absolutely no demand; price nominally 5s. 6d. per lb.

JAPAN WAX.—Only a small business is doing at 35s. per cwt. on the spot.

MERCURIALS.—It is probable that makers will shortly advance their prices, which, however, so far remain unchanged at 2s. 2d per lb. for *Corrosive Sublimate*, and 2s. 6d for *Calomel* in half ton lots, the rise in price of *Quicksilver* being the cause of the expected advance in price of mercurials.

MENTHOL—Is quiet but spot price is fairly steady at 7s 3d. to 7s. 6d. per lb.

MORPHIA—Is dearer at 4s. 6d. per oz. for the *hydrochlorate* salt in powder for large contracts and in bulk packing, although the advanced price of opium would fully justify a much higher figure for both the alkaloid and its salts.

OILS (ESSENTIAL).—*Amydg. dulc. Ang.* is dearer at 1s. 4d. per lb., being an advance of 2d. per lb. *Peppermint H.G.H.* is steady at 5s. 7½d. to 5s. 9d. per lb. on the spot. *Wayne County* 4s. per lb. *Japan* dementholised 3s. per lb., 40 per cent. 4s. per lb. *Star aniseed* quiet at 6s. 4½d. to 6s. 6d. per lb. *Citronella*: 1s 1½d. to 1s. 2d. per lb. for drums and tins respectively. *Lemongrass* quiet 4½d. per oz. *Peppermint*: American. A New York report says that the high

price for wheat and other food products cannot but help to reduce the acreage under mint this year.

Oils (Fixed) and Spirits.—*Linseed* is again dearer, spot pipes, London, being now quoted £16 17s. 6d. ; barrels, £17 5s. *Rape* is lower at £23 for ordinary brown on the spot, and £24 5s. for refined, same position. *Cotton* is again lower and closes quiet; London, crude, spot, £14 5s. ; refined on the spot, £16 to £16 15s., according to make. *Olive* firm at £33 for both Spanish and Levant. *Coconut* is dearer and very firm at £24 10s. for Ceylon on the spot, and £29 10s. for Cochin, same position. Palm firm at £23 10s. *Turpentine*: Since our last values have still further declined; but the market closes dearer from the bottom, although still below last week's quotation. American spot 25s. 6d. per cwt. *Petroleum* firm but quiet. Russian spot 4½d. per gallon, American 5d. per gallon, Water White, 6⅛d. *Petroleum Spirit*: American 5⅜d. per gallon, deodorised 5¾d. per gallon.

Opium—Is decidedly firmer, 11s. 3d. to 11s. 6d. being now asked for good *Persian* while manufacturing stuff is quoted 10s 6d. per lb. on the spot it being reported that as much as 11s. 10d. has been paid for the same quality in Smyrna. The market is firm and appearances point to even higher prices for the article.

Orris Root.—The reported revolution in Italy will probably lead to higher values for this article, meantime prices is firm.

Phenacetin—Is somewhat firmer, best makes are, however, still obtainable at 3s. 9d. to 4s. 3d. per lb. in bulk packing, according to quantity for *crystals* and *powder*.

Potash Compounds.—*Chlorate* is very quiet at 3¼d. per lb. *Bromide* steady at 1s. 10d. per lb. *Iodide* firm at 10s. 3d. per lb. *Permanganate* remains quiet at 62s. 6d. per cwt. for small crystals, and 67s. 6d. per cwt. for large crystals. *Cyanide*: Cake, 98 to 100 per cent., is very firm at 1s. 2d. per lb. *Prussiate*: Yellow, 6¾d. to 7d. per lb. ; red, 1s. 2d. per lb. *Bicarbonate* firm at 30s. per cwt. for crystal or powder. *Bichromate*: 4d. to 4¼d. per lb.

Quicksilver—Is again higher and very firm at £7 10s. per bottle from importers, and 6d. less from second hands. The following figures illustrate the strength of the present position :—

Imports.

	1898. Bottles.	1897. Bottles.	1896. Bottles.	1895. Bottles.
April	5334	15,729	304	12.0
January to April	37,810	37,952	22,781	33,480

Exports.

	Bottles.	Bottles.	Bottles.	Bottles.
April	2939	1684	4305	4992
January to April	9802	7983	13,713	13,549

Average Price.

	£ s. d.	£ s. d.	£ s. d.	£ s. d.
April	7 0 0	7 3 6	6 14 6	6 13 6

Quince Seeds—Are in demand, but there are no *Cape* on the spot, which are quoted at 1s. 6d. per lb. to come forward.

Quinine.—Market has been quiet during the week, and against the makers' price of 1s. per oz. for best German brands of *Sulphate* in 1000-oz. lots in oz. tins ; there have been sellers from second hand at 11d. per oz., it would, however, be difficult to buy any large quantity at this lower figure. In spite of the advance of about 25 per cent. shown at the late Amsterdam Bark Sales, the position of Quinine appears to be somewhat doubtful. On the one hand there is quite a possibility of higher prices prevailing ere long, while on the other hand many people who should be qualified to judge fear that the large supplies of bark from Java, combined with the fear of further supplies of the manufactured article from that quarter, may easily exercise a depressing influence on the market.

Shellac—Is somewhat steadier, but the market is quiet. On the spot *Second Orange* sold on a basis of 61s. per cwt. for *TN*; for arrival April to June steamer there are buyers at 60s. per cwt., *c.i.f.* The Calcutta market is cabled very firm. For delivery prices are firmer, with further sales of *TN* August at 63s. 6d. per cwt., closing buyers at that price.

Soda Compounds.—*Crystals* steady at 55s. per ton. *Bicarbonate* £7 5s. per ton for the 98 per cent. *Bromide* unchanged at 2s. 2d. per lb. *Iodide* 11s. 7d. per lb. *Hyposulphite* steady at 6s. to 8s. per cwt., according to brand and package. *Sulphite* 20s. to 22s. 6d. per cwt. *Caustic*: 70 per cent., white, £7 10s. ; 60 per cent. £6 10s. per ton. *Nitrate*: Refined, £7 15s. to £8 per ton.

Spermaceti. — American is dearer at 1s. 3d. per lb.

Spices (various).—*Black Pepper* : only 18 bags extra bold, heavy, clean Mangalore sold at 8d. ; Lampong bought in at 3⅞d. to 4d., and Singapore at 4⅛d. to 4¼d. *White Pepper*: Singapore bought in at 7⅞d. to 8d. *Chillies*: 22 bales good, fair Zanzibar sold at 31s. ; 10 bags rather dull Japan sold at 39s., fine bought in at 45s. *Capsicums*: 14 bales Bombay, small round red and brown off-stalk bought in at 25s. to 30s. ; 3 bales mixed Natal sold at 60s. to 65s. *Cassia Lignea*: 100 boxes sold at 50s. ; 200 bales broken bought in at 36s. *Cassia Buds*: 7 bags wild Tellicherry sold at 33s. *Cinnamon* ; 44 bags coarse broken bark sold at 5d. ; 327 bags Ceylon chips bought in at 3d. to 3¼d., except 30 bags quillings, which were sold at 8½d. to 9½d. *Mace:* 43 cases Penang bought in, pickings 1s. 5d., ordinary to middling 1s. 7d. to 2s., fine 2s. 6d. 3 packages West India sold at 1s. 3d. to 1s. 4d. *Nutmegs* dull. Penang bought in, 65's at 2s. 6d., 67's at 2s. 5d. 10 packages West India sold, 79's at 1s. 7d., 87's at 1s. 6d., 95's at 1s. 3d., 106's to 111's at 1s. 2d. *Pimento*: Only 60 bags offered and bought in at 4½d.

Sulphonal.—The chief outside maker in Germany having been prohibited from manufacturing the article, in consequence of the fearful stench caused thereby in the neighbourhood, the article appears now to be practically in the hands of the two principal makers, which may very possibly mean a decided advance in price in the not too distant future, and the more so in that it has been all along insisted that present price was not remunerative, makers are, however, meantime, still accepting orders for quite limited quantity, and from regular customers only at 7s. 3d. per lb. in bulk packing for both *crystals* and *powder*.

Sulphate of Copper—Is very dull at £15 17s. 6d. to £16 15s. per ton.

Turmeric.—*Bengal* is firm, with sales at 15s. per cwt., but buyers now ask 15s. 6d. per cwt. *Madras* firmer, ordinary finger sold at 20s. per cwt.

To-day's drug auctions passed off quietly, with, however, a moderate amount of business passing, Rio Ipecacuanha being held for higher figures, without, however, meeting with response on part of buyers. Turkish Colocynth sold at lower rates. The following are some of the prices which ruled :—

Aloes.—Good *Socotrine*, but rather softish held for 77s. 6d. per cwt. Coarse *Curacoa* in boxes for 21s., small gourds realising 28s. 10 boxes fine livery ditto sold at 40s. to 41s., and lower quality at 24s. to 29s. per cwt.

Annatto Seeds.—13 bags of fair quality were taken out at 4d. per lb.

Camphor.—9 cases refined *Japan* in squares sold at 1s. 2d. to 1s. 4d. per lb., according to size of tablets ; 1 case slabs bought in, price asked being 1s. 2½d. per lb.

Cardamoms.—For the 280 cases offered to-day the demand was fairly active, but prices fell on an average about 3d. per lb. Good bold bleached *Mysore* sold at 3s. 10d. per lb., the second size at 3s. 4d. per lb., good decorticated 3s. to 3s. 1d. per lb. *Mangalore*: Fine bold pale round 4s. per lb., bold dull 3s. 9d. to 3s. 10d., second size 3s. 4d. to 3s. 5d. per lb., small 3s. to 3s. 1d. per lb.

Cascarilla Bark.—13 bales part held at 35s., for fair bright thin ; 3 cases bolder quality realising 51s. per cwt.

Castor Oil.—20 cases, good firsts, were bought in at 4d. per lb. ; seconds, at 3½d., which shows easier values for the article.

Civet.—2 horns of fair quality bought in at 13s. 6d. per oz.

Cinchona Bark.—5 bales bold *Carthagena* sold at 4d per lb.

Colocynth.—12 cases small to medium broken *Turkey* sold at 10½d. per lb. which was cheap, looking at prices hitherto asked for the article ; 1 cask good pale *Spanish* fetching 11d.

Colombo Root.—102 bags very brown with stalk sold at 20s. to 21s. 10 bags fine bright small to bold washed bought in at 55s. per cwt.

Dragon's Blood.—10 cases were advertised, but 7 of these were not landed in time. For the remaining 3 cases dullish re-boiled saucers no bid could be obtained, £6 being the price required. Fine is much wanted, and long prices could be obtained.

Ergot of Rye.—Good bold Spanish, but slightly wormy, was bought in at 1s. 3d. per lb.

Essential Oils.—2 cases Oil of Limes bought in at 4s. 4d. per lb.

Cowage.—1 case very brown sold at 1d.

Galls.—26 cases *Japan* bought in at 56s. per cwt.

Gum Benjamin.—Good seconds *Sumatra* sold at £8 7s. 6d. per cwt down to £8 2s. 6d. for slightly inferior, and £6 for lower quality. Low seconds sold without reserve at 71s. to 77s. per cwt. Medium *Siam* realised £11 per cwt.

Gum Guaiacum.—2 cases fine glassy block were held for 2s. per lb., an offer of 1s. 11d. being declined.

Gum Kino.—8 boxes genuine small ruby were held for 10s., good *African* for 4s. 3d. per lb.

Gum Mastic.—2 cases pale sold at 1s. 10d. per lb.

Gum Myrrh.—1 case good native picked was held for £5 per cwt., poor and dusty sorts selling without reserve at 30s., and pickings at 4s. to 5s. 6d. per cwt.

Honey.—Fair *Jamaica* sold readily at 20s. to 22s. 6d. per cwt., inferior ditto at 15s. 29 cases *Australian* were taken out at 21s. Good *Californian* was held for 35s., 10 cases lower quality selling at 26s. per cwt.

Ipecacuanha.—24 bales *Rio* were offered, but buycrs were not prepared to pay the further advance asked, 9s. to 9s. 2d. per lb. being now the price. Of *Carthagena* quality, 63 packages were offered, but this grade is not wanted, and lower prices failed to tempt buyers.

Kola Nuts.—One case fair West Indian sold at 3½d. per lb.

Lemon Juice.—4 octaves were held for 11d. per gallon.

Musk.—5 caddies old-fashioned *Tonquin* held for 55s. per oz.

Orange Peel.—Fair new thin cut was held for 7d. to 7½d. per lb.

Rhubarb.—Good flat *Canton*, slightly rough, was bought in at 1s. 4d. per lb., round ditto being held for 1s. 3d. to 1s. 4d. for medium to good but rather rough, and trimming root for 1s. 5d. per lb., bold flat *high-dried* for 1s. 3d., second size fetching 1s. 1d.; 2 cases rough horny ditto, 7d. Dark-coated round *Canton* sold, subject to approval, at 1s. 1d. per lb; very rough stalky and woody round *Shensi* was held for 1s. 2d. per lb., only 1s. being bid, ditto flat selling at 1s.

Sarsaparilla.—19 bales *Jamaica* sold freely at 1s. 8d. to 1s. 10d per lb., 1 bale *Native* in rolls being bought in at 2s.

Scammony.—2 boxes were held for 20s. per lb., a bid of 17s. 6d. being declined.

Senna.—About 130 bales *Tinnevelly* were offered, the greater part being second hand holdings. The whole of the lots in the principal catalogue were withdrawn amid signs of impatience at the ridiculous prices asked. A few bales sold at 1½d. to 2¼d. per lb. for dark to medium green small. *Alexandrian*: Good leaf bought in at 7d. per lb.

Vanilloes.—187 tins were offered, mostly without result. A few tins *Seychelles* sold at 20s. to 20s. 6d. lb. for 7½ inch, 19s. lb. for 7 to 7½ inch, 18s. 6d. lb. for 7 inch and 17s. 6d. lb. for 6 to 6½ inch.

Vermilion.—6 cases *China* held for 1s. 11d. per lb.

Wax—Good *Jamaica* realised £7 2s. 6d. to £7 5s. per cwt. 2 cases *Japan* sold without reserve at 34s. 6d. per cwt.

LIVERPOOL REPORT.

May 11, 1898.

Ammonium Salts.—*Carbonate*: 3d. per lb. *Sal ammoniac*: 33s. and 35s. per cwt. *Sulphate*: Steady at £8 15s. per ton.

Bleaching Powder.—£5 10s. to £6 per ton. Business is somewhat slack.

Carnauba Wax.—60 bags of grey and medium sold on private terms.

Copperas.—Very firm at 38s. per ton for Lancashire and 36s. for Welsh.

Copper Sulphate—is firm at £16 10s. per ton.

Ginger.—About 900 bags of Sierra Leone rhizome sold at 18s. to 18s. 6d. per cwt. in store and in transit.

Gum Arabic.—"Sorts" have been selling at 75s. per cwt.

Honey.—Chilian Pile 3 sold to the extent of 86 barrels at 21s. per cwt.

Kola Nuts.—15 bags dried found buyers at 1¼d. per lb. ex quay.

Oils (Fixed) and Spirits.—*Castor* is steady both in price and demand, Calcutta "good seconds" at 3¼d. to 3⅜d. per lb., and French 1st pressure at 3¼d. per lb. *Olive*, of Spanish origin, is at an extremely low price, and a fair amount of trade is passing in Seville and Malaga varieties at £30 10s. to £31 per tun. *Linseed*, of Liverpool make, has been a shade easier since last week, but is now back to the old figure, 18s. to 18s. 6d. per cwt. *Cottonseed* is about 3d. per cwt. cheaper; 16s. 9d. to 17s. 3d. per cwt. *Spirits of turpentine* has dropped considerably since last report, and is now selling moderately at 27s. per cwt.

Potash Salts.—*Bicarbonate*: 30s. per cwt. *Bichromate*: 3¾d. per lb. *Chlorate* in brisk demand, good business having been done at 3¼d. per lb. *Cream of tartar* is still not much asked after at 75s. per cwt. *Pearlashes* are quiet at 37s. 6d. to 40s. per cwt. *Potashes*: 20s. 9d. per cwt. *Saltpetre* firm at 21s. per cwt.

Quillaya Bark.—140 bales of Chilian sold early in the week for £16 15s. per ton, and later 15 tons sold for a similar figure.

Seeds.—*Canaryseed* still rules high, prices being 29s. to 30s. per 464 lbs. for Turkish. 200 bags of 1897 crop for shipment sold at 28s. *Linseed* is very dead, neither buyers nor holders seeming inclined for trade.

Soda Salts.—*Bicarbonate*: £7 per ton. *Borax*: £13 to £13 5s. per ton, *Caustic*: 76 to 77 per cent., £8 15s. per ton; 70 per cent., £7 5s. per ton. *Crystals* firmer at £3 per ton. *Nitrate* in fair spot demand, and steady at 7s. 6d. to 7s. 7½d. per cwt.

Spermaceti.—*Crude*: 49 bags sold for 56s. per cwt.

PARTNERSHIP DISSOLVED.

(From the London Gazette.)

T. E. Butler, J. A. Butler, and H. M. Thornton (trading as Butler, Son & Co.), Chemists, Leicester.

RECEIVING ORDER IN BANKRUPTCY.

(From the London Gazette.)

Edward Joseph Dore, Physician and Surgeon, 32, Clytha Square, Newport, Mon.

Advertisement.

(Received too late for Classification).

VACANCY for an Apprentice will occur next month in a long-established firm of country Chemists, where a sound knowledge of every part of the business can be acquired. Youth must have passed the Preliminary examination of the Pharmaceutical Society, and be well recommended by his last schoolmaster. In-door. A premium will be required. Address, Chemist, care of T. B. Browne's Advertising Offices, 163, Queen Victoria St., E.C.

DIARY FOR THE WEEK.

Saturday, May 14.

Reynolds and Branson's Cricket Club v. Bainbridge, Ltd.

Tuesday, May 17.

Pharmaceutical Society, at 7 p.m.
Annual Dinner (Hotel Cecil).

Wednesday, May 18.

Pharmaceutical Society, at 12 noon.
Annual General Meeting.
Royal Microscopical Society, at 7.30 p.m.
Exhibition of Microscopic Aquatic Life.

Thursday, May 19.

Chemical Society, at 8 p.m.
"The Action of Formaldehyde on Amines of the Naphthalene Series," by G. T. Morgan.
"On the Constitution of Oleic Acid and its Derivatives" (Part I.), by F. G. Edmed.

Friday, May 20.

Royal Institution, at 9 p.m.
"The Early Life and Work of Shakespeare," by the Right Hon. D. H. Madden.

EXCHANGE.

OFFERED.

Miscellaneous.

Splendid St. Bernard Bitch.—Strong, and healthy, 11 months, grand pedigree, good-tempered and affectionate; sell, or exchange saleable patents.—Busby, Chemist, Stanley Bridge Post Office, Fulham.

30s.—Oppenheimer's globe nebuliser, perfect and clean, only used twice, take 15s.—Highton, Chemist, Blackburn.

Surplus Stock.—12 Williams', 12 Carter's, 6 Cockles', 6 Holloway's, 6 each Steedman's, 1s. 1½d. and 2s. 9d., £2 17s. 6d. Cash with order, or London reference if fresh customer.—Eastman, Forest Lane, Stratford.

For Sale.—Pneumatic Bicycle, £5. Write for particulars—A. Pollard, 82, Cambridge Gardens, Notting Hill, London, W.

Magic Lanterns, second-hand; triples and biunials; oxyhydrogen microscope; marvellous pamphengos oil; lantern gives 14-ft. picture; 60,000 slides and effects; 4-in. 4-wick lanterns, 18s. 6d. each, bargains; illustrated list post free, 2d. Animated photographs: A splendid machine for £9 9s.—Hughes, Brewster House, 82, Mortimer Road, Kingsland, N.

To clear.—1897 English Honey, pure and good, 1 ½lbs. for 5s.; offers for 1 cwt. New Combined Monocle and Stereoscope, cost 17s. 6d., price 9s.—Brampton, Sudbury, Suffolk.

Books.

Special.—The first twelve volumes 'Strand Magazine' quite new; bound publisher cases, £2 11s. 6d. Note.—The First 2 volumes are 21s. each at the publishers.—Pouteau, 44, Warden Road London, N.W.

Latest editions, nearly new. Squire (12s. 6d.), 7s.; Wills' 'Pharmacy,' 3s. 6d.; Gerrard (8s. 6d.), 4s. 6d.; Bentley's 15s. 'Manual,' 7s. 6d.; Pereira's 'Selecta,' 2s. 9d.; Oliver's 4s. 6d. 'Botany,' 2s. 9d. Carriage free.—Gower, Publisher, Waterloo, Liverpool.

WANTED.

Desideratum (28 lbs.) or similar powder mixer and sifter—"Sifter," 232, Portway, West Ham.

Wanted.—Munyon's Remedies. State kinds, quantity, and lowest price for cash to—Eastman, Forest Lane, Stratford.

Old Platinum Utensils or Scrap, also Old Electric Lamps wanted for prompt cash by P. Rowsell, 14, Walcot Square, London, S.E.

PHOTOGRAPHIC NOTES.

Snap-Shot Developer.—Solution A. Weigh 6 drachms of sulphite of soda, dissolve in 1½ ounces of water, then add 25 grains of citric acid; finally add 2 drachms of pyro, and make up to 2½ ounces of water. Solution B. A saturated solution of common washing soda. To use take one part of A to seven parts of B. This developer is only for snap-shots; time exposures would be hopelessly fogged.—J. S. Henderson in *Photo. News.*

Retouching Medium.—A very good retouching medium may be made by simply dissolving about 40 grains powdered resin in 1 ounce of turpentine.—A. E. L. in *Photo. News.*

Removal of Pyro Stains.—R. Ed. Liesegang finds that ammonium persulphate is an excellent means to remove this stain. The persulphates possess a very fair solvent action for this brown colouring matter. A little of the damp crystalline powder should be rubbed between the fingers and then rinsed off. The solution of ammonium persulphate can also be used for reducing negatives when the pyro stain makes them too dense. The still wet negative should be bathed after fixing and washing in a 10 per cent. solution of ammonium persulphate, and when the stain is sufficiently removed, the solution should be washed off. This clearing bath must not be allowed to act too long, or else the metallic silver of the image itself may be dissolved.

Heating the Dark Room.—Dark rooms built away from the house are, as a rule, either insufficiently ventilated or heated. In the winter months this is important, as the user generally finds it necessary to heat the room by means of a gas or oil stove. In either case this means of heating dries the atmosphere, and renders it disagreeable and fatiguing to work in for any considerable period. The remedy is simple—namely, place a tin containing water on the top of the stove, and the steam given off will assist in keeping the air of the dark room fresher than would otherwise be the case.—Phi-Phia in *Photo. News.*

Klondike Developer.—Every druggist should have developers put up in 8 or 12 ounce bottles, properly labelled, with directions, and over his own name. The developer I recommend as suitable to every brand of plates and almost every variety of amateur is the following:—

Metol	80 grs.
Hydroquinone	80 grs.
Potassium carbonate	28 grs.
Sodium sulphite	38 grs.
Water	12 ozs.

Dissolve the sodium sulphite first, then the metol and hydroquinone and potassium carbonate. Thus made, the developer will keep almost indefinitely, which is a very great advantage. Call it the Klondike, or something equally fancy. Directions: For snap-shots, dilute with twice as much water; for time exposures, dilute with four times as much water. After using, pour into a separate bottle, and use on next batch until exhausted. An old developer is best to use on over-exposed plates.—*American Druggist.*

A Fixing Bath comes next. A great many amateurs make their own by simply dissolving sodium hyposulphite in water; others prefer a ready-made one. The one I have put up and sold in 12 ounce panels at 15 cents is the Stanley Acid Fixing Bath.

Hyposulphite	2 lbs.
Alum	2 ozs.
Hot Water	4 qts.

Allow to stand twenty-four hours and filter clear. Directions: Allow the plate to stay in bath five minutes after becoming transparent, then wash fifteen minutes and dry.—*American Druggist.*

An Intensifier.—The best contains mercury bichloride.

Hydrarg. bichlor	4 drs.
Acid. hydrochlor.	1 dr.
Aquæ ad.	8 ozs.

Label as follows: Soak the plate fifteen minutes in water, then immerse in bath, and keep it there until more or less whitened (according to degree of intensification wanted), then wash ten minutes and place in water to which a very little ammonia has been added, until it darkens, then wash well and dry. Of course, it must be poison-labelled, and the user also cautioned regarding its poisonous nature, but as most all photographic chemicals are poisonous, equal care must be exercised with all.—*American Druggist.*

Flashlight Powder is a necessity, especially in winter. The kinds put up for sale do not give enough margin to pay for handling. It pays better to make your own after this formula:—

Magnesium	4 parts.
Potass. bichrom.	3 parts.
Potass. permang.	3 parts.

Pulverise separately and mix carefully. I have tried the various formulæ published for flashlight powder, but this is the only one that gives entire satisfaction. The majority of the others are so slow that the resulting picture is, perhaps, very amusing, but is also very disappointing. Most of the persons are shown with their eyes shut, while some are seen to be elevated an inch or so from the floor or seat, etc. With this powder it is impossible for the subject to move quick enough to blur the picture. I always advise a very rapid plate for use with the flashlight.—*American Druggist.*

Chloride of Gold.—Chloride of gold is so easy to produce in a perfectly pure state, ready to use, that anyone using a large quantity is very foolish not to make it. A $2·50 gold coin dissolved in aquæ regia neutralised with bicarbonate of soda until the copper alloy falls as green precipitate, then filtered, and then re-acidified with nitric acid, will keep indefinitely as a stock solution, and will tone more prints than $4 expended in the manufactured article. A little of it neutralised or made slightly alkaline with either borax, phosphate of soda, or acetate of soda and borax, will make as good a toning bath as any combination of patent mixtures or nostrums to be obtained.—D. Bachrach, in *Wilson's Photographic Magazine.*

Dull Black Varnish.—A useful varnish for blacking the interior of lantern bodies, lens tubes, etc., is made by mixing vegetable black or gas black with lacquer or French polish. Too much lacquer gives a shiny surface. Too little fails to make the black adherent. To ensure a smooth mixture, free from lumps, keep a few shot in the bottle containing the varnish and shake up before use.—G. E. B. in *Photo. News.*

Drying and Draining Plates.—A negative is often wanted to dry in a short time. Methylated spirits may be used, but there is always a risk of drops of spirit remaining on the film, and so causing a difference in density. The following is a remedy:—When the plate is taken from the last washing water, wipe it gently but firmly with a soft old, well-washed pocket-handkerchief, then place it in the alcohol. It is surprising how much careful wiping the film will stand. Or the following may be used as fixing bath:—Chrome alum, ¾ oz.; sulphite soda (powdered), 1 oz.; water, 8 oz. Dissolve and mix with hypo, ¼ lb.; water, 12 oz. Wash and then dry as quickly as you like. To keep the edges of plates free from dust, drain on a strip of corrugated paper.—L. L. O. in *Amateur Photographer.*

Mounting Gelatino Chloride Paper.—Much difficulty seems to be experienced in mounting prints, but the following plan is so simple that there need not be any if it is followed:—Lay the print face down on a clean piece of glass, paste it over, and rub the paste in with the fingers, or a bit of chamois leather, till the print lies quite smoothly, press out all air-bubbles, add a little more paste, and lay the print on its mount, place a piece of plain paper over it and squeegee down firmly. Do not touch it with any material; even silk leaves fluff behind. I use ordinary paste made with flour. It will keep two or three days and is very little trouble to make. I trim the prints after toning so as to leave an edge to hold them by during toning and fixing.—M. A. C. in *Amateur Photographer.*

To Prevent Curling of Prints.—This may be entirely avoided if the print is immersed in the following solution after their final washing:—

Water	1 part.
Alcohol	4 parts.
Glycerin	3 ,,

After this they will dry quite flat.—C. J. M. in *Photo. News.*

SELECTED FORMULÆ.

SUPPOSITORIES, PESSARIES, AND GYNECOLOGICAL CRAYONS.

For pessaries Delaye advises the use of a simple solution of gelatin in glycerin without previously softening the former in water, since he finds that, on keeping, articles made in the usual manner with water-softened gelatin lose their shape and consistence by gradual evaporation. He recommends the use of five bases, containing respectively 10, 8, 7, 6, and 5 parts by weight of sheet gelatin in 90, 92, 93, 94, and 95 parts of glycerin. The gelatin is simply dissolved in the glycerin by heating on the water-bath. The melted basis is mixed intimately with the medicament; when six pessaries are ordered, the requisite quantities for seven are weighed out, and the pessaries are left in the mould for at least twelve hours. When removed they are slightly oiled with olive oil or paraffin. For general use the mass containing 7 per cent. of gelatin is preferable for bodies which are soluble in glycerin and first dissolved in a portion of the solvent which is used to complete the weight. The basis containing 8 per cent. of gelatin is used for vegetable extracts and liquids, such as ichthyol, creolin, etc. The 10 per cent. basis is reserved for hygroscopic substances, such as potassium iodide, chloral, etc. In certain cases the irritant action of glycerin on the rectum contra-indicates its use for suppositories. When this is so a mass containing 25 to 30 parts of gelatin and 75 to 70 parts of water may be employed. Where no objection to the use of glycerin occurs, the suppository basis may be composed of similar proportions of gelatin and that solvent to those stated above, the basis, containing 30 per cent. of gelatin, being reserved for liquid or soft medicaments. These suppositories melt between 32° and 34° C. Where cacao butter is employed the author recommends the addition of 12½ per cent. of white wax, since theobroma oil alone melts too rapidly in the bowel. Gynecological crayons are best prepared with the following basis:—Sheet gelatin, 2; distilled water, 2; simple syrup (containing sugar, 5; water, 1), 1 part. The medication is first dissolved or suspended in the water. The mass thus obtained cannot be poured out, but must be shaped while warm by introducing between the open halves of the mould and closing with pressure. When cold, the superfluous mass is trimmed off with a scissors and dried by exposure to the air for two or three days in a dry place, and finally coated with a solution of gelatin, 20, in glycerin, 85.—*Journal de Pharm. d'Anvers*, liii., 255.

SYRUP OF IPECACUANHA.

Espagne recommends extr. ipecac., 10·0; alcohol (60 per cent.), 30·0; aq. destill., 340·0; sacch. albi., 630·0. For children and adults, 20 to 30 grm. to be used as an emetic (three to six years).—*Pharm. Zeitg.*, xlii., 354.

SYRUPUS FERRATUS.

Ferr. ammon. citr., 10·0; tinct. strychni, 5·0; syrup. cort. aurant, 385·0. M.D.S.—Three teaspoons per diem.—*Pharm. Zeitg.*, xlii., 354.

CHEMIOGRAPHIC INK.

Gawalowski states that ink of the following composition is used for secret dispatches, etc.:—Dissolve lead acetate, 1·0; uranium acetate, 0·1; bismuth citrate, 1·0; distilled water, 100·0. Add carefully a few drops of ammonia until the solution becomes clear. Then add a few drops of gum arabic or sugar. Characters written with this ink are quite invisible until they have been subjected to fumes of sulphuretted hydrogen, when they appear immediately as brownish-black. After a few minutes the characters fade to light brown; if moistened with highly diluted nitric acid they are regenerated and become quite clear again.—*Pharm. Post*, xxx., 534.

PREPARATION OF PICRIC ACID SOLUTION.

Saturated aqueous solution of picric acid is often required quickly for application to burns, and by mere solution takes time to prepare. Sochaczewski recommends the following rapid method:—Picric acid, 10; ether, 20; warm distilled water, 500. Dissolve the acid in the ether and pour into the warm water with constant stirring; the ether is quickly volatilised and leaves a supersaturated solution, 1 in 10, of picric acid.—*Petit. Monit. de Pharm.*, 47., 2613.

NEW REMEDIES.

LACTOPHENINE AS AN ANTINEURALGIC.—Clevenger finds that lactophenine in repeated doses of 30 to 60 centigrammes is the most effectual of all the antineuralgics, and is, at the same time, non-toxic.—*Bull. Gén. de Thérap.* (sec. Pharm.), ii., 540, after *Vratch.*

GUAETHOL.—This is a derivative of guaiacol, in which the methyl group is replaced by an ethyl radicle, $C_6H_4 \cdot OH \cdot OC_2H_5$. It forms an oily liquid, crystallising at low temperatures, insoluble in water and in glycerin, and dissolved by alcohol, chloroform, and ether. Its analgesic action is stated to be more marked than that of guaiacol. It is used for allaying pain by direct application, or as an ointment of 1 part of guaethol to 6 of vascline, or as a 10 per cent. emulsion in glycerin. Given internally it possesses no advantages over guaiacol.—*Therap. Woch.*, iv., 745.

CINNAMIC ACID IN TUBERCULOSIS.—Huesser confirms the opinion of Sanderer that cinnamic acid, by largely increasing the number of leucocytes, enables these organisms to surround the tubercular lesions, and ultimately, under favourable conditions, to destroy the specific bacilli. Under the influence of this acid, a wall of leucocytes surrounds the tubercle, and a process of aseptic inflammation is set up, which ultimately results in the disappearance of the morbid conditions, and is followed by a healthy cicatrisation. The method requires careful supervision, and is, moreover, not a rapid one, so the patient must be impressed with the fact that the treatment must be persevered in for some months before the full benefit can be expected to be derived. Huesser injects the acid into the gluteal region in the form of an emulsion, commencing with a dose of 1½ minim of a 5 per cent. emulsion and gradually increasing the dose every second day until the maximum of 15 grains is reached, the dose being regulated according to the observed effect on the patient. Generally the treatment must be continued for five or six months, and at the expiration of this period the sputum should be occasionally examined, and on the reappearance of bacilli the treatment should be resumed. Care should be taken that the injection does not penetrate the subdermal tissue or pain may result. The author has treated in this manner twenty-two cases, six of which were completely cured, twelve improved, one died, and in three the treatment was without result.—*Therap. Monats.*, xi., 451.

BENZOIN IN WHOOPING COUGH.—Of all remedies employed by Ecross in 874 cases of whooping cough, the insufflation of powdered benzoin was found to give the best results. In 60 per cent. of the cases there was a marked improvement, a lessening of the severity of the paroxysms and a shortening of the course of the disease. The powder should be blown into the pharynx as well as up the nostrils. Where no benefit is observed in four or five days, the method of treatment may be abandoned.—*Therap. Gaz.* [3], xiii., 67, after *Arch. of Pediat.*

ICHTHYOL IN CHYLURIA.—Moncorvo has found ichthyol to cure cases of chyluria of parasitic origin, a disease which is of common occurrence in the tropics, and which has often proved intractable to treatment with drugs. The ichthyol was given in the form of pills, commencing with a dose of ½ to 1 gramme, in twenty-four hours, increasing up to 2 grammes.—*Les nouveaux Rem.*, xiii., 719.

CRYSTALLINE DIGITALIN AS A SUBSTITUTE FOR DIGITALIS LEAVES.—On account of the highly variable potency of digitalis leaves in active principle, Huchard advocates the use, whenever practicable, of crystalline digitalin in their stead. For this purpose he prescribes digitalin (crystalline), 1 gramme; glycerin, 333 C.c.; water, 14·6 C.c.; alcohol (95 per cent.), to make up to 1 litre.—*Bull. Gén. de Thérap.*, cxxxiii, 382.

BALSAM OF PERU AND CASTOR OIL AS A DRESSING.—Gallant recommends (*Annals of Surgery*) the use of an admixture of 30 minims of Peruvian balsam to 1 fl. oz. of castor oil as a dressing. It permits of continuous drainage, and therefore causes no retention of secretions, epithelial growth takes place rapidly, and no irritation is occasioned, while perfect asepsis is maintained.—*Practitioner*, lix., 557.

List of the Principal Chemicals used in Photography.*

IN ENGLISH, LATIN, GERMAN, AND FRENCH.

ENGLISH.	LATIN.	GERMAN.	FRENCH.
Acid Acetic	Acidum aceticum	Essigsäure	Acide acétique.
Acid Acetic Glacial	Acidum aceticum glaciale.	Eisessig	Vinaigre glacial.
Acid Boric (Boracic).	Acidum boricum	Borsäure	Acide borique.
Acid Chromic	Acidum chromicum	Chromsäure	Acide chromique.
Acid Citric	Acidum citricum	Citronensäure	Acide citrique.
Acid Gallic	Acidum gallicum	Gallussäure	Acide gallique.
Acid Hydrochloric (Muriatic).	Acidum hydrochloricum.	Salzsäure	Acide chlorhydrique.
Acid Hydrofluoric	Acidum hydrofluoricum.	Fluss-säure	Acide fluorhydrique
Acid Nitric	Acidum nitricum	Salpetersäure	Acide nitrique (azotique).
Acid Oxalic	Acidum oxalicum	Oxalsäure	Acide oxalique.
Acid Pyrogallic (Pyrogallol).	Acidum pyrogallicum.	Pyrogallussäure or Pyrogallol.	Acide pyrogallique.
Acid Tannic (Tannin).	Acidum tannicum	Gerbsäure	Acide tannique.
Acid Tartaric	Acidum tartaricum	Weinsteinsäure	Acide tartarique
Acid Sulphuric	Acidum sulphuricum	Schwefelsäure	Acide sulfurique.
Alcohol Ethyl	Alcohol	Weingeist	Alcool.
Alcohol Wood	Alcohol methylicum.	Holzgeist	Alcool methylique.
Alum (Ammonia)	Aluminiii et ammonii sulphas.	Ammoniak-Alaun	Sulphate d'alumine et d'ammoniaque
Alum (Chrome)	Chromii et potassii sulphas.	Chrom-Alaun	Alun chromi-potassique.
Alum (Potash)	Aluminii et potassii sulphas.	Kali-Alaun	Sulfate d'alumine et de potasse.
Amidol (Diamidophenol Chlorhydrate)	Amidolum	Amidol	Amidol.
Ammonium Bichromate.	Ammonii bichromicum.	Doppeltchromsaures Ammon.	Bichromate d'ammoniaque.
Ammonium Bromide.	Ammonii bromidum.	Ammoniumbromid	Bromure d'ammonium.
Ammonium Carbonate.	Ammonii carbonas	Ammoniumcarbonat	Carbonate d'ammoniaque.
Ammonium Chloride.	Ammonii chloridum.	Ammoniumchlorid	Chlorure d'ammonium.
Ammonium Citrate	Ammonii citras	Ammoniumcitrat	Citrate d'ammoniaque.
Ammonium Iodide	Ammonii iodidum	Ammoniumiodid	Iodure d'ammonium.
Ammonium Hydrate, see Water of Ammonia.			
Ammonium Nitrate	Ammonii nitras	Ammoniumnitrat	Azotate d'ammoniaque.
Ammonium Salicylate	Ammonii salicylas	Ammoniumsalicylat	Salicylate d'ammoniaque.
Ammonium Succinate	Ammonii succinas	Ammoniumsuccinat	Succinate d'ammoniaque.
Ammonium Sulphocyanate	Ammonii sulphocyanas.	Rhodanam monium	Sulfcyanate d'ammoniaque.
Ammonium Sulphydrate or Sulphide Solution.	Liquor ammonii hydrosulphas.	Schwefelammoniumlösung, or Ammonium sulfhydrat	Sulfhydrate d'ammoniaque.
Barium Bromide	Barii bromidum	Baryumbromid	Bromure de baryum
Barium Chloride	Barii chloridum	Baryumchlorid	Chlorure de baryum
Barium Iodide	Barii iodidum	Baryumiodid	Iodure de baryum.
Barium Nitrate	Barii nitras	Baryumnitrat	Nitrate de baryte.
Benzin	Benzinum	Petroleumbenzin	Benzine.
Benzol	Benzolum	Benzol	Benzole.
Bromine	Bromum, or Bromium	Brom	Brome.
Cadmium (Metal)	Cadmium	Cadmium, or Kadmium.	Cadmium.
Cadmium Bromide	Cadmii bromidum	Kadmiumbromid, or Bromkadmium.	Bromure de cadmium.
Cadmium Chloride	Cadmii chloridum	Cadmiumchlorid	Chlorure de cadmium.
Cadmium Iodide	Cadmii iodidum	Kadmiumjodid, or Jodkodmium.	Iodure de cadmium
Cadmium Nitrate	Cadmii nitras	Cadmiumnitrat	Nitrate de cadmium
Calcium Bromide	Calcii bromidum	Bromcalcium	Bromure de calcium.
Calcium Carbonate	Calcii carbonas	Calciumcarbonat	Carbonate de chaux
Calcium Iodide	Calcii iodidum	Jodcalcium	Iodure de calcium.
Chloroform	Chloroformum	Chloroform	Chloroforme.
Collodion	Collodium	Collodion	Collodion.
Cobalt Chloride	Cobalti chloridum	Cobaltchlorid	Chlorure de cobalt.
Copper (Metal)	Cuprum	Kupfer	Cuivre.
Copper Bromide	Cupri bromidum	Kupferbromid	Bromure de cuivre.
Copper Chloride	Cupri chloridum	Kupferchlorid	Chlorure de cuivre.
Copper Nitrate	Cupri nitras	Kupfernitrat	Nitrate de cuivre.
Copper Sulphate	Cupri sulphas	Kupfersulphat	Sulfate de cuivre.
Dextrin	Dextrinum	Stärkegummi	Dextrine.
Eikonogen	Eikonogenum	Eikonogen	Eikonogen.
Ether (Sulphuric)	Aether (sulphuricus).	Aether, or Schwefelather.	Ether sulfurique.
Gelatin	Gelatina	Gelatin	Gelatine.
Glycerin	Glycerinum	Glycerin	Glycerine.
Glycin	Glycinum	Glycin	Glycine.
Gold	Aurum	Gold	Or.
Gold Chloride	Auri chloridum	Goldchlorid	Chlorure d'or.
Gold and Sodium Chloride.	Auri et sodii chloridum.	Natriumgoldchlorid.	Chlorure d'or et de Sodium.
Gum Arabic	Gummi Arabicum	Arabisches Gummi.	Gomme Arabique.
Hydrochinone (Hydroquinone).	Hydrochinonum	Hydrochinon	Hydrochinon.
Iodine	Iodum: Iodidium	Jod	Iode.
Iron (Metal)	Ferrum	Eisen	Fer.
Iron Ammonio-Sulphate (Ammonio-ferric Sulphate).	Ferri et ammonii sulphas.	Ferro-ammonium sulphat (Schwefelsaure Eisenoxydul-ammoniak).	Sulfate d'ammonii aque et de fer.
Iron Chloride (Ferrous), (Ferro Chloride).	Ferro chloridum	Eisenchlorür (Ferrochlorid).	Chlorure de fer (Chlorure ferreux).
Iron Chloride (Ferric), (Ferric Chloride).	Ferri chloridum (Ferri-sesquichloridum).	Eisenchlorid (Ferrichlorid).	Perchlorure de fer.
Iron Iodide	Ferri iodidum	Eisenjodid (Jodeisen, or Ferroiodid)	Iodure de fer.
Iron Oxalate (Ferrous).	Ferro-oxalas	Eisenoxalat	Oxalate de fer.
Iron Sulphate	Ferri sulphas	Ferrosulfat	Sulfate de fer.
Lavender Oil	Oleum Lavandulæ	Lavendelöl	Essence de Lavand.
Lead (Metal)	Plumbum	Blei	Plomb.
Lead Acetate	Plumbi acetas	Bleiacetat	Acetate de plomb.
Lead Chloride	Plumbi chloridum	Bleichlorid	Chlorure de plomb.
Lead Nitrate	Plumbi nitras	Bleinitrat	Nitrate de plomb.
Lithium Bromide	Lithii bromidum	Bromlithium	Bromure de lithium
Lithium Iodide	Lithii iodidum	Jodlithium	Iodure de lithium.
Magnesium, Bromide.	Magnesii bromidum	Brommagnesium	Bromure de magnesium.
Magnesium Iodide	Magnesii iodidum	Jodmagnesium	Iodure de magnesium
Magnesium Sulphate.	Magnesii sulphas	Magnesiumsulfat	Sulfate de magnesie.
Mercury Bichloride	Hydrargyri bichloridum.	Quecksilber chlorid.	Bihlorure de mercure
Metol (Monomethyl-paramido-meta-eresolate).	Metolum	Metol	Metole.
Para-amidophenol Hydrochlorate.	Para-amidophenol-hydrochloras.	Para-amidophenol-hydroehlorat.	Para-amidophenol-hydrochlorate.
Platinum Chloride	Platini chloridum.	Platinchlorid	Perchlorure de platine.
Platino-Potassium Chloride.	Platini et Potassii chloridum.	Kalium-platinchlorid.	Chlorure de platinum et de potassium.
Potash, Sulphurated, or Liver of Sulphur.	Potassa sulphurata	Schwefelleber	Sulfure de potasse.
Potassium Acetate	Potassii acetas	Kaliumacetat	Acetate de potasse.
Potassium Biehromate.	Potassii bichromas	Kaliumbichromat	Bichromate de potasse.
Potassium Bromide	Potassii bromidum	Kaliumbromid	Bromure de potassium.
Potassium Carbonate.	Potassii carbonas	Kaliumcarbonat	Carbonate de potasse.
Potassium Citrate	Potassii citras	Kaliumcitrat	Citrate de potasse.
Potassium Chloride	Potassii chloridum	Kaliumchlorid	Chlorure de potassium.
Potassium Cyanide	Potassii cyanidum	Cyankalium	Cyanure de potassium.
Potassium Ferricyanide.	Potassii ferricyanidum.	Ferridcynkalium	Forricyanure de potassium.
Potassium Ferrocyanide.	Potassii ferrocyanidum.	Ferrocyankalium	Ferrocyanure de potassium.
Potassium Hydroxide or Hydrate, or Potash.	Potassii hydras, or potassa.	Aetzkali	Potasse Caustique.
Potassium Iodide	Potassii iodidum.	Jodkalium	Iodure de potassium.
Potassium Metobisulphite.	Potassii metabisulphis.	Kalium-metabisulfit.	Metabisulfis de potassium
Potassium Nitrate	Potassii nitras	Kaliumnitrat	Nitrate de potasse.
Potassium Oxalate (Neutral).	Potassii oxalas	Kalium Oxalat, neutrales.	Oxalate de potasse.
Potassium, Permanganate	Potassii permanganas	Kaliumpermanganat	Permanganate de potasse.
Potassium Sulphite	Potassii sulphis	Kaliumsulfit	Sulfite de potassium.
Potassium Sulphocyanide	Potassii sulphocyanidum	Kalium sulfocyanat, or Rhodankalium.	Sulfocyanure de potassium.

* Compiled by C. L. Lochman and adapted from the 'Year-Book of Photography.'

ENGLISH.	LATIN.	GERMAN.	FRENCH.
Pyroxylin (Gun Cotton).	Pyroxylinum.....	Collodionwolle, or Schiess-baumwolle.	Pyroxyle, or Fulmicoton.
Reducin	Reducinum	Reducin	Reducine
Rodinal	Rodinalum	Rodinal	Rodinale
Sandarac	Sandarac.....	Sandarak	Sandaraque.
Shellac	Ressina lacca.....	Lack Gummilack..	Laque.
Silver	Argentum	Silber	Argent.
Silver Acetate	Argenti acetas	Silberacetat	Acetate d'argent.
Silver Citrate	Argenti citras	Silbercitrate	Citrate d'argent.
Silver Chloride	Argenti chloridum-	Silberchlorid	Chlorure d'argent,
Silver Iodide	Argenti iodidum ..	Silberiodid	Iodure d'argent.
Silver Nitrate.....	Argenti nitras	Silbernitrat	Nitrate d'argent.
Silver Oxide	Argenti oxidum ..	Silbor Oxyd	Oxyde d'argent.
Silver Sulphate	Argenti sulphas ..	Silbersulfat	Sulfate d'argent.
Sodium Acetate ...	Sodii acetas	Natriumacetate ..	Acetate de soude.
Sodium Biborate, or Borax.	Sodii biboras.....	Natriumborate, or Borax.	Borate de soude.
Sodium Bicarbonate	Sodii bicarbonas ..	Natriumbicarbonat	Bicarbonate de soude.
Sodium Bromide ..	Sodii bromidum ..	Bromnatrium	Bromure de sodium
Sodium Carbonate..	Sodii carbonas	Natriumcarbonat..	Carbonate de soude
Sodium Chloride ..	Sodii chloridum ..	Chlornatrium	Chlorure de sodium
Sodium Citrate	Sodii citras	Natriumcitrat, or Citronensaures Natron.	Citrate de soude.
Sodium Hydroxide, Hydrate, or Soda.	Sodii hydras, or Soda.	Aeznatron	Soude castique.
Sodium Hyposulphite or Thiosulphate.	Sodii hyposulphis..	Unterschwefligsaures Natron ..	Hyposulfite de soude.
Sodium Iodide	Sodii iodidum	Jodnatrium	Iodure de sodium.
Sodium Sulphate ..	Sodii sulphas.....	Natriumsulfat	Sulfate de soude.
Sodium Sulphite ..	Sodii sulphis	Natrium sulfit	Sulfite de soude.
Sodium Tungstate .	Sodii tungstas	Wolfraumsaures Natron	Tungstate de soude.
Starch	Amylum	Stärke, Starkmehl	Amidon.
Strontium Bromide	Strontii bromidum	Bromstrontium ..	Bromure de strontium.
Strontium Chloride	Strontii chloridum	Chlorstrontium ..	Chlorure de strontium.
Strontium Iodide ..	Strontii iodidum ..	Jodstrontium	Iodure de strontium.
Tannin, see Acid Tannic.			
Turpentine Oil	Oleum Terebinthinæ.	Terpintinöl	Essence Terebinthine.
Turpentine, Crude or White.	Terebinthina communis.	Geweiner Terpentin.	Terebenthine commune.
Uranium Bromide..	Uranii bromidum..	Bromuranium	Bromure d'uranium.
Uranium Nitrate ..	Uranii nitras.....	Salpetersaures Uranoxyd.	Nitrate d'uranc.
Water, Distilled....	Aqua destillata....	Destillirtes Wasser	Eau distillée.
Water of Ammonia	Aqua ammoniæ ..	Salmiakgeist or Ammoniak-Flussigkeit.	Eau d'ammoniaque.
Zinc Bromide.....	Zinci bromidum ..	Zinkbromid or Bromzink.	Bromure de zinc.
Zinc Chloride.....	Zinci chloridum ..	Chlorzink	Chlorure de zinc.
Zinc Iodide.....	Zinci iodidum	Zinkjodid, or Jodzink.	Iodure de zinc.

VETERINARY NOTES.

PICRIC ACID IN VETERINARY PRACTICE.—Picric acid in a 1 per cent. solution is a useful application to eczema in animals. It is applied every day until acute inflammation vanishes. It rapidly allays the itching. The following ointment: Picric acid, 1; vaseline, 7,. is good for eczema in the dog. The glycerole, containing picric acid, 1, and glycerin, 7, is also useful in auricular catarrh.—*La presse Veterinaire.*

FOLLICULAR MANGE IN DOGS.—The pustules should be opened with a lancet and the contents expressed. The affected parts are then to be rubbed with the following ointment:—Zinc sulphate, 6; flowers of sulphur, 30; mercurial ointment, 60; lard, 90; concrete bay oil, 90. Besides this the dogs were washed every day in a 10 per cent. solution of creolin.—*Veterin. Record*, after *Journ. Med. Vet. et Zootchen.*

PICRIC ACID FOR SORE BACKS IN HORSES.—Desine and Vairon, military veterinary surgeons in the French army, recommend the following solution in the treatment of sore backs, wounds, cracked heels, burnt sole and other affections in horses: Picric acid, 1; rectified spirit, 5; water, 100. A sheet of sterilised cotton is impregnated with the solution, then squeezed out and applied to the wound. It is a good antiseptic cicatrisant and analgesic, especially in the treatment of wounds caused by harness.—*Vet. Record*, x., 191, after *Rec. Med. Vet.*

ANALYTICAL NOTES.

DETECTION OF COBALT IN THE PRESENCE OF NICKEL.—Jaworswsky detects cobalt in the presence of nickel by the following method: The solution of cobalt and nickel salts is neutralised with sodium carbonate, if it contains free acid, and shaken with crystalline sodium pyrophosphate until the solution, which has become turbid, is again clear. It is then drawn off from the undissolved sodium pyrophosphate, and if it is coloured violet or reddish-violet it is diluted with water until almost colourless. Next, shake 6 to 8 C.c. of the solution to be examined with 1·0 to 1·5 gramme of sodium carbonate and a few drops (5 to 8) of bromine water. Even very slight traces of cobalt will colour the solution distinctly green. An excess of bromine must be avoided, as in that case the reaction is much less sensitive, or may not be obtained at all.—*Pharm. Zeit. f. Russl.*, xxxvi., 632.

DETERMINATION OF STROPHANTHIN IN STROPHANTHUS SEEDS.—Fromme gives the following method for determining the amount of active principle in a sample of strophanthus seeds. About 9 grammes of the seeds are finely comminuted in a metal mortar, 8 grammes of the powder are weighed out, and the fat extracted by percolation with petroleum ether. The fat free powder, after evaporating the adherent petroleum ether, is macerated with 80 grammes of absolute alcohol for six to twelve hours. 50·3 grammes of liquid are then run off and evaporated on the water-bath, the residue so obtained is taken up with 6 to 8 grammes of water. Three drops of basic lead acetate are now added to this solution, the precipitate is filtered out, and the filtrate freed from excess of lead by means of sulphuretted hydrogen solution. The lead sulphide is filtered out and washed with hot water, the filtrate evaporated to constant weight, and weighed as strophanthin. The weight thus obtained is the amount present in 5 grammes of the seeds.—*Pharm. Cent*, xxxviii., 703.

DETERMINATION OF IRON, CALCIUM AND ALUMINIUM IN THE PRESENCE OF PHOSPHATES.—In order to curtail the very tedious and not too exact process generally employed in the determination of these metals by oxidising the solution of ammonium citrate after the phosphoric radical has been precipitated as the magnesium salt, the filtrate from the phosphate is concentrated and then oxidised, as suggested by Villiers, by the addition of a trace of manganese salt, or better still, of vanadium oxychloride, in the presence of nitric acid. If a solution of vanadium salt of known strength is used, there is no need to separate this from the iron precipitate, as both are collected and weighed together, the known weight of the vanadium oxide being deducted from the total. According to Lindet, the separation of iron, alumina and calcium in the liquids in which the citric acid has been oxidised in this manner is easily effected in the ordinary way. This is a great improvement on the old method of calcining the mixed ammonio-citrates.—*Comptes Rendus*, cxxv., 246.

EXAMINATION OF ROSE OIL.—Dietze finds the saponification or ester number to be the most reliable factor in the examination of rose oil. It is obtained by boiling for half an hour an exactly weighed quantity of the oil with alcoholic $\frac{N}{2}$ potash solution and re-titration with $\frac{N}{2}$ sulphuric acid with phenolphthalein as indicator. The following numbers were obtained:—*German Rose Oil*, 8·6, *Bulgarian*, 9·2, *Turkish*, 8·9, *French Geranium Oil*, 59·1, *African*, 53·1, *Spanish*, 75·3, *Indian*, 32·5. On the strength of his examinations the author gives the following characters:—Pure rose oil, (1) that the specific gravity exceeds not 0·870 at 15°; (2) that it should not congeal below 15 to 20; (3) the rotation in 100 Mm. tube at 20° C. must not be more than −1° 30′; (4) the saponification number must not exceed 9 5 −10.—*Chemik. Ztg.*, xxi, 288.

OBITUARY.

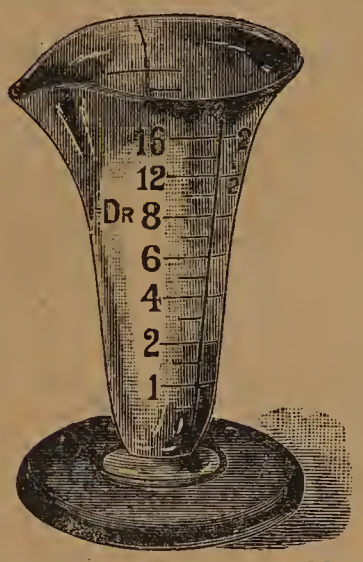
BULLEY.—On May 12, William Henry Bulley, Chemist and Druggist, Exeter. Age 59. Mr. Bulley was one of the oldest chemists in business in Exeter, and for over twenty years was dispenser to the Exeter Board of Guardians.

ELLIS.—On May 12, at Blakeney, Forest of Dean, Walter Ellis, Chemist and Druggist, late of Thornbury, Gloucester. Aged 55.

NEW IDEAS & TRADE NOTES

Messrs. Hora & Co., 47, Minories, London, direct attention to their seidlitz powders, which are of full weight, and well packed in boxes of good quality at the low price of 4s. 3d. per gross. The Health Salt supplied by the same firm in 4-oz. air-tight decorated tins is a pleasantly flavoured preparation, and the Lemonade Crystals in capsuled bottles makes an excellent and palatable drink.

Mr. A. B. Taffs, of the firm of Messrs. H. Gilbertson & Sons, Ltd., 9 and 11, St. Andrew Street, and Shoe Lane, Holborn Circus, London, directs attention to his patent foot protector for glass measures. The



protector is composed of a solid rubber base with a flexible cover which slips easily over the foot of the measure. The utility of the protector in preventing the breakage of measures when it is used is obvious.

Messrs. A. Gallenkamp & Co., 19 and 21, Sun Street, Finsbury Square, London, E.C., have laid in a good stock of balances, weights and measures, so as to be prepared to meet any possible demand in connection with preparations for the new Pharmacopœia.

The Sanitas Co., Ltd., write to point out that they have placed their "Sanitas" proprietary articles upon the P.A.T.A. list, subject to the important reservation that they remain at liberty to supply any firm, whether members of that Association or not, with their preparations, subject to receiving from them an undertaking to observe their fixed minimum retail prices, viz., 5½d. for 6d. articles and 10½d. for 1s. articles. Traders who are not members of the P.A.T.A. are required to sign an undertaking (1) not to list or sell by retail any "Sanitas" articles below the minimum retail prices, (2) not to supply the trade below the wholesale prices of 4s. 6d. per dozen for 6d. articles, 9s. per dozen for 1s. articles, and *pro rata* for the others, and (3) not to supply upon any terms whatsoever any firms whose names appear on the P.A.T.A. list of firms from whom supplies are to be withheld.

NEWS IN BRIEF

The Photographic Supplements to the *Pharmaceutical Journal* published on April 2 and May 7 respectively are still in print, and copies of the Journals containing them can be obtained from the publishers at 4½d. each, post free. The numerous formulæ for developers, intensifiers, etc., published in those Supplements have all been thoroughly tested in practice, whilst the mass of other information of the highest importance to chemists and druggists who do a photographic trade has been furnished by experts. As the Supplements cannot be reprinted, early application should be made for copies.

Plymouth, Devonport, Stonehouse and District Chemists' Association. — The annual outing of this Association is arranged for Wednesday, June 8, to the romantic and beautiful Membland Drives. The party will leave the Guildhall Square, Plymouth, at 1 p.m. in waggonettes and proceed to Yealmpton, thence through the delightful grounds of Membland, passing through some of the finest seascape and landscape scenery in the West of England. The party will be photographed, and high tea will be provided at Membland at 5.30 p.m. Persons requiring tickets (6s. 6d. each inclusive) must apply at once, either to the Hon. Secretaries—Mr. C. J. Park, Mutley Plain, and Mr. A. D. Breeze, Station Road, Union Street, Plymouth—or to any member of the Outing Committee. No application will be entertained later than June 1.

Lafar's 'Technical Mycology' has been translated by Mr. C. T. C. Salter, and the first of the two volumes is announced by Messrs. Charles Griffin and Co., Limited, London. The work deals with the utilisation of micro-organisms in the arts and manufactures, and the first volume, published at 15s., and freely illustrated, treats of schizomycetic fermentation.

The Atlas Chemical Co., Sunderland, submit the catalogue of their technical library for 1898. The subscription to this library is 25s. per annum, and each subscriber may receive 26 volumes a year, the proprietors paying outward postage or carriage. New technical works are added as published.

The Late Mr. James Watt, Jun., pharmaceutical chemist, of Haddington, whose death was announced in last week's Journal, was well known and was greatly esteemed by a wide circle of friends. He was a keen golfer, and his death was the result of a chill received while golfing, which was almost his only form of recreation. The keenest sympathy is felt in the burgh for his aged parents, widow, and two young children.

The Apothecaries' Society sued Thos. Hetherington, Marlborough Crescent, Newcastle, at the Newcastle County Court, on May 17, for £20, for having practised as an apothecary without having obtained a certificate from the Society, as required by statute.—The evidence was to the effect that the defendant had been consulted by two men suffering from no complaint whatever. For one of the men he compounded medicine, and to the other he gave a box of capsules. The charges were stated to have been distinctly excessive.— The defendant, who had already been fined £20 at the police court for misuse of title, stated, through his solicitor, that he had a United States certificate to practise as a doctor and that he was a qualified dentist.—Judgment was given for the plaintiff Society

Messrs. Ayrton & Saunders, Liverpool, have just fitted up completely a shop opened by Mr. A. H. Leach, chemist and druggist, at 3, Kay Street, Darwen.

Mr. A. Sidney Campkin, J.P., was recently re-elected for another triennial period as a member of the Cambridge Board of Guardians, a position he has now held for twenty-four years past, and on Thursday last he was re-elected as chairman of the Assessment Committee, a body composed of heads of the University and representatives appointed by the Town Council and Board of Guardians.

Inland Revenue Prosecution.—At the Norton (Malton) Court-house on Saturday, May 7, the Inland Revenue authorities prosecuted John Spanton, chemist and druggist, of Norton, for selling a certain medicine in bottles not having the necessary Government stamp.—It was alleged that defendant sold a "cough mixture" in bottles bearing a label which stated the mixture was a cure for coughs, colds, influenza, consumption, etc., and the words on the label brought the mixture within the provisions of the Act. If defendant had simply confined himself to the words "cough mixture," he would not have been interfered with.—Mr. Spanton said he had taken the precaution to submit his label to the local excise officer, Mr. Tremellin, before using it, and he was given to understand no stamp was requisite. —After argument, the Bench dismissed the case, on defendant paying costs.

Poisonous "Weed Killer," kept in an old barrel, has once again been mistaken by a thirsty man for beer, with a fatal result. The unfortunate individual in this case was an old man named Alexander Grant, of Ballinteem, who, it is stated, was a grand-nephew of the two brothers Grant, made famous as the "Cheeryble Brothers" in Dickens's 'Nicholas Nickleby.'

NEWCASTLE CHEMICAL REPORT.

May 18, 1898.

Fair business is still passing in heavy goods, principally for the upper Baltic ports. Still, there is no pressure felt to warrant any change in values, which are quoted as follows:—Bleaching Powder: £6 5s. to £6 10s. Soda Crystals: Basis, 45s. to 52s. 6d. Caustic Soda: 70 per cent., basis, £7 5s. to £7 10s. Soda Ash: 52 per cent., £4 5s. Alkali: 52 per cent., £5 5s. Sulphur: £4 15s. per ton.

MARKET REPORT and Prices Current

Specially compiled for the Pharmaceutical Journal.

The quotations here given are in all cases the lowest cash prices for bulk quantities, and often the articles quoted have to be sorted in order to suit the requirements of the retail pharmacist. The cost of freightage from the chemical and drug works to the various distributing centres must also be considered. It is important that these conditions should be borne in mind in making any comparison between the prices quoted and those of the wholesale drug trade.

LONDON REPORT.

MAY 19, 1898.

Business has been somewhat quiet during the past week, the changes having been a rise in Mercurials in sympathy with the advanced price of Quicksilver. Eserine (Physostigmine) has about doubled in price. Atropine and Homatropine are also decidedly dearer. Bismuth unchanged, as is also Lithia. Acid Citric is firm, as are also Iodides and Bromides. Cocaine is higher. Acetanilide dull. Phenacetin quiet. Sulphonal unchanged. Permanganate of Potash in somewhat better demand, and expected to advance in price. Quicksilver very firm, and expected to further advance, which would in turn influence the price of Mercurials. Glycerin is quiet. Cod-liver Oil dull. Opium firm. Morphia and Codeia unchanged. Sulphate of Ammonia is dearer. Ipecacuanha firm. Star Aniseed higher. Shellac firm. Ether and Spirits are dearer. Cream of Tartar very dull. Acid Tartaric steady. Star Aniseed Oil dearer. Borax and Acid Boracic quiet. Linseed Oil dearer and very firm. The following are prices actually ruling for articles of chief interest :—

ACETANILIDE—Is dull at 1s. 3d. to 1s. 4d. per lb.

ACID ACETIC—Continues in steady demand, the various strengths being quoted as follows :—30 per cent. or 1 to 7 14s. 6d. per cwt., 33 per cent. or B.P. 15s. 9d. per cwt., 50 per cent. 22s. per cwt., 60 per cent. 26s. per cwt., 74 per cent. 31s. per cwt., 90 per cent. 36s. per cwt., and 98 to 100 per cent., glacial, 40s. per cwt.

ACID BORACIC—Unchanged at 23s. per cwt. for *crystals*, and 25s. per cwt. for *powder*.

ACID CARBOLIC—Is firm at 6½d. per lb. for 35° C. *crystals* in bulk packing, and 6¾d. to 7d. per lb. for 39° to 40° C. *crystals*; other packing in proportion more. *Crude*: 60° F., 2s. 1½d. to 2s. 2d. per gallon ; 75° F., 2s. 7d. to 2s. 7½d. per gallon. *Liquid*: Pale 95 per cent., 1s. 3d. per gallon, in 40-gallon casks.

ACID CHRYSOPHANIC—Quiet but steady at 12s. 6d. per lb.

ACID CITRIC—Is very firm at 12¾d. per lb. for *crystals*.

ACID OXALIC—Is unchanged at 3⅝d. per lb. on the spot.

ACID TARTARIC—Is steady at 1s. 1d. per lb. for *English* crystals on the spot, *foreign* 12¾d. per lb.

AMMONIA COMPOUNDS.—*Sulphate* has had a good advance this week, price closing firm at £9 2s. 6d. per ton for grey prompt, 24 per cent., London. *Bromide* steady at 2s. 2d. per lb. *Iodide* firm at 14s. 6d. per lb. *Oxalate* unchanged at 6d. per lb. *Sal Ammoniac* steady at 35s. per cwt. for sublimed firsts, and 33s. per cwt. for seconds, crushed and powder in proportion more. *Sulphocyanide* firm at 1s. 2d. per lb.

ATROPINE.—Makers have, in consequence, it is stated, of continued scarcity and dearness of good raw material, again advanced their prices to 17s. 10d. per oz. for the *pure*, and to 15s. 6d. per oz. for the *Sulphate P.B.*

BALSAM PERU.—A fair business has been doing at rather higher prices—9s. to 9s. 3d. per lb. being now quoted in quantity.

BALSAM CANADA—Is offered from New York at 1s. per lb. in casks, and 1s. 2d. per lb. in tins and cases, both *c.i.f.* terms.

BALSAM COPAIBA—Is very quiet here, although from New York higher prices are spoken of. *Maranham* is quoted 2s. 1d. to 2s. 2d. per lb.

BALSAM TOLU—Is firm, and good quality is held for 1s. 10d. to 2s. 3d. per lb., with a few small sales.

BISMUTH—Still unchanged at 5s. per lb. for the *metal*, and 4s. 10d. per lb. for the *subnitrate*, in 5 cwt. lots.

BLEACHING POWDER.—Steady at £7 5s. per ton on the spot.

BORAX—Quiet at 14s. per cwt. for *lump*, and 14s. 6d. per cwt. for *powder*.

BROMIDES.—A good business is doing at makers' prices, which are 1s. 10d. per lb. for *Potass. Bromide*, and 2s. 2d. per lb. for *Ammon.* and *Soda Bromide*. *Bromine* also unchanged at 1s. 11d. per lb. in 20-case lots.

CAMPHOR.—Crude is very quiet, and we hear of no business on the spot. For arrival quotations come firmer at 90s. per cwt. for Japan, and 84s. 6d. for China, *c.i.f.*

CANTHARIDES.—*Russian* are quiet at 1s. 10d. to 2s. per lb. *Chinese* : There is no stock here.

CARAWAY SEED—Is again dearer, 24s. per cwt., having been paid for good Dutch.

CASCARA SAGRADA—Is quiet at 20s. to 25s. per cwt. People who are "in the know" are, however, looking for decidedly higher prices for the article ere long.

CINCHONA BARK.—The next London auctions will be held on the 24th inst. At present only a small quantity is advertised. The total exports from Ceylon from Jan. 1 to April 30 were : Season 1898, 284,400 lb. ; 1897, 273,823 lb. ; 1896, 306,198 lb. The exports from Java from Oct. 1 to April 20 were : Season 1897-98, 5,651,000 lb. ; 1896-97, 5,067,000 lb. ; and 1895-96, 5,539,127 Amsterdam lb.

CLOVES.—There is a quiet tone and practically no business passing privately in *Zanzibar* ; quotations are June-August delivery 3⅞d., and August-October, 4d. Of 99 bales *Zanzibar* offered at auction 20 bales sold at 3¾d. ; 76 bags *Amboyan* bought in at 6d.

COAL TAR DISTILLATION PRODUCTS.—*Toluol* : Commercial, 1s. 5d. ; pure, 3s. per gallon. *Crude Naphtha* : 30 per cent., at 160° C., 6d. per gallon. *Solvent naphtha* : 95 per cent., at 160° C., 1s. 8d. per gallon.

COCAINE. — Messrs. Boehringer and Soehne, whose brand is most in favour on this market, add who were last week booking orders for limited quantities of the article from regular customers, at 9s. per oz., in 100 oz. lots, have withdrawn their quotation, nearest price for good brands is now 9s. 6d. to 9s. 9d. per oz., with indications that price may very likely still further advance in the near future.

CODEIA—Appears to be scarce and makers are very firm in their price of 11s. 3d. to 11s. 6d. per oz. for quantity.

COD-LIVER OIL — Remains very quiet, nearest price being 80s. per barrel, *f.o.b.*, for best new non-congealing *Norwegian* oil, in tin-lined barrels.

COLOCYNTH. — Since the auctions last week, at which several cheap lots were cleared, holders have been rather firmer, but demand for the moment is satisfied. Prices are quoted from 11d. to 1s. 2d. per lb., according to quality, for Turkey kinds.

CORIANDER SEED—Is very dull of sale, the usual demand for the United States not having so far started. On the spot 7s. 3d. to 7s. 6d. per cwt. for good *Morocco* is the nearest value.

CREAM OF TARTAR—Is exceedingly dull, and lower quotations do not seem to bring the buyers out. Quotations : First white *crystals*, 73s. 6d. per cwt. ; *powder*, 76s. to 78s. per cwt. ; *B.P. crystals*, 79s. per cwt.

ETHERS AND SPIRITS—Are dearer, the following being now the quotations for wholesale quantities :—Æther P.B., s. g. 735, 4s. 6d. per lb. ; æther purif. P.B., s. g. 720, 5s. 2d. per lb. ; æther rect., s. g. 750, 4s. 4d. per lb. ; spirit. æther nit. P.B. 1898, s. g. 842, 2s. 7d. ; spirit ammon. arom. P.B. 1898, 2s. 1d.

ESERINE.—*Physostigmine* : Makers advanced their prices to 3s. per gramme for the *Sulphate* and *Salicylate*, and 4s. per gramme for the *other salts* and for the *pure*, reason given being that the prices previously ruling were not sufficiently remunerative in view of the troublesome and tedious mode of manufacture.

GALLS.—This is a firm market, although transactions are small, and these only in *blues*, for which 55s. per cwt. is asked for *Busreh*, and 50s. for *Smyrna* descriptions. *Green* are scarce, and for *white* there is no demand.

GENTIAN ROOT—Is quiet but steady at 20s. to 21s. per cwt. *f.o.b.* for really good dry root.

GINGER.—The demand for *Jamaica* continues active, and about 900 packages offered. Nearly all sold, realising again rather higher prices. Common lean dark *Rhatoon* sold at 76s. to 80s. ; low middling and small scraped, 82s. to 84s. 6d. ; middling to good middling washed, 85s. to 93s. 6d. ; good and fine bright and bold, 96s. ; to 102s. 6d., selected bold 107s. 6d. to 120s. *Cochin* remains dull and only 120 bags rough sold ; ordinary washed, without reserve, at 18s. 6d. to 19s., cuttings at 14s. 6d. Of cut kinds 21 cases sold, bold 80s. to 85s., bold and medium 71s. 6d. to 76s., rather small 47s. 6d., ends 26s. 6d.

GLYCERIN—Is quiet at unchanged prices, say 50s. to 52s. 6d. per cwt. *English* make,

and 52s. 6d. to 57s. 6d. per cwt. for *German* white double distilled, chemically pure, 1260 quality, in 2 cwt. cases, 4 tins to the case, according to quantity and brand.

Golden Seal Root.—There is very little stock available on the other side, and quotations range from 2s. 2d. to 2s. 3d. per lb., *c.i.f.* terms. It is thought that much higher prices will be seen.

Guaza—Is scarce, and from 5½d. to 6½d. per lb. is asked for fair quality.

Guarana—Is dull of sale at 1s. 8d. to 1s. 10d. per lb. for good.

Gum Guaiacum.—The fine bright lump which was bought in at last public sale, is reported to have been meantime sold privately at 2s. per lb.

Gum Mastic.—Good pale is in moderate supply, and is held for 2s. per lb.

Gum Tragacanth.—There is a continued good demand, mainly in fourths and lower grades. Quotations are as follows:—Baghdad: Firsts, £13 10s. per cwt.; seconds, £12 10s.; thirds, £11 5s.; fourths, £9 15s.; lower qualities, 40s. to £8 per cwt.

Homatropin.—Makers have raised price to 11s. 9d. per gramme for the *pure*, and 9s. 11d. per gramme for the *Hydrochlorate* and *other salts*.

Hypophosphites—Are in fair demand at 3s. 3d. per lb. for the *Potash*, *Lime*, and *Soda Salts* in half-ton lots.

Iodides—Are in very brisk demand at 9s. 9d. per lb. for *Potass Iodide* in 2 cwt. lots, and 13s. 4d. per lb. for *Iodoform*: *Iodine* being also unchanged in price at 7½d. per oz.

Ipecacuanha.—*Rio* is very firm at 9s. to 9s. 3d. per lb. as to quality, whilst the demand for *Carthagena* remains quiet.

Japan Wax—Is quiet, 35s. per cwt. being asked for good squares.

Jalap.—Small heavy Vera Cruz is held for 6d. per lb.

Kava Kava—Is quoted at 9d. per lb. on the spot.

Lithia—Is firm at 10s. 8d. per lb. for the *Carbonate* in 2-cwt. lots, 6s. 8d. per lb. for the *Citrate cryst.*, and 7s. 2d. per lb. for the *Citrate powder*.

Menthol—Is quiet at 7s. to 7s. 3d. per lb. on the spot.

Mercurials—Are dearer by 1d. per lb., the following being now the quotations:—

	Below 56 lb.	Not less than 56 lb. to 224 lb.
	s. d.	s. d.
Hyd. sub-chlor (Calomel) P.B.	2 10	2 9
,, perchlor. P.B.	2 6	2 5
,, oxid. rub.	3 2	3 1
,, ammon.	3 3	3 2
,, persulph.	2 3	2 2

Morphia—Is steady at 4s. 6d. per oz. for the *Hydrochlorate* salt in powder, and 2d. per oz. more for *crystals* in large quantity and in bulk packing. Looking at price actually ruling for *Opium*, price of *Morphia* should certainly be decidedly higher.

Musk—Is quiet at 75s. to 80s. per oz. for Pile I. thin blue skins in caddy lots.

Nitrate of Silver—Is weak at 1s. 5½d. per oz. for the crystals, the sticks being dearer in proportion.

Oils Essential.—*Star aniseed* has been advancing since our last and closes firm at 6s. 9d. to 7s. 3d. per lb., according to quantity *Carraway*: Owing to the advance in the price of the seeds, this is quoted dearer in all qualities. Foreign is quoted 3s. 6d. to 5s. per lb. *Cassia* is easier with moderate sale to arrive, including 70 to 75 per cent. at 4s. 0½d. per lb., and 75 to 80 per cent. at 4s. 1½d. per lb., *c.i.f.* On the spot there is no demand. *Citronelle* is quiet at last week's price. *Lemongrass* quiet but steady at 4¼d. per oz. *Peppermint* is firm at 5s. 7½d. to 5s. 9d. per lb. for *H.G.H.* Fine *Wayne County*, 3s. 9d. to 4s. per lb., *c.i.f.* terms. Japanese dementholised 3s. per lb., 40 per cent. 4s. per lb.

Oils (Fixed) and Spirits.—*Linseed* very firm at again higher prices. On the spot, pipes, London, £17 5s.; barrels, £17 15s. *Rape* dearer, closing very firm; ordinary brown on the spot £24, refined £25 10s. *Cotton* slightly dearer on last week's prices; London crude £14 10s., refined spot £16 5s. to £16 15s., according to make. *Olive* firm at £33 per ton for both Spanish and Levant. *Coconut* firm but unchanged. *Ceylon* on the spot £24 10s. *Cochin* spot £29 10s. *Palm* steady at £23 10s. *Turpentine*: The market is depressed and rather easier at 25s. 3d. per cwt. for American on the spot. *Petroleum Oil* is quiet but unchanged; Russian spot 4½d. per gallon, American 5d. per gallon, Water White 6¼d. per gallon. *Petroleum Spirit* dearer at 5⅝d. per gallon for American, deodorised 6d. per gallon.

Opium.—Market is very firm; there is, however, no change in price from last week, good manufacturing is quoted 10s. to 10s. 3d. per lb. on the spot, and about 3d. per lb. higher in Smyrnas. *Soft shipping*: Good to fine 11s. 6d. to 12s. Fine *Druggists'* 10s. to 10s. 6d. *Persian*: 10s. to 11s. 6d. per lb. Reports as to the prospects of the new crop continue unfavourable, which would point to the probability of a further advance in value, and the more so as existing stocks are believed to be very moderate.

Phenacetin is rather firmer, good makes can, however, still be bought at 3s. 9d. to 4s. 3d. per lb., according to quantity and packing for *crystals* and *powder*. *Bayers'* make is still held for the fancy price of 14s. 3d. per lb. in bulk.

Potash Compounds.—*Chlorate* is very dull at 3¼d, per lb. *Bromide* steady at 1s. 10d. per lb. *Iodide* firm at 9s. 9d. to 10s. 3d. per lb., according to quantity. *Bichromate* unchanged at 4d. to 4½d. per lb. according to quantity. *Bicarbonate* firm at 30s. per cwt. for both crystal and powder in large bulk. *Cyanide* is steady at 1s. 2d. per lb. for 98 to 100 per cent. cake. *Permanganate* is quiet but steady at 62s. 6d. per cwt. for small crystals, and 5s. per cwt. more for large crystals. *Prussiate*: *Yellow* is quiet at 6¾d. to 7¼d. per lb., according to quantity and package. *Red* is firm at 1s. 2d. per lb.

Quicksilver—Is very strong at £7 12s. 6d. per bottle from first hands; this marks an advance of 2s. 6d. on the week.

Quinine.—Market remains flat, with sellers of brands not most in favour as low as 10½d. per oz., makers' price remaining 1s. per oz. for 1000-oz. lots in 100-oz. tins. It would hardly be possible, however, to buy any considerable quantity from second hands at the lower price mentioned above, or even at 11d. per oz. It is difficult to foresee with any degree of certainty what the future course of the article will be.

Rhubarb.—Since the sales a small business has been done in medium round slightly rough *Canton* of fair fracture at 1s. 2d. to 1s. 3d. per lb.

Salicine—Remains steady and in good demand. Price ranges from 10s. to 10s. 6d. per lb., according to quantity.

Santonine—Is firm at 4s. 5¼d. per lb. in cwt. lots.

Sarsaparilla.—*Mexican* is very firm at 4½d. to 5d. per lb. *Honduras* is very scarce, with reported higher prices in New York; spot quotation is 1s. 8d. per lb. *Jamaica* firm at 1s. 9d. per lb.

Senna.—A moderate business has taken place since last week's auctions in *Tinnevelly* grades, 3d. per lb. being paid for fair green small leaf, slightly spotty, and 4d. per lb. for medium-sized leaf of fair colour. The last steamer from Bombay has brought 170 bales, and these will probably be in next auctions. In *Alexandrian* grades we do not hear of any business passing. The demand is slow, except for finest leaf, which is scarce.

Seneka Root—Is decidedly firmer, but good Western root can still be had at 1s. 2d. to 1s. 2½d. per lb.

Shellac.—Privately holders are very firm, and this has somewhat checked business. At the auctions on Tuesday supplies were small, and a fair demand prevailed for *Second Orange* at current rates, but sellers in most cases asked more money, which buyers were not ready to pay. For such lots as sold fully last week's rates were paid, the value of *TN* being now 61s. full. A total of 591 cases offered and 106 cases sold. *Second Orange*: Of 458 cases 55 sold, fine bright at 69s., flat flimsy reddish 61s., fair bright part blocky at 56s., dark claret blocky at 53s.; the remainder bought in, including fine *SG* in diamond at 79s., *PM* in double triangle at 78s., and *AA* in circle at 72s. *Garnet*: 19 cases offered and sold, common ruby hard block at 54s. to 55s. *Button*: Of 114 cases 32 sold, fair pale firsts at 77s., ordinary ditto at 70s., fine strong seconds at 71s., ordinary ditto at 65s., weak glassy ditto at 63s., broken at 60s.

Soda Compounds.—*Crystals* quiet at 55s. per ton. *Bicarbonate* firm at £7 10s. per ton for the 98 per cent., whilst the full bicarbonated quality is still to be had at 18s. to 19s. per cwt. *Bromide* steady at 2s. 2d. per lb. *Iodide* firm at 11s. 7d. per lb. *Hyposulphite* in good demand at 6s. to 8s. per cwt., according to brand. *Nitrate*: Ordinary on the spot £7 12s. 6d. per ton, refined £7 15s. per ton. *Caustic*: 70 per cent., white, £7 10s. per ton; 60 per cent., £6 10s. per ton.

Spermaceti.—*American* is very firm at 1s. 3d. per lb.

Spices (Various).—*Black Pepper*: 271 bags Singapore sold at 4d.; 146 bags Tellicherry bought in at 4¼d.; 25 bags Malabar sold at 4¼d. to 4⅜d.; 9 bags fine heavy bold clean Ceylon sold at 5⅜d. *White Pepper*: All bought in; Siam at 7¼d.; Penang at 6¾d. *Chillies*: 50 bags dull Zanzibar sold, without reserve, at 29s. to 29s. 6d.; 58 bags good Japan sold at 39s. to 41s. *Cinnamon*: 16 bales broken Tellicherry sold at 10d. to 10½d. *Cinnamon Chips*: 195 bags Ceylon coarse chips bought in at 3d., 14 bags coarse bark sold at 4d. *Mace*: 16

cases Peraing bought in, ordinary red 1s. 6d. to 1s. 6½d., pickings 1s. 5d.; 22 packages West Indian sold at 1s. 4d. to 1s. 7d. *Nutmegs* dull. *Pimento*: Of 270 bags offered only 100 bags sold in small lots at 4¼d. to 4½d.

STAR ANISEEDS—In very small supply on the spot, 110s. per cwt. being asked. New crop offered freely, but no business therein.

STROPHANTHUS SEEDS. — Good green *Kombé* are steady at 3s. 3d. per lb., and brown slightly weevily are quoted 10d. to 1s. per lb., both in original import packages.

SULPHATE OF COPPER—Quiet and rather easier at £15 17s. 6d., to £16 15s. per ton according to brand.

SULPHONAL.—The two chief makers have so far not raised their price, which remains at 7s. 3d. per lb. for *crystals* and *powder* in bulk packing.

TURMERIC—Is decidedly firm, but business is quiet. Small sales of *Bengal* at 15s. 6d. per cwt.; fair *Malabar* finger at 20s. per cwt., but 22s. 6d. per cwt. now asked; and *Cochin* split bulbs at 8s. 6d. per cwt.

LIVERPOOL REPORT.

MAY 18, 1898.

Business continues very steady, and though transactions have not been very numerous, the prices obtained are satisfactory. There has been no great fluctuation of price in any one article, the chief being an easier rate for olive oil, due to the alteration in the Spanish rate of exchange. Good sales of Fœnugrec, Ginger, Kola Nuts, and Peruvian Honey are reported. Among chemicals, Caustic Soda and Sulphate of Copper are lower, and Ammonia Sulphate a turn higher in price.

AMMONIUM SALTS.—*Sulphate*, £8 17s. 6d. to £9 per ton.

BEESWAX.—Sales of Chilian are reported at £6 15s. per cwt.

BLEACHING POWDER.—Continues dull at £5 10s. to £6 per ton.

COPPER SULPHATE—Is lower at £16 2s. 6d. to £16 5s. per ton.

FŒNUGREC.—About 5 tons of Egyptian sold for 10s. per cwt. ex quay.

GINGER.—30 bags good Sierra Leone sold for 18s. 6d. per cwt.

GUM ARABIC—Sorts continue to sell in small amount at 75s. per cwt.

HONEY—42 barrels of Peruvian made 21s. per cwt.

KOLA NUTS.—50 packages of dried sold at 1½d. per lb.

OILS (FIXED) AND SPIRITS. — *Castor* is offering at very steadily maintained prices for spot parcels, Calcutta at 3¼d. to 3⅝d. per lb., and French 1st pressure at 3¼d. per lb. *Olive* is steady at £28 15s. to £29 15s. per tun (for shipment) for Seville, and Malaga £30 per tun. *Linseed* is firmly held at last week's rates, viz., 18s. to 18s. 6d. per cwt. *Cottonseed*, Liverpool refined, is also unchanged, 16s. 9d. to 17s. 3d. per cwt. *Spirits of Turpentine* is somewhat quieter at 27s. 3d. per cwt.

SEEDS.—*Canaryseed* is unchanged as regards Turkish, viz., 28s. to 30s. per 464 lbs., but is somewhat neglected. *Linseed*: 250 tons of River Plate sold *ex* quay at 35s. per 416 lbs., and 25 tons Bombay at 39s. *ex* store. Spot parcels are fairly plentiful; "futures" scarcely offered.

MANCHESTER CHEMICAL REPORT.

MAY 18, 1898.

The market for heavy chemicals continues fairly firm, and Ammonia Alkali, 58 per cent., has an upward tendency, although at present there is no advance to be noted in this district, reports to the contrary notwithstanding. Chlorate of Potash is a fraction higher, but oxalic is rather lower, closing at 3⅜d. United Kingdom delivery. Sulphate of Ammonia has spurted, and sellers in this district are reluctant to sell under £8 17s. 6d. to £9 per ton on rails, bags. It is also noteworthy that Benzols are higher, owing to their increased use for gas enrichment, and the relative cheapness as compared with other materials. Creosote is firm at 2¾d. In the demand for Lancashire made green copperas there is no abatement, but manufacturers here have made no change in price for the present. Yellow Prussiate still firm at 6¾d. to 9d. Glaubers are scarce, but without change.

EXCHANGE.

OFFERED.

Miscellaneous.

Surplus Stock.—12 Williams', 12 Carter's, 6 Cockles', 6 Holloway's, 6 each Steedman's, 1s. 1½d. and 2s. 9d., £2 17s. 6d. Cash with order, or London reference if fresh customer.—Eastman, Forest Lane, Stratford.

Magic Lanterns, second-hand; triples and biunials; oxyhydrogen microscope; marvellous pamphengos oil; lantern gives 14-ft. picture; 60,000 slides and effects; 4-in. 4-wick lanterns, 18s. 6d. each, bargains; illustrated list post free, 2d. Animated photographs: A splendid machine for £9 9s.—Hughes, Brewster House, 82, Mortimer Road, Kingsland, N.

To clear.—1897 English Honey, pure and good, 12 lbs. for 5s.; offers for 1 cwt. New Combined Monocle and Stereoscope, cost 17s. 6d, price 9s.—Brampton, Sudbury, Suffolk.

Overstocked.—5 dozen enemas, seamless, new (Ingram's expired patent), enamelled black, hinged boxes, vagina pipes, leather shields, 30s. dozen; sample posted, 2s. 9d., cash.—Warnes, Chemist: 533, Gray's Inn Road, W.C.

Essential Oils to dispose of cheap. About 2 lbs. Citronelle (Fisher's); 40 ozs. Lemongrass; 2 lbs. Oil Bergamot; also 20 lbs. Bichromate of Potash.—Bromide, "Pharm. Journ." Office, 5, Serle Street, London, W.C.

Surplus Stock.—6 dozen Daisy Powders, 8s. 6d. per dozen; 28 lbs. Confect. Sennæ Nost., 6d. lb.; 3+1 lb. bots. Potas. Acetas, 10d. lb.; 2 lb. Aq. Anethi Conc., 1 to 40, 2s. lb.; 4 lbs. Ol. Succini Rect. (Schimmel's), 1s. lb.; 1 lb. Phosphorus in bot., 2s.; 2 lbs. Pulv. Canthaiides, 2s. lb.; 2 lbs. Pulv. Gum Ammoniac, 1s. lb.; 56 lbs. Tamarinds, 2d. lb. Prices marked are in Grimsby.—Reigo Company, Grimsby.

Two doz. each 2s. and 2s. 6d. North Lincolnshire Drug Co.'s Cattle-oil; what offers?—613, Romford Road, E.

Twelve Gibson's 1s 1½d. Top. Note Producers; 36 6d. Zomela Soap; 2 4s. 6d. Maltine; 12 1s. Pegamoid Silver Paint; 10 1s. 6d. Armour's Beef-Juice.—Lees, Drug Stores, Stalybridge.

Books.

Special.—The first twelve volumes 'Strand Magazine' quite new; bound publisher cases, £2 11s. 0d. Note.—The First 2 volumes are 21s. each at the publishers.—Pouteau, 44, Warden Road, London, N.W.

Students' and Chemists' books offered and wanted, for cash or exchange; purchasers write for list (post free); sellers send list, stating edition, date, condition, price required.—Gower, Publisher, Waterloo, Liverpool.

Proctor's 'Pharmacy,' Attfield's 'Chemistry,' Bentley's 'Systematic Botany,' all new; Southall's E Collection, 'Pharmaceutical Journal' for 1897, clean and entire; offers invited.—Morris, Winchmore Hill, N.

What offers?—'Pharmaceutical Journals,' 1846 to 1848, 1858 to 1859, 1859 to 1863; well bound.—Hoad, 20, Church Square, Rye.

'Cassell's Family Physician,' in four cloth volumes, with steel plates; and 'Ladies Physician'; carriage paid, for 20s.—Wallbridge, Chemist, St. Helens.

Pereira's 'Materia Medica,' 3 vols., 7s 6d. 'Beasley's Receipts and Prescriptions,' 3s. pair.—"Alpha," 34, Church Street, Preston.

Botany, Prantyl and Vines, fifth edition, in good condtiion, 5s.—Bryan, 109, St. James Street, Brighton; post free.

Sixty Volumes of Braithwaite's 'Retrospect of Medicine (30 years) what offers! No quack remedies.—Simsom, Chemist, Leamington.

Lewkowitch's 'Oils, Fats, and Waxes,' 11s. (21s. net); Pearmain and Moor's 'Applied Bacteriology,' 6s. 6d. (12s. 6d. net); Mackenzie's 'Dictionary of Applied Chemistry,' 8 vols., 20s. (£4).—Johnson, 155, Lea Road, Wolverhampton.

Optical and Photographic.

Whole-plate Tourist Camera, 3 double backs, ¼ RR lens, focussing cloth, walnut tripod stand, black leather case, belonged to gentleman, price £7, not half cost.—Wright & Co., Photo Chemists, Burnley.

Bargains.—No. 2 Xit Camera, six Edwards's double backs, two cases, slightly soiled, £2 15s.; No. 3. Junior Kodak and glass plate attachment, two leather cases, splendid order, cost £10 9s. 6d., price £6 15s.; Memo. Frena Camera, new condition, £2; Robinson's Luzo ¼-plate Hand Camera for roll films in leather case, good order, cost £8, price £4 15s.; Shew's Bamboo Stick Tripod, new condition, cost 25s., price 15s; Shew's Registered Case for Xit, new. 14s.; ¼-plate RR Lens, iris diaphragm, new, splendid definition, 12s. 6d. each, to clear.—Wright and Co., Photo chemists, Burnley.

WANTED.

Desideratum (28 lbs.) or similar powder mixer and sifter.—"Sifter," 232, Portway, West Ham.

Wanted.—Munyon's Remedies. State kinds, quantity, and lowest price for cash to—Eastman, Forest Lane, Stratford.

Old Platinum Utensils or Scrap, also Old Electric Lamps wanted for prompt cash by P. Rowsell, 14, Walcot Square, London, S.E.

Wanted.—Muter's 'Handbook of Volumetric Analysis.'—Longley, Wombwell, Barnsley.

SATURDAY, MAY 21.

REYNOLDS AND BRANSON'S CRICKET CLUB v. Wakefield Asylum.

TUESDAY, MAY 24.

RECEPTION BY THE "THREE PRESIDENTS" at the Royal Institute of Painters in Water Colours, Piccadilly, at 8.30 p.m.

WEDNESDAY, MAY 25.

EDINBURGH PHARMACY ATHLETIC CLUB, at 6.45 p.m. Seventh Annual Amateur Athletic Sports at Powderhill Grounds.

NOTTINGHAM AND NOTTS. CHEMISTS' ASSOCIATION, at 9 p.m.
Annual Meeting for the Election of Officers and Council and other business. (Albert Hotel).

WESTERN CHEMISTS' ASSOCIATION (OF LONDON), Meeting at the Westbourne Restaurant, Craven Road, W., at 9 p.m.

THURSDAY, MAY 26.

ROYAL INSTITUTION, at 3 p.m.
"Natural Philosophy," by Lord Rayleigh.

FRIDAY, MAY 27.

ROYAL BOTANIC SOCIETY GARDENS (Museum), at 4 p.m.
"Mimicry in Plants," by the Rev. Professor Henslow, M.A.

ROYAL INSTITUTION, at 9 p.m.
"Sir Stamford Raffles and the Malay States," by Lieut.-Gen. the Hon. Sir Andrew Clarke.

SATURDAY, MAY 28.

ROYAL INSTITUTION, at 3 p.m.
"The Biology of Spring," by J. A. Thomson.

Western Chemists' Association (of London).—At a meeting of this Association, held on Wednesday, May 25, it was arranged to hold the annual summer outing on Thursday, July 21, when the party will proceed by train to Henley, then up the river in an electric launch, on board which luncheon and tea will be provided, subsequently returning to town by train from Henley. It was also decided to hold the annual dinner at the Café Royal, in November next.

Messrs. C. J. Hewlett & Son, Charlotte Street, E.C., have followed the example of other firms in publishing in book form 'Notes on the New British Pharmacopœia, 1898.' In the general arrangement of the compilation Mr. E. J. Millard appears to have followed the plan of the *P. J.* Synopsis, and the book is accordingly conveniently arranged.

Dr. George Watt, C.I.E., Reporter on Economic Products, Calcutta, has obtained eight months' leave from May 1. Mr. David Hooper, Curator of the Indian Museum, Economic and Art Section, will officiate as Reporter during Dr. Watt's absence.

Edinburgh District Chemists' Golf Club.—The second competition this year for the "Gibson Handicap Medal" was played last week over the Braids course, and resulted as follows:—1st, James Stott, 89 plus 4 equals 93; 2nd, A. M. Stewart, 106 less 5 equals 101; 3rd, D. N. Wylie, 106 less 4 equals 102. There was a good turn out of members.

Mr. J. S. Grant, dentist, of Aberdeen, on Thursday morning, May 19, was suddenly seized with illness, and in about half an hour expired. Deceased served an apprenticeship as a chemist and druggist in Aberdeen, after which he proceeded to Edinburgh, where he entered the service of Messrs. Duncan and Flockhart. He subsequently set up in business in Aberdeen, but about twenty years ago he removed to Brechin, where he set up as a dentist, a profession which he has practised ever since. Mr. Grant was of a kindly and happy disposition, and the news of his sudden demise has been heard of with general regret in the district.

The Working of the New B.P. at Birmingham.—The Birmingham Health Committee have had under consideration the question of the new B.P. Councillor Price, a member of the Midland Chemists' Association, urged upon the Committee the desirability of some notice being sent to the trade as to the course it was intended to follow in the new order of things. He suggested that for at least another six months no prosecution should be instituted in any case where the sample was found to conform with either the old or the new formulæ, pointing out that it would take chemists some time to get rid of their present stocks. The Committee delegated the matter to a sub-committee, who, in the course of a discussion, heard at length Mr. Price's views from the point of view of the trade. The sub committee declined, however, to give any definite undertaking, stating that each case would be taken on its merits. Their recommendation to this effect came before the Health Committee on Tuesday and was adopted.

Mr. Hugh M. Massingham, for many years senior dispenser to the Manchester Royal Infirmary, has been installed Worshipful Master of the De Grey and Ripon Lodge No. 1161 of Freemasons, held at the Freemasons' Hall, Cooper Street, Manchester.

Window Advertising and its Results.—At Lancaster Castle, on Saturday, May 21, Thomas Waddington, described as a chemist and druggist, of Morecambe, although his name does not appear on the Register of Chemists and Druggists, appeared under a warrant issued by the Bench because the defendant sent his assistant to answer a summons for obstruction. The action of the Bench caused considerable indignation, as the sending of the assistant implied a plea of guilty to the charge of obstruction caused by people watching an automatic figure in his window advertising headache powders. The defendant was fined 10s. and costs.

Edinburgh Pharmacy Athletic Club.—The seventh annual sports took place at Powderhall Grounds, on Wednesday, May 25, 1898. The weather conditions were perfect, and there was a large and representative attendance, including Messrs. J. Laidlaw Ewing, Chairman of the North British Branch Executive; John Bowman, President of the Chemists' Trade Association; J. Davies, of Raimes, Clark & Co.; D Mackenzie, of T. and H. Smith & Co.; C. F. Henry, Secretary Trade Association, etc. The principal officials were:—Judges: D. S Duncan and Thomas Fraser. Referee: F. A. Lumley. Judges of Confined Events: Geo. Coull, B.Sc., and D. B. Dott, F.I.C. Handicapper and Timekeeper: W. M. Lapsley. Football Referee: J. Grieve. Starter: J. Dalziel. Handicappers of Confined Events: G. F. Anderson, J. P. Gibb, and Geo. Somerville. Hon. Secretary: J. P. Gibb, 8, Cobden Crescent, Newington. An excellent programme opened with a One Mile Bicycle Handicap (confined to the trade): 1, D. S. Napier; 2, W. Arres. Other confined events were:—Five-a-Side Football Competition for Anderson Challenge Cup, presently held by John Mackay & Co.'s team. The final tie between teams from Raimes Clark & Co. and T. and H. Smith & Co. resulted in favour of the former with 3 goals to 1. 300 Yards Flat Race Handicap (confined to apprentice members of the Club): 1, J. B. Mitchell; 2, R. Wilson; 3, P. P. Dunn. 220 Yards Flat Race Handicap (confined to trade): 1, J. B. Mitchell; 2, R. Marshall; Half-mile Flat Race Handicap (confined to Club members): 1, J. Walker; 2, R. Marshall. All the events were keenly contested, and the gathering was a distinct success from an athletic point of view. At the conclusion of the sports Mr. J. Rutherford Hill, Honorary President, congratulated the Club and complimented the Honorary Secretary, Mr. Gibb, on the success of the seventh annual competition. The prizes were presented to the winners by Miss Macmillan, and on the motion of Mr. G. Somerville (President) a vote of thanks was awarded to Mr. Hill for presiding. The donors of prizes were Messrs. Anderson & Co., Messrs. Duncan, Flockhart & Co., Mr. J. P. Gibb, Mr. J. H. Haywood, Messrs. S. Maw, Son & Thompson, and Messrs. Raimes, Clark & Co.

Vitrol Throwing.—On Saturday, May 21, a man named Zerubbabel Baillie Balcarres (42), called at a house of a distant female relative at 9, Ingleston Street, Edinburgh, and asked to see her. She came to the door, and the man, it is alleged, took from his pocket a cup containing some dark brown liquid and threw the contents in her face. The woman had a duster in her hand at the time, and held it up in front of her face, with the result that it caught all the liquid except a few drops, which fell upon her arms and upon a little girl who was standing beside her. Feeling a burning sensation, the woman and the child at once went to a chemist who dressed the wounds with oil. Information was given to the police, and about half-past six on Saturday night the accused was arrested. He was taken to the High Street Police Office, and on being searched a gill bottle half-full of vitrol and a cup were found in his possession. Accused, who is a brushmaker by trade, was confined in Morningside Asylum about seven or eight years ago, and is supposed to be of unsound mind. He passed the bar of the City Police Court on Tuesday, and was remitted to higher authorities.

PARTNERSHIPS DISSOLVED.

(From the London Gazette.)

Wm. Patterson, Wm. B. Fowle, and Henry Spencelayh (trading as Patterson & Co), Cork Cutters, Manufacturers, etc., 21, Turner's Road, Burdett Road, Bow. Debts will be received and paid by Henry Spencelayh.

Robert Gourlay and Joseph Law, Physicians and Surgeons, St. James's Terrace and 247 and 249, Ripponden Road, Oldham. Debts will be received and paid by Robert Gourlay, who will continue the practice on his own account.

Mould and Tod, Printers, etc., 3, St. James's Square, Edinburgh. The business has been transferred to Mr. W. A. G. Graham, who will continue it under the old style, and will receive and pay all debts.

RECEIVING ORDERS IN BANKRUPTCY.

(From the London Gazette.)

Geo. B. Filmer (trading with Arthur Ryden as Filmer & Co.), Mineral Water Manufacturer, Whitegate Mineral Works, Whitegate Lane, Blackpool.

Gilbert Thonger, Chemist, Harborne, Staffs., lately trading at Medical Hall Hagley Road, Edgbaston, Birmingham.

Walter Beaumont (trading as Jonas Beaumont), Manufacturing Chemist, 149, Pellon Lane, Halifax.

Chas. W. Flack, Chemist, High Street, Stevenage, Herts.

MARKET REPORT and Prices Current

Specially compiled for the Pharmaceutical Journal

The quotations here given are in all cases the lowest cash prices for bulk quantities, and often the articles quoted have to be sorted in order to suit the requirements of the retail pharmacist. The cost of freightage from the chemical and drug works to the various distributing centres must also be considered. It is important that these conditions should be borne in mind in making any comparison between the prices quoted and those of the wholesale drug trade.

LONDON REPORT.

MAY 26, 1898.

Business, as might have been expected in view of the fact of it being the Derby week, combined with the near approach of the Whitsuntide holidays, has been anything but brisk during past few days. Not only have transactions been limited, but changes of importance in values have also been conspicuous by their absence. Acid Boracic and Borax are quiet. Acid Citric and Tartaric firm. Camphor quiet. Balsam Peru dearer. Ipecacuanha very firm. Glycerin slightly dearer. Quicksilver and Mercurials, Iodine and Iodides, Bromine and Bromides unchanged. Cod-liver Oil dull. Sulphate of Ammonia again dearer. Cream of Tartar very dull of sale. Price of Methylated Ether has been advanced. Opium, Morphia, and Codeia steady. Quinine quiet. Sulphonal, Phenacetin, and Acetanilide unehanged. Cocaine dearer. The following are the prices ruling for article of principal interest:—

ACETANILIDE—Is quiet at 1s. 2d. to 1s. 3d. per lb., there being a rumour that price is likely to advance. Certainly the ruling figure is sufficiently low to apparently justify any such advance.

ACID BORACIC.—*Crystals* 23s. per cwt., *powder* 25s. per cwt., being unchanged with a steady demand.

ACID CARBOLIC—Is in fair demand at unchanged value, say 6¼d. to 6½d. per lb., according to make, for 35 to 36° C. *ice crystal* in quantity and bulk packing. Other qualities and packing in proportion. *Crude*: 60° F., 2s. 1d. per gallon; 75° F., 2s. 6d. *Liquid*: 95 per cent. of pale straw colour 1s. 2d. to 1s. 3d. per gallon in 40-gallon casks.

ACID CITRIC—Very firm at 12¾d. to 1s. 1d. per lb. for *crystals*.

ACID OXALIC—Is steady at 3⅝d. to 3¾d. per lb. on the spot.

ACID TARTARIC—Is firm at 1s. 1d. per lb. for English *crystals*, and 12¾d. per lb. for foreign.

AMMONIA COMPOUNDS.—*Sulphate* dearer and closes firm at £9 5s. for grey prompt 24 per cent., London. *Bromide* unchanged at 2s. 2d. per lb. *Iodide* firm at 14s. 6d. per lb. *Oxalate* 6d. per lb. *Sulphocyanide* steady at 1s. 2d. per lb. *Sal ammoniac* unchanged at 35s. per cwt. for sublimed firsts, and 33s. per cwt. for seconds.

BALSAM PERU.—Price continues to advance, 9s. 6d. to 9s. 9d. per lb. being now asked.

BISMUTH—Unchanged at 5s. per lb. for the *metal*, and 4s. 10d. per lb. for the *Subnitrate* in 5-cwt. lots.

BLEACHING POWDER.—A moderate business doing on the spot at £7 5s. per ton.

BORAX—Is quiet and unchanged at 14s. per cwt. for lump and 14s. 6d. per cwt. for powder.

BROMIDES—Unchanged at 1s. 10d. per lb. for *Potass. Bromide*.

CAMPHOR.—Crude continues very quiet; for arrival June-July steamer there are sellers of China at 82s. per cwt., and Japan at 89s. per cwt., *c.i.f.*

CINCHONA BARK.—The supplies at Tuesday's auctions in London were larger than for some time past, amounting to 4160 packages of all descriptions, the bulk of which was East Indian kinds. There was a fair demand, and for *Cinchonidine* yielding barks fully last rates were paid, but the *Ledger* and *Crown* barks sold at a decline of about 15s. per cwt. *African*: 174 bales sold, fair quill, 3¾d. to 4d.; broken ditto, 3¾d. to 4¼d. per lb. *Calisaya*: 81 bales fair quill sold, 5¼d. to 5¾d. per lb. *Ceylon*: Of 249 bales 169 sold. Ledgeriana, original stem, 4⅛d.; branch, 2⅜d.; crown, original stem, 2¾d. to 3d.; branch, 2½d.; bold red broken quill, 2⅝d.; twigs, 1⅝d. per lb. *East Indian*: Of 3300 packages 2165 sold, Ledgeriana original stem, 2⅞d. to 4d.; branch, 2d. to 3d.; bold quill, 5d.; root, 4⅜d.; crown, original stem, 1¾d. to 3¾d.; renewed, 2¾d. to 4⅜d.; red, original stem, 1¾d. to 2½d.; branch, 1⅝d. to 3⅜d.; renewed, 1¾d. to 2⅜d.; fair bold quill, 3¼d. to 6¼d.; broken quill, 2½d. to 3⅞d.; root, 2⅜d. to 3½d.; hybrid, original stem, 3¼d. to 3½d. per lb. *Java*: 351 bags retired.

CLOVES.—Privately the market for *Zanzibar* is steady. Sales include June to August delivery at 3¼d. to 3$\frac{25}{32}$d., August to October at 3⅞d., and October to December at 3$\frac{15}{16}$d. No public spice sales have been held this week.

COAL TAR DISTILLATION PRODUCTS.—*Toluol*: Commercial, 1s. 5d.; pure, 3s. per gallon. *Benzole*: 50 per cent., 1s. 3d.; 90 per cent., 1s. 2d. per gallon. *Crude Naphtha*: 30 per cent. at 120° C., 6d. *Solvent Naphtha*: 95 per cent. at 160° C., 1s. 8d. per gallon.

COCAINE—Is firmer, the agents for the brand most in favour here only being willing to book quite limited orders at 9s. 6d. to 9s. 9d. per oz., whereas a short time since they were selling at 9s. It is maintained that a further advance in price is probable.

COD-LIVER OIL.—Market remains exceedingly quiet, nominal price being 80s. per barrel for new non-congealing *Norwegian oil* in tin lined barrels.

CODEIA—Is firm at 11s. 3d. to 11s. 6d. per oz. for quantity and bulk packing.

CREAM OF TARTAR—Very quiet, the lower strengths being practically unsaleable. First white *cryttals* on the spot quoted 72s. 6d. per cwt.; *powder*, 75s. per cwt. B.P. quality is fairly firm a 78s. to 79s. per cwt. for *crystals*, and 81s. to 82s. per cwt. for *powder*.

CUTCH—Is very firm, with but little offering. Sales of fair slabs at 27s. 6d. per cwt.

ETHERS, METHYLATED. — Makers now quote the above as follows:—s.g. ·730, 8¼d. per lb.; s.g. ·725, 10¼d. per lb.; s.g. ·720, 12¼d. per lb.; and s.g. ·717 (absolute), 1s. 3¾d. per lb.

GLYCERIN.—*Crude* is dearer and rather more money has been paid for the *refined* article, which now seems in a strong position for a rise. White, double-distilled, chemically pure, 1260 s. g. quality in cases of 4 and 56-lb. tins is quoted 52s. to 53s. per cwt. for *English* make, and 55s. to 60s. per cwt. for *German* brands.

IODIDES—Are in very good demand at 9s. 9d. to 10s. 3d. for *Potass. Iodide* and 7½d. for *Iodine*.

ISINGLASS.—At the monthly auctions on Tuesday about 700 packages were offered as against 550 packages at the April sales. A quiet tone prevailed for all descriptions, and less than half found buyers at irregular prices. *Penang*: Leaf sold firmly, but tongue was cheaper; 149 packages offered and 108 sold (1 lot of good pale long leaf 5s. 7d.); leaf, good and fine pale 4s. 3d. to 4s. 8d., good yellow slightly red 3s. 10d. to 4s. 2d., fair reddish 3s. 6d. to 3s. 9d., dark part thin 3s. 2d. to 3s. 5d., small palish 3s., dark common 1s. 3d.; tongue, good and fine pale 4s. 2d., fair reddish 3s. 6d. to 3s. 10d., reddish mixed 3s. 1d. to 3s. 4d., dark mixed 2s. 4d. and 3s., small pale 2s. 10d.; purse, good bold pale 2s. 3d. reddish 1s. 2d. to 1s. 8d., floats large 2s. 2d. small 1s. 3d. to 1s. 6d. *Brazil*: sold slowly at about 1d. per lb. decline. *Bombay*: Sold steadily at about last rates.

JAPAN WAX—Is dearer for arrival, June-July steamer being quoted at 33s. 3d. per cwt. *c.i.f.* On the spot there are sellers of good squares at 35s. to 36s. per cwt.

MERCURIALS—Are without change at the advanced prices given last week.

MORPHIA—Is quiet but firm at unchanged prices, say 4s. 6d. per oz. for the *hydrochlorate* salt in powder.

OILS (ESSENTIAL).—*Star Aniseed* is very firm at 6s. 9d. to 7s. 3d. per lb. on the spot, whilst quotations from China come firmer. *Caraway* is dearer at 5s. 6d. per lb. for English, and 4s. 9d. to 5s. per lb. for foreign. *Cassia* is quiet, and demand on the spot is slow. *Cloves* firm at 2s. 10d. to 3s. per lb. according to quantity. *Peppermint*: American H.G.H. is quiet at 5s. 7½d. per lb. on the spot. Wayne County is rather dearer for fine qualities, 3s. 9d. to 4s. per lb. *c.i.f.* being the quotations.

OILS (FIXED) AND SPIRITS.—*Linseed* dull and lower at £16 15s. for pipes on the spot. *Rape* lower and with a downward tendeney—ordinary brown on the spot, £23 10s.; refined, £25. *Cotton* unchanged on last week's prices: London crude spot £14 10s.; refined spot £16 5s. to £16 15s., according to make. *Olive*: Spanish and Levant green oils £33 per ton; eating oils 4s. 6d. to 5s. 9d. per gallon. *Coconut* steady but quiet. Ceylon on the spot, £24 10s. *Cochin*, £29 10s. *Palm*: On the spot Lagos is quoted £23 15s., being the shade dearer. *Turpentine* steady at 25s. 3d. per cwt. for American on the spot. *Petroleum Oil* steady: Russian on the spot, 4⅝d. to 4¾d. per gallon; American spot, 5⅛d. per gallon; water white,

6¼d. per gallon. *Petroleum Spirit* : American, 5⅝d. per gallon ; deodorised, 6d. per gallon.

Opium.—Market is quiet but firm, price here being 10s. to 10s. 6d. per lb. for good *manufacturing*, while *Smyrna* price is now rather lower and about approaching the spot price here, whereas lately it had been 4d. to 6d. per lb. dearer.

Phenacetin—Is the turn harder at 3s. 9d. to 4s. 3d. per lb., according to quantity and make.

Podophyllin—Is firm at 12s. 6d. to 14s. per lb. for B.P. quality, according to holder. Partly insoluble qualities at 10s. to 11s. per lb.

Potash Compounds.—*Chlorate* : Dull at 3¼d. per lb. *Bromide* : Unchanged at 1s. 10d. per lb. *Iodide* : 9s. 9d. to 10s. 3d., according to quantity. *Bicarbonate* : Crystal and powder, both quoted 30s. per cwt. in large bulk. *Bichromate* : Steady at 4d. to 4½d. per lb. *Cyanide* : Very firm, and a good business passing at 1s. 2d. per lb. for 98 to 100 per cent. cake. *Permanganate* : Is in rather better inquiry at 62s. 6d. per cwt. for small and 67s. 6d. per cwt. for large crystals. *Prussiate* : Yellow 6¼d. to 7¼d. per lb., according to brand and package ; red firm at 1s. 2d. per lb.

Quassia Wood—Is dearer, good logs being held for £5 5s. per ton.

Quicksilver—Very firm at £7 12s. 6d. per bottle from importers.

Quinine.—Market remains in *statu quo*, *German* makers' price for best brands being still 1s. per oz., while from second hand a limited quantity could be bought at 10½d. to 11d.

Shellac.—A moderate business is passing at steady prices, including *Second Orange* on the basis of 61s. per cwt. for fair *TN*, and fine up to 78s. per cwt. For arrival there is very little doing, prices are unchanged at 60s. per cwt., *c.i.f.*, for *TN*, April to June steamer. There is more inquiry for speculation.

Soda Compounds.—*Crystals* unchanged at 55s. per ton. *Bicarbonate* steady at £7 10s. per ton for the 98 per cent., and 18s. to 19s. per cwt. for the fully bicarbonated quality. *Bromide* firm at 2s. 2d. per lb. *Iodide* steady at 11s. 7d. per lb. *Hyposulphite* is in active demand at 6s. to 8s. per cwt. according to brand. *Nitrate* : Ordinary on the spot £7 12s. 6d. per ton ; refined £7 15s. per ton. *Caustic* : 70 per cent. white £7 10s. per ton ; 60 per cent. £6 10s. per ton.

Sulphate of Copper—Quiet at last week's quotations, £15 17s. 6d. to £16 15s. per ton, according to brand.

Sulphonal—Can still be bought from the two principal makers at 7s. 3d. per lb. for bulk packing.

Turmeric—Continues firm, but business is of a retail character, including *Bengal* at 15s. 6d. per cwt., *Madras* finger 20s. to 21s. per cwt., *Cochin* split bulb at 9s. to 9s. 6d. per cwt.

To-day's Drug Sales went off quietly, only a moderate proportion of the offerings finding buyers, the chief point of interest being the continued firmness of Ipecacuanha and a rising tendency in price of Honey.

Aloes.—22 boxes *Curacoa* of low burnt quality were taken out, only 7s. per cwt. being bid. Good livery ditto realised 26s. per cwt. down to 15s. for capey. Softish but bright *Cape* sold at 24s., while good hard bright ditto was held for 26s. 6d. per cwt.

Aniseeds.—8 bags fair Spanish held for 28s. per cwt.

Annatto Seeds.—13 bags fair bright held for 4d. per lb., an offer of 3¾d. per lb. being refused.

Asphalt.—1 case *Egyptian* bought in at 85s. per cwt., 29 cases *Syrian* being also bought in.

Cactus Flowers.—The usual 10 bags of *Grandiflora* again made their appearance and were as usual again bought in, 8d. per lb. being the price named.

Camphor.—55 tubs *Japan* bought in at 92s. 6d. per cwt.

Cardamoms.—Demand was very slow, only a portion of the offerings finding buyers. The finer qualities sold up to 3s. 10d. per lb., these being fairly firm. The lower qualities were, however, about 3d. per lb. lower.

Cassia Fistula.—37 cases fair bold held for 11s. per cwt.

Castor Oil.—Good water white *Italian* held for 4½d. per lb., and good *French* at 4d. per lb.

Chiretta.—Good green is very scarce ; 2 bales in to-day's auctions realised 3¼d. per lb.

Cinchona Bark.—Serons *Crown and Grey* sold at 5½d. up to 11d. per lb. ; 31 bales *yellow* at 5¼d. to 7½d. ; 9 bales *red* at 3d. up to 3s. 7d. per lb. 10 cases *E. I. Cinchona* being bought in at 1s. 6d., and 1 case *Madras Cinchona* at 1s. 2d. per. lb.

Cinnamon Oil.—51 cases leaf oil were advertised "without reserve," but broker announced that he would only sell 1 case of each mark unless prices were satisfactory. It proved in the result that they were not satisfactory, for only 7 cases sold at 3d. to 3¾d. per lb., at which prices he declined to go on. A further parcel of 4 cases sold at 3d. to 3½d. per lb.

Colocynth.—4 cases and 2 bags *Turkish*, small to medium, part very seedy, sold at 10¾d. to 11d. per lb., good small apple being held for 1s. 2d. per lb.

Colombo Root.—237 bags fair brownish sorts sold at 20s. to 21s. per cwt., being rather easier.

Croton Seeds.—3 bales of good small seeds sold, with good competition at 87s. per cwt., being again dearer.

Cuttlefish.—25 cases sold at 1d. per lb. for broken, up to 3½d. for fairly bold.

Dragons' Blood.—9 cases dull reeds bought in at £9 per cwt.

Elaterium.—9 boxes *Maltese*, part rather unsightly, were taken out at 1s. 7d. per oz.

Ergot of Rye.—5 bags good bold sound *Russian* sold cheaply without reserve at 8¼d. per lb., weevily *Spanish* being bought in at 9d. per lb.

Gamboge.—1 case of medium quality sold at £6 10s. per cwt.

Gentian Root.—Good red chopped root sold at 22s. 6d. per cwt.

Golden Seal Root—Is firmly held on the spot at 2s. 5d. per lb., being very scarce both here and in New York, whence the quotation comes 2s. 1d. to 2s. 2d. per lb. *c.i.f.*

Gum Ammoniacum.—1 case part fair pale loose drop, part dark blocky, sold at 21s. 6d. per cwt.

Gum Arabic—Fair yellow sorts were bought in at 85s. per cwt., good grain selling at £6 10s. to £6 17s. 6d. per cwt.

Gum Asafetida.—7 cases good clean gum sold at 60s. per cwt., subject to approval.

Gum Benjamin.—Good seconds *Sumatra* held for £6 5s. to £8 10s., low ditto selling without reserve at 70s. to 80s. per cwt., fair yellow *Siam* part free part blocky held for £15 per cwt., low ditto sold at 97s. 6d.

Gum Galbanum.—2 bales part blocky held for 9d. per lb. ; 7½d. being refused ; 1 bale was held for 1s., good clean pale for 1s. 4d., and pickings for 4d. per lb.

Gum Kino.—8 boxes and 1 tin genuine red dust held for 10s. per lb. *African* was held for 7s., a bid of 4s. being refused.

Gum Mastic.—6 cases good clean pale held for 1s. 11d. per lb., 6 cases low *East Indian* being taken out at 6d. per lb.

Gum Myrrh.—14 cases sold very cheaply at 63s. to 64s. per cwt. for fine sorts. *Aden* picked, small pale siftings, realising 42s. Pickings were held for 36s., a bid of 28s. per cwt. being declined.

Honey.—40 cases *Californian* bought in at 40s. per cwt. for brownish liquid, down to 27s. for inferior. White *Italian* sold at 20s. to 29s. 6d. per cwt. Medium *Jamaica* at 20s. 6d. up to 22s. per cwt. for fair. From all appearances the article would appear likely to be dearer.

Ipecacuanha.—*Rio* very firmly held for 9s. to 9s. 3d. per lb., according to quality, but only 1 bale sold at 9s. 1d. per lb. *Carthagena* quality all bought in at from 4s. 6d. to 5s. 6d. per lb. according to holder.

Jalap Root—Is becoming scarce, and fair small heavy root is selling privately at 6d. per lb., which was the price asked for 26 bags in to-day's auctions, without, however, business resulting.

Liquorice Root.—50 bales rough *Syrian* held for 9s. 6d. per cwt.

Menthol Crystals.—3 cases good dry crystals *Kobayashi* brand held for 7s. per lb.

Nux Vomica.—32 bags sold, fair medium dull at 7s. 6d. per cwt., and small bright at 9s. 6d. per cwt.

Orange Peel.—Good new thin cut was held for 7½d. per lb.

Patchouli Leaves.—44 bales sold without reserve at from 2d. to 2½d. per lb. being cheap.

Pistachio Nuts.—2 cases fair *Syrian* held for 1s. 4d. per lb.

Rhubarb—Good bold round *Canton* was held for 1s. 4d. per lb., fair medium for 1s. 2d., bold flat for 1s. 6d., medium for 1s. 2d., good bold *high dried* for 1s. 2d. per lb. Fair round *Shensi* small to bold, fair colour bought in at 2s. 6d. to 3s. 3d. per lb.

Sarsaparilla.—1 bale native picked held for 2s. per lb.

Scammony. — 8 cases were bought in at 20s. to 28s. per lb., according to quality.

Scammony Root.—80 bales all bought in, 30s. per cwt. being figure named.

Senna.—*Tinnevelly*, the late arrival was not in time for to-day's auctions only second hand parcels, therefore, were offered. Holders had ideas of value far beyond those o buyers, and only a few bales sold at from 3½d. to 4½d. per lb. for medium sized leaf.

Alexandrian: Small sale of medium leaf at 5d. per lb.

WAX.—Fair *Madagascar* sold at £6 7s. 6d. to £6 10s, per cwt. Fair *Zanzibar* held for £6 12s. 6d., fair *Italian* fetched £6 12s. 6d. down to £5 15s., latter price being, however, subject to approval. Fair *Australian* realised £7 5s., white *Calcutta* was bought in at £6 10s. to £7 5s. *Mogador* at 85s. per cwt.

NEWCASTLE CHEMICAL REPORT.

MAY 25, 1898.

A steady business in heavy chemicals continues. More Baltic shipping orders are in circulation, still it is said such are scarcely up to an average for the season so far. Prices go unchanged and are quoted as follows:—Bleaching Powder: £6 5s. to £6 10s., according to markets. Soda Crystals: Basis, 45s. to 52s. 6d. Caustic Soda: 70 per cent., basis, £7 5s. to £7 10s. Soda Ash: 52 per cent., £4 5s. Alkali: 52 per cent., £5 5s. Sulphur: £4 15s. to £5 per ton.

MANCHESTER CHEMICAL REPORT.

MAY 25, 1898.

The market for heavy chemicals is steady with little variation in values In miscellaneous articles the changes to note are generally in a downward direction. Sulphate of copper may be bought at £16 15s. to £17 per best brands, delivered Manchester. This in face of the continued firmness of the metal is rather puzzling, but it is generally attributed to overproduction. Brown acetate is easier at £5 17s. 6d. per ton, Welsh or American here. Chlorate of Potash is a shade higher, and varies from 3¼d. to 3½d. Green Copperas is dull, but without change. Glycerin is a trifle lower, and for quantities it is thought that £1 to £1 10s. less will be accepted on last week's prices. Naphthas have advanced sharply, miscible being quoted at 4s. 3d. per gallon with but little offering, and solvent wood (white colourless) 2s. 9d. to 3s. Powdered Arsenic is very irregular, ranging from £17 10s. to £18, ex ship. Aniline Oil and Salt are advanced to 5½d. and 5d. respectively. In Sulphate of Ammonia a considerable forward business is reported. The oil trade in Manchester is rapidly increasing, and in future a steamer will always be at sea bound for this port. The forward shipments are estimated at about 400,000 tons of American oil alone, besides the large quantities of Russian petroleum coming on.

LIVERPOOL REPORT.

MAY 25, 1898.

AMMONIA SALTS.—*Carbonate*, 3d. per lb. *Sal Ammoniac*, 33s. and 35s. per cwt. *Sulphate* firm at £9 5s. per ton.

BEESWAX.—5 cases Peruvian sold at £7 2s. 6d. per cwt.

BLEACHING POWDER—Is dull of sale at £5 10s. to £6 per ton.

COPPERAS.—Lancashire, 38s. per ton; Welsh, 36s.

COPPER SULPHATE—£16 2s. 6d. per ton.

GINGER.—Sierra Leone: 845 bags brought 17s. 9d. to 18s. 3d. per cwt.; and 55 bags 18s. 6d. per cwt.

GUM.—5 tons of Brazilian Arabic changed hands at late rates.

KOLA NUTS—Have been selling at 1¼d. per lb. for dried.

OILS (FIXED) AND SPIRITS. — *Castor* is firm in tone, with somewhat low stocks here at present. Calcutta good seconds is firmly held for 3¼d. to 3⅜d. per lb., and French, first pressure, at 3¼d. per lb. *Olive* is firm on the spot at £30 to £32 per tun for Spanish oils, a little good Malaga having changed hands at the latter price. *Linseed* is steady at 18s. to 18s. 6d. per cwt. *Cotton-seed* has advanced slightly; present price, 17s. to 17s 6d. per cwt. *Spirits of Turpentine* is in moderate demand at 27s. per cwt.

POTASH SALTS.—*Bicarbonate*: 30s. per cwt. *Chlorate*: 3¼d. per lb. *Cream of Tartar* is slow of sale at 75s. per cwt. *Potashes*: 20s. 3d. per cwt. *Pearlashes*: 37s. 6d. per cwt. *Saltpetre*: 21s. 6d. per cwt.

SODA SALTS.—*Bicarbonate*: £7 per ton. *Caustic*: 75 to 77 per cent., £8 12s. 6d. to £8 15s. per ton; 70 per cent., £7 5s.; 60 per cent., £6 5s. *Borax*: £13 per ton. *Nitrate*: 7s. 4½d. to 7s. 7½d. per cwt.

SPERMACETI.—32 cases Chilian refined sold at 1s. 0¾d. per lb.

Publications received.

VERZEICHNISS NEUERER HEILMITTEL MIT KURZEN BEMERKUNGEN ÜBER HERKOMMEN, ZUSAMMENSETZUNG UND WIRKUNG. Zusam, mengestellt von Gehe & Co., Dresden. April, 1898. Pp. 28. From the Publishers.

GARDNER'S HOUSEHOLD MEDICINE AND SICK-ROOM GUIDE. Thirteenth edition. Revised by W. H. C. STAVELEY, F.R.C.S., Evng., with numerous illustrations. P. ii. + 511. Price 8s. 6d. London: Smith, Elder & Co. 1898. From the Publishers.

GESCHÄFTS-BERICHT von Caesar and Loretz in Halle a. S. Nachdruck nur mit Quellenangabe gestattet! Pp. lxviii. September, 1897. From the Publisher.

THE DIAGNOSIS OF DISEASE. By J. PORTER PARKINSON, M.D., M.R.C.P., Lond., F.R.C.S., Eng. Pp. 178. Illustrations 21. Crown 8vo. Price 4s. London: Messrs. Baillière, Tindall & Cox, 20, King William Street, Strand. 1898. From the Publishers.

MARRIAGES.

JACKSON—FROST.—On May 19, at St. Barnabas, Sheffield, by the Rev. A. Wood. J. Gilbert Jackson, Chemist, to Florence, second daughter to the late Francis Frost.

DIARY FOR THE WEEK.

FRIDAY, MAY 27.

ROYAL BOTANIC SOCIETY GARDENS (Museum), at 4 p.m.
"Mimiery in Plants," by Rev. Professor Henslow.

SATURDAY, MAY 28.

REYNOLDS AND BRANSON'S CRICKET CLUB *v.* Leeds Y.M.C.A.

TUESDAY, MAY 31.

ROYAL INSTITUTION, at 3 p.m.
"Literary Criticism in Greece" (Lecture I.), by Prof. S. H. Butcher.

THURSDAY, JUNE 2.

CHEMICAL SOCIETY, at 8 p.m.
"The Action of Ether on Organic Acids and on Carbohydrates in Presence of Hydrogen Bromide," by H. J. H. Fenton and Mildred Gostling.

LINNEAN SOCIETY OF LONDON, at 8 p.m.
"Notes on Some Lories," by Prof. St. Geo. Mivart.
"A Revision of the genus Symblepharis," by E. J. Salmon.
"On the Food of the Uropoda," by Surg.-Capt. H. A. Cummins.

ROYAL INSTITUTION, at 3 p.m.
"Modern Methods and their Achievements in Bacteriology" (Lecture I.), by Edward E. Klein.

FRIDAY, JUNE 3.

ROYAL INSTITUTION, at 9 p.m.
"The Development of the Tomb in Egypt," by Professor W. M. Flinders Petrie.

EXCHANGE.

OFFERED.

Books.

'British Pharmacopœia,' 1885. 'Additions 1890; both new. Turpin's 'Inorganic Chemistry,' 'Medical Directory,' 1896; 'British Medical Journals, March 20 to June 19, 1897. What offers.? Alpha, 194, Greenfield Road, St. Helens, Lancs.

'Lancet,' unbound, last six years; what offers? —Taaffe, Londonderry.

What offers?—'Pharmaceutical Journals,' 1841 to 1846, 1858 to 1859, 1859 to 1863; well bound.—Hoad, 20, Church Square, Rye.

Knight's 'Illustrated Natural History,' thirteen volumes, £1 10s.—Hudson, Chemist, Cranbrook.

Miscellaneous.

Two 7-gallon Pear-shape Show Carboys, cut stoppers, York Glass Co.'s make, cost £3 10s., price £2; 2 modern massive carved and moulded baywood stands, similar to Fig. 5 Maw's catalogue, height 3 ft. 4 in., cost £8 10s., price £5.—J. Botham, Higher Broughton, Manchester.

Magic Lanterns, second-hand; triples and biunials; oxyhydrogen microscope; marvellous pamphengos oil; lantern gives 14-ft. picture; 60,000 slides and effects; 4-in. 4-wick lanterns, 18s. 6d. each, bargains; illustrated list post free, 2d. Animated photographs: A splendid machine for £9 9s.—Hughes, Brewster House, 82, Mortimer Road, Kingsland, N.

Twelve 1-gall. upright store bottles, as 89, 232, Maw's Catalogue, with new gold labels attached, 15s. —Smith, 55, Hatcham Park Road, New Cross.

50 oz. sulphate of quinine, B.P., 11d. per oz., carriage paid.—Wells Wood, Chemist, 8, Albion Parade, Stoke Newington, N.

Electro-plated water-pressure accumulator fountain, 9-in. diameter, equal to new; free by parcel post on receipt of 12s. 6d.—Kneen, Anerley, London, S.E.

WANTED.

Old Platinum Utensils or Scrap, also Old Electric Lamps wanted for prompt cash by P. Rowsell, 14, Walcot Square, London, S.E.

BELFAST LETTER.

[*From our Special Correspondent.*]

British Law has a Poisons Act in force, the object of which is to prevent persons of suicidal or homicidal intent accomplishing their desires. Now it is well known that there is nothing more anomalous on the face of the earth than the British Constitution. This is the reason that the Frenchman, who is logical to a most painful degree, cannot comprehend the Anglo-Saxon. Here is a case in point. John Bull with most patient assiduity has blocked all the exits by which the poison fiend can escape—all—except one—and that by no means a harmless one. Carbolic acid still counts its slain by the tens and twenties. The chemist takes all due precautions in vending cocaine and laudanum, whilst he is scrupulously careful *in re* strychnine, etc. But all these safeguards are so much comedy, for a man can purchase a quart of crude carbolic and destroy a family—like an Irishman in Monaghan lately, who, having got drunk, purchased a bottle full of the stuff. He, with the greatest *bonhomie*, offered it to half a dozen people. There is not a doubt they would all have been poisoned but for the avidity of one man who died in five minutes. What little was left has prostrated another person, who consumed it in spite of the warning cries of deceased that "the devil was in the bottle."

The Danger has again been illustrated of allowing novices to dispense poisons as if they were sweetmeats. A total stranger came into a druggist's in Belfast and purchased some cyanide of potassium to "clean jewellery." Altogether it was a gross piece of laxity and illegality. The man, when shortly after seen, was under the influence of liquor, and must in any case have been half insane. The mistiness of the magisterial inquiry was due to the absence of H.M. coroner, who would have created the necessary interest in the case to warn others of the law *in re* the sale of poisons.

It is Calculated that the population of Belfast is increasing at the rate of 10,000 per annum. There is a constant rustic immigration going on, and as a consequence pharmacies are springing up rapidly. Nor is the advent of medical men behind, newly-fledged practitioners from Dublin are dotting the thoroughfares with brightly-burnished plates.

At the Beginning of 1897, the long-opposed Notification of Diseases Act was introduced into Belfast. A few months ago the notifications of typhoid fever were "fast and furious"; an investigation was made, and one city councillor declared that "eight cases of asiatic cholera were notified which were only diarrhœa"; another declared that a mishap from a bicycle accident was notified as enteric. A medical man informed me that nearly all the supposed cases of typhoid were influenza. I see that medical men are taking trouble to have a more independent position assured them under the new Local Government Bill. This is not to be wondered at. Any ignorant guardian can badger a doctor to any extent at present although he is a Government servant.

This is an Age when the maxim "Make money, by fair means if you can, but make it" is pretty generally acted upon. A publishing firm in the south of England has been annoying various chemists in the north of Ireland with offers of printing their almanacs. In one case the parcel came on (carriage unpaid); the almanacs contained nothing in accordance with the terms of agreement, and were returned. The publishers threatened legal proceedings, but ultimately thought better of it. It is rather a pity that these shrewd fellows should "even their wit" to small provincial pharmacists. It is, nevertheless, galling that they should not be able to realise even the amount of the carriage.

The Annual Meeting of the Belfast and District Branch of the Royal Medical Benevolent Fund Society of Ireland recently recalls the loss of one subscriber who had the interests of the Charity at heart—Mr. William Pratt, M.P.S.I. His death, which was sudden, took place last September. He was principal and proprietor of the long-established firm of Davidson and Leslie, Castle Place. He was President of the Ulster Pharmaceutical Association. His geniality and kindness were only known to those who came into personal touch with him. Being a native of East Scotland, he possessed in an eminent degree those firm business qualities which build up success. Some of his former employés have launched out in the same line, Mr. W. W. Cleland, of Duncairn Gardens, Mr. Stewart, Ormeau Road, and Mr. Murray, of Mountpottinger, are all flourishing pharmacists. Mr. Scott, who was an assistant in Davidson and Leslie's, it will be remembered went out some months ago to South Africa, and not finding circumstances there favourable to pharmacists, returned home, and is now in partnership as a house and land agent. *Sic transit gloria Pharmacopœae.*

Under the Auspices of the Chemico-Agricultural Society, Mr. S. F. W. Hodges, F.I.S., read a paper on the "Cultivation of Sugar Beet in Ireland," Friday, May 20. In so far as it interested chemists, it should be known that so far back as 1850 this question was under the consideration of the Society. Experiments were then made and analyses conducted of a large number of samples of home-grown beetroot. The beet can be made to yield 12 to 16 per cent. of sugar, in some instances 20 to 22 per cent. On the Continent farmers use 300 pounds of nitrate of soda and 400 pounds of superphosphate as manure per acre.

I do not Suppose there is anyone objects to fair and above-board advertising. It is a necessary adjunct nowadays of doing business, and largely replacing the commercial traveller. But there is a class of advertising of chemicals at present which strikes me as very un-English. We have reached a stage of "blatancy" very foreign indeed to the sound business principles which one usually associates with the commercial traditions of Britain. That it has the assistance of religious papers such as the *British Weekly* and *Methodist Times* is only a proof of the enormous financial power of the advertiser. Professional journals as they circulate among an educated constituency do not lend themselves to this victimising of the credulous and illiterate. The advertising of Pears, Cadbury, Burroughs, Wellcome and Co., and such is legitimate and praiseworthy, but columns of gush, "interviews," and miraculous cures which put even the old parody on the quack who declared that "a man blown to atoms in a boiler explosion was gathered together and cured by half a bottle" into the shade, are insufferable. There is an Irish advertiser, who, moreover, is a preacher, who pretends to cure "epilepsy." I understood the cure consists of that well-known drug bromide of potassium, administered in large doses. As our asylums and workhouses are filled with these unfortunates, charity might suggest the curing of them. One such gentleman died lately who had an infallible remedy for what even did not yield to Koch, and was referred to in the following terms by a local religious paper: "Built up a fortune by the sale of useful and popular medical remedies—chief promoter of a scheme for the building of a handsome chapel." His "sovran" cure could have been supplied by any pharmacist for a tenth of the price charged for it. Only lately a drug advertiser so far transgressed the canons of good taste as to include among a collection of hymns a parody on a sublime natal anthem adulatory of his own pills, and then generously forwarded a number of the books to a church. Somewhat in the same spirit another has issued cards, each containing a good lithographic drawing of an apostle, and on the reverse side a solicitation to use ——'s pills. Now that the polychrome Bible is out the day is not far distant when the Scriptures will be interpolated with texts which will tell of the drugs of the blatant advertiser. Now it is to the interest of the public and the pharmacist that advertising regarding drugs, etc., should be restricted to a legitimate area. The blight of American methods should be "sprayed" into harmlessness by the action of the Legislature. Fraudulent testimonials and absurd stories of curative treatment are not only affecting the province of pharmacy, but the province of morals as well.

A Few Weeks Ago a patient died in a Dublin hospital whilst undergoing an operation. "Her death," the doctor said, "was due to syncope, owing to some unascertained peculiarity in the action of the drug on her system." As Mrs. R. M. King, in the *Nineteenth Century*, declared, on the testimony of the Hyderabad Commission, that the deaths are directly due to that administration, it would seem that a serious difference of opinion exists on the question. Dr. Dudley Buxton, President of the Society of Anæsthetists, does not deny that many persons are suffocated needlessly by chloroform. He holds that doctors do not know how to administer chloroform, and that the anæsthetist is an expert. Professor Ramsay says that doctors frequently administer anæsthetics in an impure state. Both chloroform and ether can be easily purified. "A little slaked lime in the chloroform bottle and a little metallic mercury in the ether bottle are all that is required."

Dr. Conan Doyle, when asked by monthly magazine what was the most beneficent thing which had come to pass during the past sixty years, replied laconically, "Chloroform." It is, however, whilst a great assuager, evidently not without drawbacks.

WHEN THE ORDINARY LAY PERSON undertakes to write out his own prescription the difficultics of the pharmacist are not lessened, accustomed as hc is to the fearful caligraphy which passes for penmanship with some medical practitioners. The necessity for imagination is never more pressing. An aged person, who brought a prescription for some suppositories, after a few weeks sent a written mcssage indited thus: "Please send me another box of the jujubes I got on the 16th," etc. It was only after some thought that the chemist managed to grasp the situation.

A FRIEND OF MINE had a somewhat exciting experience last week, which should put chemists on their guard against being too precipitate in tasting promiscuous substances. An old gentleman submitted to his inspection a lump of some chemical, asking him what it was. The pharmacist put it in his mouth, and after a prolonged tasting, said he could not tell, but if he would leave it he would test it. The old man refused, and inquired "if it wasn't poison." This was startling. It turned out to be corrosive sublimate! My friend took an antidote and made a note of the occurrence. He conjectures that the old man has a fortune, and somebody has been acting Jonas Chuzzlewit.

AN AMERICAN went into a Belfast chemist's lately, and after receiving various medicines, asked for a "pair of crutches." "What?" asked the licentiate doubting if he had heard aright." "Crutches! Crutches! they're for a friend." We don't sell them," said the chemist. "Why," exclaimed the Yankee, "this is a most backward country, in the States you can get everything in one store." "Sorry," replied the chemist, "they may supply crutches with medicine in your country, we act differently here."

THE LONG HOURS which the chemist has to endure might be excused if they were unavoidable, but it is not so. The draper's assistant has found his lot ameliorated by large premises voluntarily closing at four o'clock on Saturday, but the pharmacist is still toiling seven hours after that. There is a widespread consensus of opinion that Sunday opening only turns a medical hall into a confectionery shop. One would be surprised in such a Sabbath-keeping city as Belfast at the scores that rush from church into the chemist's for the purchase of articles (postage stamps being in great demand) which by no stretch of imagination could be termed medicines. It is to be hoped that Sir Chas. Dilke will persevere in his endeavours to make shorter hours compulsory.

NEW REMEDIES.

GUAIAQUININE.—This compound, $C_6H_4 \cdot O_2CH_3 \cdot HSO_3 \cdot C_{20}H_{24}N_2O_2$, is obtained by the action of molecular proportions of guaiacolsulphonic acid on quinine. It forms a yellow powder with an acid bitter taste, readily soluble in alcohol, water, and dilute acid. It is odourless and non-caustic.—*Pharm. Centrall.*, xxxviii., 501.

GASTROMYXIN.—According to the *Pharm. Post* this is a newly introduced digestive prepared from the gastric juice of oxen. It is prepared as a brownish-yellow powder with a faint aromatic odour.

MAGNESIUM SULPHATE IN TROPICAL DYSENTERY.—Wyatt Smith states that large doses of magnesium sulphate in an acid mixture with sulphuric acid are promptly effective in curing tropical dysentery, far more so than either ipecacuanha or opium.—*B. M. J.*, Jan. 29, 1898.

EUCHINACEA ANGUSTIFOLIA IN SCARLET FEVER.—This drug has been tried by the American Institute of Homœopathy, and good results have been obtained in acute scarlet fever, combined with diphtheria. It was also successfully employed in the treatment of septic inflammation of the glands; 10 to 30 drops of the tincture were given in water at intervals of an hour, or else a mixture of 1 part tincture and 10 parts water or syrup.—*Pharm. Zeit. f. Russl.*, xxxvi., 627.

EXTRACTS FROM CONSULAR REPORTS.

A GERMAN SYNDICATE some years ago commenced to search for sulphur near Sassoferrato in the province of Ancona (Italy), and, according to the report of Vice-Consul Tomassini, after encountering great difficulties their efforts have now completely succeeded.

THE AMOUNT OF SENNA sent forward from Suakin during 1897 increased by about 115 tons at prices varying from 7*s.* up to 16*s.* 6*d.* per cwt., making an increase of £1200 in the returns.

THE PRINCIPAL CHEMICAL PRODUCTS exported from Bordeaux to the United Kingdom during 1897 were chestnut and other vegetable tannin extracts, amounting to 59,511 cwts., glycerin 2076 cwts., cream of tartar 38,048 cwts., raw tartar 12,626 cwts., and oxide of zinc 1836 cwts.

IT IS SATISFACTORY TO NOTE that although there was a great decrease last year in the total importation of chemical products into Bordeaux and district (817,245 cwt. as against 966,368 cwts. in 1896), there was a very substantial increase in those from the United Kingdom, the total British imports being 510,877 cwts. in 1896, and 570,321 cwts. in 1897. The principal items were: sulphate of copper, 263,455 cwts.; superphosphate of lime, 39,980 cwts.; chemical manures, 52,990 cwts.; and coal-tar products, 195,779 cwts. It is also interesting to note that all the ink (57 cwts.) and all the blacking (73 cwts.) were imported from the United Kingdom.

A MIXTURE OF NAPHTHALIN AND SULPHUR has been successfully tried in the French vineyards as a remedy for "cochylis," but Consul Hearn is of opinion that the best cure for "cochylis" and other insect pests is to put a stop to the wholesale destruction during the "chasse" of small birds which live almost exclusively on insects, and instead of destroying, to preserve and encourage the multiplication of the feathered tribe.

GINGER ALE imported into Chicago, according to a recent report, comes almost exclusively from the United Kingdom. The total importation for the United States in 1897 amounted to a value of £41,428, of which Chicago Customs received £893.

THE CULTIVATION OF FLOWERS for cutting and forwarding to all parts of Europe and for perfumery purposes is the principal agricultural industry in the consular district around Cannes. About 400 tons of cut flowers, it is estimated, are sent away during the winter months, while the quantities employed in the manufacture of perfumery are given in tons, as follows:—Parma violets, 100; mignonette, 15; orange flowers, 1500; roses, 1500; jasmine, 250; tuberose, 50; jonquils, 20; cassia, 30; geranium, 500; peppermint, 1000. In addition to these considerable quantities of mountain lavender, rosemary, thyme, and absinthe are used. It is calculated that the turn-over of the perfumery and distillation works may be put down as about £800,000 per year.

AFTER GREAT BRITAIN, France is reported to occupy the next place in the import trade of Syra, supplying amongst other goods, colours, soaps, perfumery, drugs and medicines. The gross value of the French imports in 1897 amounted to £59,320.

OF THE SULPHATE OF COPPER imported into Uruguay during 1897, Great Britain supplied £4000 worth, out of a total of £7000, but is reported to have lost ground in this article compared with former years. Germany is said to have advanced considerably, having sent £1700 against £400 worth in 1896. The United States increased her trade from £300 to £1200. In starch and blue, Germany leads the way, but in varnish Great Britain takes £2000, out of a total of £4000, the United States' share for the latter article being £800. Great Britain heads the list with paints, supplying £10,000 worth, out of £16,000, while she sends the whole supply of soda. France comes first in the supply of drugs with £40,500 worth, Germany, £8000; Great Britain, £7500; Italy, £6000, and the United States, £5000. The total value of drugs imported into Uruguay was £70,000. France is ahead in perfumery with a contribution of £10,000; Great Britain following with £4000.

MEDICAL, SURGICAL, AND HYGIENIC EXHIBITION.

During the past week an exhibition has been held at Queen's Hall, Langham Place, to which medical practitioners have been invited. Nearly one hundred firms had stands, most of whom are well known to our readers. Foods, beverages, disinfectants, surgical instruments and appliances, pharmaceutical preparations, and medical publications formed the attractions which induced a large number of doctors, nurses, and chemists to assemble each afternoon and evening. Amongst those firms exhibiting were the following:—Camwal, who occupied the vestibule, Idris & Co., Ingram & Royle, each of whom had their usual display of aërated and medicinal waters; Maw, Son & Thompson, whose display of surgical instruments when enumerated occupied about four pages in the catalogue; Southall Brothers & Barclay showed surgical dressings, sanitary towels, collections of materia medica, herbaria, microscopes, and table waters; the Berkefeld Filter Co. were in evidence with their household, service pressure, travelling, and large supply filters for chemists and aërated water manufacturers.

The only stand exclusively devoted to the display of soap was that of the Ovaline Soap Co. Mr. B. Kühn showed chinosol in its various forms—papain, ethyl chloride (Bengué), etc., etc. Cooper & Co., of South Kensington, had a very attractive display of pharmaceutical preparations, including "cachoids," emulsions, pastilles, suppositories, and mineral waters. J. F. Macfarlan & Co. exhibited their Listerian surgical dressings, anæsthetics, and Holyrood table waters. Parke, Davis & Co. were, as usual at these exhibitions, strongly in evidence with their chemists' specialties and physicians' requisites, so varied that we have only space to allude to them. The Liebig's Extract of Meat Co., Vimbos, and the Valentine Extract Co., each had stands displaying their meat extracts. Henri Nestlé exhibited Nestlé's food, condensed Swiss milk, and the "Viking" brand of condensed milk (without sugar). Cadbury Brothers showed their cocoa. Holloway's Wine Co. displayed coca wine, meat and malt wine, coca lozenges, and coca clixir. Newton Chambers & Co. exhibited "Izal" in its various forms. Fairchild Brothers & Foster (whose London agents are Messrs. Burroughs, Wellcome & Co.) had a large display of the Fairchild digestive products. Mr. Frank A. Rogers exhibited medical sprays, inhalers, and hypodermules, small sealed glass flasks for hypodermic medication, containing accurately measured doses of sterilised solution. The Sanitas Co.'s stand comprised the Sanitas disinfecting fluid, oils, inhalers, soaps, Kingzett's fumigating candles and sulphugators, sheep dips, etc., etc.

The exhibition was held under the direction of the Medical, Surgical, and Hygienic Exhibitors' Association, whose President is Mr. Fred. Weiss, of 287, Oxford Street, W., and the Hon. Sec. Mr. F. Blau, 29, New Bridge Street, E.C.

NEWS IN BRIEF

Mr. N. H. Martin, pharmaceutical chemist, has been appointed by the Lord Chancellor to serve on the Commission of the Peace for Newcastle-on-Tyne.

Chemists' Assistants' Association, 73, Newman Street, W. — The following officers have been elected for the season 1898-9. President: F. W. Gamble; Vice-Presidents: Geo. E. Pearson, F. Cooper; Hon. Vice-President: T. Morley Taylor; Hon. Treasurer: C. J. Strother; Hon. Secretaries: Literary—Harold Matthews; Financial—C. E. Pickering.

The Sale of Poisons.—Mr. John Troutbeck, Coroner, held an inquiry at Westminster, on Friday, May 20, respecting the death of Ellen Walker, aged 26 years, a domestic servant, who was found poisoned at St. Stephen's Club, where she was engaged. The evidence showed that the young woman had complained of feeling as if she was going silly, but never threatened suicide. On the 21st ult. she was found lying in bed dying, and by her side were two tins, which had contained "rat poison" and "vermin killer." Dr. Frederick Womack, analyst to St. Bartholomew's Hospital, now stated that he had concluded his analysis, and found that death was due to arsenic poisoning. In the rat poison he found arsenic to the extent of 11 per cent., and the tin was labelled "Poison." It could hardly be taken in mistake, owing to the nauseous taste. In the two tins there was enough poison to kill sixty persons. The Coroner spoke very strongly about such a poison being allowed to be about the place, and informed Mr. Taylor, who supplied the tins, that he appeared to be carrying on a system of trade which an Act of Parliament had purposely been passed to prevent, and he considered that every tin should be labelled in large letters, "Arsenic—Poison." No poison book was kept as required by the Act, yet the tins were handled by the employés of the club. Mr. Taylor denied that he conducted a retail business, and said he had a contract with the club. The Coroner remarked that he took a very serious view of this matter. Arsenic was a most deadly poison, yet here it was being sold contrary to the Act. The matter would certainly require the fullest investigation. Further evidence having been given, the Jury returned an open verdict, and suggested that the sale of such poisons should be prohibited.

"Like a Highly Respectable Country Chemist up in London for a few days' holiday," is the *Sunday Chronicle's* description of the Earl of Kimberley. At first glance this appears rather complimentary than otherwise to the country chemist, but due regard must be paid to the following description of his lordship's dress when strolling over Westminster Bridge:—"An old suit of shiny broadcloth, of a cut which was fashionable in the days of the crinoline and the antimacassar." Moreover, he walked along "swinging a clumsy old umbrella, and smiling to himself under the shade of a ten-year-old silk hat." The finishing touch to the resemblance between the Earl and the chemist is that both possess "a smug, quaint, old-fashioned cast of face."

Accidental Poisoning Cases. — Tom Bradley (53), labourer, of Penistone, was slightly addicted to drink, and after consuming a considerable quantity of whisky during the week, finished up on Saturday, May 21, with a "pull" at a bottle containing ammonia. At a subsequent inquest, a verdict of "Death by misadventure" was returned. — Medicine and a bottle of liniment were served out from a dispensary in Salford to Elizabeth Green (50), of Peel's buildings, Salford. On May 2, she made a mistake and drank some of the liniment instead of the medicine. She was taken to the Royal Hospital, where death occurred on May 19, caused by belladonna poisoning. — William Slater (63), farm labourer, of New Quarrington, had a partiality for laudanum, so much so that it was alleged he had been known to take as much as 12 ounces in a week. Since September last he had not been able to procure as much laudanum as formerly, but on Wednesday, May 18, he succumbed to the effects of an overdose taken on the preceding Monday, after purchasing an ounce of laudanum from a local chemist. "Misadventure" was the jury's verdict at the inquest.—A three-year-old child, named Thomas Crockall, who lived with its parents at Melincrythan, discovered a bottle of spirits of salts in a pantry, drank of its contents and died. "Death from poisoning," was the jury's comment.

Mr. George Johnson, one of the oldest chemists in the Midlands, is about to retire, having sold his business at Sutton Coldfield to Mr. T. Cattell, of Aston Road, Birmingham.

Exeter Union Dispensership.—At the weekly meeting of the Exeter Corporation of the Poor, on Tuesday afternoon last, the Finance Committee, in its report, stated that, after having considered the question of the remuneration to be offered for a dispenser of medicines for the outdoor poor in the place of Mr. Bulley, deceased, it recommended that a dispenser be advertised for at £50 per annum. On the proposition of Mr. W. Jarman (Chairman), the report was adopted.

The students of the Glasgow School of Pharmacy, under the guidance of Mr. Lothian, Principal, made a botanical excursion to the Waterworks at Milngavie last Saturday. The party was conducted over the grounds by Mr. Shand, Master of Works, who explained the construction of the reservoirs and aqueducts and the various mechanical contrivances for the regulation of the inlet from Loch Katrine and distribution into the conduit mains to Glasgow. The reservoirs at Milngavie are 45 feet below the level of Loch Katrine and 280 feet above the level of Glasgow. Mr. Shand mentioned that in the excavations of the new reservoir an interesting geological formation had been observed, the sandstone which was excavated down to the shale bed being in several

places fissured, and these fissures were completely filled, as well as the surface covered with igneous rock, clearly pointing to volcanic eruption. The surface rock is abraded as the result of glacier action. The new reservoir has an area of 90 acres, and its average depth is 50 feet. The total capacity of the two reservoirs is about 1,200,000,000 gallons, and the average daily consumption of Glasgow 50,000,000 gallons. The Lock Katrine water is not filtered through chalk or animal charcoal as stated in some text-books, nor is it in fact subjected to any treatment save one of simple aëration. There is no vegetative growth in the reservoirs, but a persistent growth of spirogyra on the sluice steps requires to be periodically removed. By an ingenious electrical contrivance in Mr. Shand's house the occurrence of a leakage in any of the six conduit pipes to Glasgow is immediately signalled by the ringing of an alarm bell. The influence of the prevailing winds on the habit of the young pine and spruce trees with which the policies are thickly studded was clearly shown. The vitality of a maple tree, half of whose roots had been completely severed in the construction of a new aqueduct, has apparently not suffered in the least. Among other plants obtained were:—*Digitalis purpurea*, *Marchantia polymorpha*, *Equisetum arvensis*, *Cardamine pratensis*, *Alchemilla vulgaris*, *Sanicula europæa*, *Prunus padus*, *Spirogyra vaucheria*, *Protococcus*, etc., etc.

MR. CROSS'S AMENDMENT ON THE PHARMACY ACT.—The monthly meeting of the Highland and Agricultural Society of Scotland was held on Wednesday, Sir John Gilmour, of Montrose, presiding. Mr. J. Macdonald, the Secretary, reported that in accordance with instructions from the Finance and Law Committee he had sent a copy of the Pharmacy Acts Amendment Bill and the notice of amendment which Mr. Cross, M.P., had given notice of to Messrs. Tods, Murray, and Jameson, their law agents, with the view of ascertaining, as was indicated at last meeting, whether the sale of sheep dips, insecticides, etc., was restricted to chemists. He read the following reply, which he had received:—

May 26, 1894.

Dear Sir,—We have perused the Amendment Bill of this session, along with Mr. Cross's two letters and the notice of his amendment on the Pharmacy Act, 1868, all of which we return. It has been decided in England (Pharmaceutical Society *v.* Piper and Co., 1893, 1 Q. B., 686) that a compound containing any of the poisons scheduled by the Act of 1868 in any appreciable quantity falls within the scope of the Act. In a subsequent case it was decided that a compound containing only an infinitesimal quantity of any of these poisons does not fall within the operation of the Act. We are therefore of opinion that sheep dips, insecticides, or any other compounds which contain any appreciable quantity of one or more of the poisons above referred to can only be legally sold by chemists who are members of the Pharmaceutical Society, and that they are subject to the restrictions imposed by the Pharmacy Act of 1868 on the sale of poisons.

The Directors affirmed their former decision to support Mr. Cross's amendment to the Bill.

PROPOSED SCHOOL OF PHARMACY IN ABERDEEN.—At a recent meeting of the Education Committee of the governors of Robert Gordon's College the convener, Mr. John Morgan, reported that he had, along with the convener of the Finance Committee Baillie Kemp) and the headmaster (Dr. Ogilvie) met with a committee of the Aberdeen Pharmaceutical Association for the purpose of considering the proposal submitted to last meeting that a School of Pharmacy be established in connection with the College. An estimate had been furnished by the architect of the probable cost of the structural alterations required to afford the necessary accommodation for, and the fitting up of, a pharmaceutical laboratory and balance room, etc., which estimate amounted to £65. The representatives of the Pharmaceutical Association had indicated that they were prepared to recommend to the Association that that body should contribute one-half of this initial expenditure, besides guaranteeing the salary of a competent teacher up to £120 per annum, provided that the salary shall be considered as a first charge against the income derived from students' fees. The Association would further hand over to the college the apparatus, etc., both chemical and pharmaceutical, belonging to them. The revenue of the school from fees would, according to an estimate furnished by the Association, amount to £180 a year or thereby, assuming which figure to be correct, a satisfactory balance would result to the College after allowing for ordinary working expenses. The committee, after fully considering the matter in all its details, resolved to recommend to the governors that the proposal for the institution of the School of Pharmacy should be adopted upon the footing of the Pharmaceutical Association granting an undertaking on the lines above narrated.

PLYMOUTH, DEVONPORT, STONEHOUSE AND DISTRICT CHEMISTS' ASSOCIATION.—A special general meeting was held on Tuesday, May 31. The President (Mr. Jas. Cocks) presided. It was unanimously carried that the following resolution be printed and sent to every medical man in the neighbourhood:—

> That this meeting of the Three Towns' Association is of opinion that, in order to secure uniformity in dispensing the new British Pharmacopœia preparations, dispensing under the new Pharmacopœia should come into force on July 1, 1898.

It was also resolved that there should be printed on these circulars a list of the most potent alterations in strengths and formulæ. The annual outing, to be held on Wednesday next, promises to be a great success. The Secretaries (Messrs. A. D. Breeze and C. J. Park) announced that all the tickets had been taken, which ensures an attendance of over 70.

CHEMICAL SOCIETY'S BANQUET.—We are requested to state that the Chemical Society's banquet to the past presidents on June 9, and also Dr. Mond's garden party on June 10, are postponed in consequence of the death of Lord Playfair, the senior past president and the last surviving founder of the Society.

BRITISH PHARMACOPŒIA 1898.—Mr. G. Lunan, pharmaceutical chemist, 20, Queensferry Street, Edinburgh, has published, in very convenient form, notes of the more important additions and alterations in formulæ, strengths and doses of the 'British Pharmacopœia 1898.' This he is sending out to medical men, together with the more comprehensive *P.J.* Synopsis. He is suggesting July 1 as the date which will afford prescribers reasonable time to acquaint themselves with the new standards, and from that date he proposes to use only the preparations of the 1898 B.P., except when otherwise specified.—Mr. F. A. Rogers, pharmaceutical chemist, 327, Oxford Street, London, W., has also compiled an abridged list of the important alterations in the B. P. 1898, which should be very convenient for reference by medical men.

MR. CLARENCE H. JAMES, chemist and druggist, has purchased the business of the late Mr. S. F. Board, chemist, High Street, Cheltenham.

THE LORD MAYOR OF MANCHESTER (Alderman R. Gibson), who is a native of Carlton-on-Trent, and was formerly an apprentice at the shop now occupied by Mr. J. H. Smith, chemist, Bridge Street, Newark, entertained a number of his old friends at the Clinton Arms Hotel, Newark, on Wednesday, May 25, it being the eve of his visit to Sutton-on-Trent to unveil a Jubilee Memorial Lamp.

PARTNERSHIPS DISSOLVED.

(From the London Gazette.)

John A. Whiteley and John L. S. Jones (trading as the Sunfield Soap Co.), Kilshaw Lane, Horley Hill, Lancaster. Debts will be received and paid by J. L. S. Jones, who will continue the business under the old style.

William Jackson and Ambrose Walton (trading as Walton, Jackson & Co.), chemical manufacturers, 40, Blackfriars Street, Manchester. Debts will be received and paid by Ambrose Jackson.

Charles Rout and T. E. A. Pearman, medical practitioners, 28, Hornsey Park Road, and 2, Hillfield Avenue, Hornsey. Debts will be received and paid by T. E. A. Pearman.

John O. Davis and Albert Diaper, chemists and druggists, 3, Mornington Terrace, Wanstead, and at Rookery Chambers, George Lane, Woodford.

George Turley and Albert E. Law (trading as G. Turley & Co.), wholesale druggists, 59, Edgbaston Street, Birmingham. Debts will be received and paid by George Turley.

RECEIVING ORDER IN BANKRUPTCY.

(From the London Gazette.)

Thomas H. Summerhill, surgeon, Bodfer, Wellington Road, Rhyl, Flints.

MARRIAGES.

HARRISON—HUNT.—On May 18, at South Newton Church, near Salisbury, by the Rev. J. Bond, vicar, Fredk. J. Harrison, chemist and druggist, of Salisbury, to Mary Agnes Hunt, of Little Wishford.

NEW IDEAS & TRADE NOTES

Messrs. Ross, Limited, 111, New Bond Street, London, W., send copies of their price list and catalogue for 1898, and a copy of the price list printed in Spanish. The new catalogue, which will be sent to any part of the world on application, contains full particulars and prices of Ross' photographic lenses and shutters; field, studio and process cameras; new hand cameras; photographic apparatus of every kind; science, projection and enlarging lanterns; microscopes and objectives; sporting and naval telescopes; field, marine and opera glasses; barometers, thermometers, spectacles, eye-glasses, etc. The firm is also prepared to supply "Quadrant" cycles, together with a compact photographic outfit, which may be very conveniently carried in a light leather or canvas case attached to the cycle, as well as hand or stand cameras for cyclists.

Messrs. Ayrton & Saunders, 149, Duke Street, Liverpool, have drawn up a list of labels suitable for the complete fitting of an ordinary chemist's shop. Such a list should be extremely useful to any chemist about to open a new pharmacy, and a copy of the list will be sent to any address on application.

Messrs. Harker, Stagg & Morgan, 15, Laurence Pountney Lane, London, E.C., have introduced a concentrated Orchid Essence, an exquisite perfume distilled from the choicest flowers, also a concentrated Essence of May Blossom. These perfumes are put up in 4-oz., 8-oz., and 16-oz. white glass stoppered bottles, and may also be obtained in bulk.

Messrs. Barron, Harveys & Co., London, submit a specimen of "the latest thing in price list cases," a bright red, cloth-covered case, provided with a heavy silk cord to secure copies of the firm's prices current, and its list of soluble "sweet" coated pills. In the prices current an endeavour has been made to provide the information in a crisp and pointed manner, and to render it all-embracing. The new B.P. preparations are included, and the Latin names are given as full as possible.

Messrs. Potter & Clarke, Artillery Lane, E.C., are offering goods that should sell well in their Sensation Cachous and Royal Japanese Cachous, both being capital value. The first-mentioned are exquisitely perfumed, and supplied in neat packets to retail at 1d. each, the trade price being 7s. per gross on ¼-gross cards, or in ½-gross glass-top boxes. They can also be obtained in screw-top bottles to retail at 4d. each, at 2s. 9d. per dozen or 30s. per gross, the customer's name and address being added free on orders for not less than one gross. The Royal Japanese Cachous are put up in beautifully designed envelopes printed in colours, to retail at 2d. each, and they are offered at 14s. per gross. Samples sent free on application.

MARKET REPORT and Prices Current

Specially compiled for the Pharmaceutical Journal

The quotations here given are in all cases the lowest cash prices for bulk quantities, and often the articles quoted have to be sorted in order to suit the requirements of the retail pharmacist. The cost of freightage from the chemical and drug works to the various distributing centres must also be considered. It is important that these conditions should be borne in mind in making any comparison between the prices quoted and those of the wholesale drug trade.

LONDON REPORT.

June 2, 1898.

Business has been exceedingly quiet during the past week, caused no doubt to a certain extent by the Whitsuntide holidays. The changes in price which have taken place have also been quite unimportant. Quinine is somewhat firmer. Acid Citric very firm. Acid Tartaric and Cream of Tartar steady. Opium, Morphia, and Codeia quiet and unchanged. Quicksilver is very firm at importers' price. Mercurials without change. Cod-liver Oil very dull. Cocaine rather firmer, as is also Glycerin. Acetanilide, Cocaine, and Phenacetin unchanged. Balsam Peru dearer. Ipecacuanha is very firm. Acid Carbolic dearer, in consequence, it is stated, of demand for dynamite purposes. Sulphate of Ammonia is again higher. Shellac is firm. Crude Antimony dearer. The following are prices actually ruling for articles of chief interest:—

Acetanilide—Quiet with sellers at 1s. 2d. to 1s. 3d. per lb., according to quantity and make.

Acid Boracic—Is in good demand, but values are unchanged at 23s. per cwt. for *crystals*, and 25s. per cwt. for *powder*.

Acid Carbolic.—One of the makers, whose article is generally preferred, has advanced his price to 7d. per lb. for the 35 to 36° *ice crystal* quality in 2½ cwt. drums and over-casks, quoting proportionately higher for other qualities and packing, stating that the very active demand for making *Acid Picric* for explosive purposes is the cause of the advance, which he states is likely to make further progress. Other makers do not, however, appear so far to have followed the advance to its full extent. *Crude*: 60° F., 2s. 1d.; 75°, 2s. 7d. per gallon. *Liquid*: 95 per cent. of pale colour 1s. 2d. to 1s. 3d. per gallon in 40-gallon casks.

Acid Citric—Is dearer, 1s. 1d. per lb. being now the price for English *crystals* on the spot. The market is firm. Makers refuse to book for forward delivery.

Acid Tartaric—Quiet and without change at 1s. 1d. per lb. for *English* and 1s. 0¾d. per lb. for *Foreign*.

Ammonia Compounds.—*Sulphate* again dearer at £9 7s. 6d. per ton for grey prompt 24 per cent., London; Hull, prompt, £9 5s.; Leith, £9 7s. 6d. *Bromide* unchanged at 2s. 2d. per lb. *Iodide* steady at 14s. 6d. per lb. *Oxalate*: 6d. per lb. *Sulphocyanide*: A fair business passing at 1s. 1d. to 1s 2d. per lb. *Sal ammoniac* steady at 35s. and 33s. per cwt. for firsts and seconds sublimed respectively. *Chloride*: Chemically pure crystals, 32s. per cwt.; commercial, free from metals, 98 per cent., 25s. 6d. per cwt.

Antimony.—Price of crude *Japan* has advanced in sympathy with other metals, and 24s. per cwt. is now asked on the spot, a little being, however, still offered to arrive at 22s. per cwt. *c.i.f.*

Balsam Peru—Is again dearer at 10s. per lb., and the condition of the market points to higher prices.

Bleaching Powder—Steady at £7 5s. per ton on the spot.

Borax—Firm at 14s. per cwt. for lump, and 14s. 6d. per cwt. for powder.

Bromides—Steady at 1s. 10d. for *Potass. Bromide*, and 2s. 2d. per lb. for *Ammon.* and *Soda Bromide*, price for ½-ton lots being 1d. per lb. less.

Buchu Leaves.—Since the sale the 9 bales which were bought in have been sold at 4¼d. per lb., and a good quantity has changed hands privately, the market closing very firm with higher prices asked by second-hand holders. There have been no arrivals.

Camphor.—Crude is slow of sale, although prices are steady at 88s. per cwt. for *Japan*, and 82s. per cwt. for *China*, *c.i.f.*

Coal Tar Distillation Products.—*Toluol*: Commercial, 1s. 4d.; pure, 3s. per gallon. *Benzole*: 50 per cent., 1s. 3d.; 90 per cent., 1s. 2d. *Crude Naphtha*: 30 per cent. at 120° C., 6d. *Solvent Naphtha*: 95 per cent., 160° C., 1s. 8d. per gallon.

Cocaine.—Market remains fairly steady, makers quoting 9s. 6d. to 9s. 9d. per oz. in 25-oz. tins for the *Hydrochlorate*, according to the quantity and brand, while from second hand there are sellers at rather below these figures. The firmness of price of the crude still points to the probability of higher prices for the refined article.

Codeia—Is firm at 11s. 3d. to 11s. 6d. per oz., according to quantity.

Cod-Liver Oil.—Market is extremely quiet, nearest quotation being 80s. per barrel *f.o.b.* for best new non-congealing *Norwegian* oil in tin-lined barrels.

Cream of Tartar.—High strengths are in better demand, but prices do not improve; for quality suitable for the new B.P. requirements, 80s. per cwt. is asked for *crystals* in large bulk, and 83s. per cwt. for *powder*. The lower strengths are very dull and a shade weaker in value.

Cutch—Is firm, but very little is offering. Nominal value of *ACL* 25s. per cwt.

Glycerin.—Market is again rather harder in sympathy with the crude at 52s. 6d. to 60s. per cwt. for best *German* white double-distilled chemically-pure 1260 quality in cases, each 4×56 lb. tins, according to quantity and brand, *English* being offered at slightly below these prices.

Gum Asafœtida.—The sale of the 7 cases good quality at 60s. per cwt., which we reported in our last as being made at last week's auctions, subject to approval, was not confirmed, but the lot has since been sold at a good advance on that price.

Monthly Statement of Drugs, etc., Warehoused in London.—June 1, 1898.

Articles.		May, 1898.		Stocks, May 31.		Articles.		May, 1898.		Stocks, May 31.	
		Arrivals.	Deliveries.	1898.	1897.			Arrivals.	Deliveries.	1898.	1897.
Aloes (all kinds)	packages	36	1,222	4,712	4,490	Gum, Mastic	packages	14	6	26	14
Balsams ,,	,,	98	383	428	508	Myrrh	,,	19	28	457	523
Cinchona Bark	,,	2,288	3,512	20,218	20,785	Olibanum	,,	585	209	2,781	2,398
Quinine Sulphate	ounces	65,456	96,752	1,556,528	1,358,448	Tragacanth	,,	637	719	3,142	3,213
Beeswax	packages	381	610	1,323	1,889	Ipecacuanha	,,	69	90	265	265
Camphor	,,	—	261	9,908	10,870	Jalap	,,	—	61	296	316
Cardamoms	,,	373	403	1,517	1,045	Nux Vomica	,,	25	—	139	568
Cochineal	,,	436	136	2,815	2,106	Oils, Castor	,,	197	169	569	558
Calumba Root	,,	654	259	483	17	Olive	,,	304	321	1,033	992
Cubebs	,,	—	25	1,883	327	Aniseed	,,	—	9	112	103
Dragon's Blood	,,	12	8	30	64	Cassia	,,	—	7	106	63
Galls (all kinds)	,,	1,304	817	4,505	3,621	Rhubarb	,,	—	160	514	184
Gum, Ammoniacum	,,	2	—	34	46	Saltpetre	tons	2,761	3,324	2,888	2,601
Arabic, all kinds	,,	1,093	1,205	9,549	12,120	Sarsaparilla	packages	93	121	328	268
Asafœtida	,,	13	50	507	510	Senna	,,	251	291	634	1,299
Benjamin	,,	112	381	2,622	2,980	Shellac	,,	2,282	5,205	57,229	49,676
Galbanum	,,	—	—	—	1	Terra Japonica, Gambier	tons	633	434	1,652	1,018
Gamboge	,,	—	10	255	231	Cutch	,,	12	126	1,164	1,596
Guaiacum	,,	1	12	58	76	Turmeric	,,	14	31	271	762
Kino	,,	3	1	41	34						

The stocks of camphor, oils of aniseed and cassia are incomplete, some warehouses not making returns.

IODIDES—Unchanged at 9s. 9d. to 10s. 3d. per lb. for *Potass. Iodide*, price of *Iodine* being also unchanged at 7½d. per oz.

IPECACUANHA.—*Rio* quality is very firm at from 9s 1d. to 9s. 3d. per lb., with small sales passing. *Carthagena* is firmer from 5s. to 5s. 3d. per lb. being now the quotation for fair to good root, the cheap lots lately offering seem to be cleared.

JALAP—Is very firm and small sales have been made at 6d. per lb.

JAPAN WAX—On the spot is quiet at 35s. per cwt., whilst for arrival the market is rather firmer.

MERCURIALS—Are without change at 2s. 9d. for *Calomel* and 2s. 5d. for *Corrosive sublimate* in ½-cwt. lots.

MORPHIA—Quiet but steady at 4s. 6d. per oz. for the *Hydrochlorate* salt in powder, makers stating that this price is by no means in accordance with the actual cost of *Opium*, as compared with which price of *Morphia* should be nearer 5s. than 4s. 6d. per oz.

NITRATE OF SODA—Is quoted £7 12s. 6d. to £7 15s. for *commercial*, and £8 per ton for *refined*.

OILS (ESSENTIAL). — *Star Aniseed* continues in good demand at firmer rates, 7s. to 7s. 3d. per lb. being obtainable on the spot, whilst for arrival June to July steamer business has been done at 6s. 6d., per lb., *c.i.f.* terms. *Cassia* firmer; 70 to 75 per cent. on the spot, 4s. 9d. to 4s. 10d. per lb. *Peppermint*: HGH firm at 5s. 7½d. to 5s. 9d. per lb.; Wayne County, 3s. 9d. to 3s. 10d. per lb., *c.i.f.* terms. *Citronelle* quiet at 1s. 2d. per lb. in tins or drums. *Lemongrass* very quiet at 4½d. per oz. *Cajeput* steady at 3s. 9d. to 4s. per bottle. *Eucalyptus* steady at 1s. 6d. to 2s. 6d. per lb., according to quality.

OILS (FIXED) AND SPIRITS. — *Linseed*: Since our last the market has been very weak, but closes decidedly firmer at £16 15s. for spot pipes London, barrels £17 5s. *Rape*: As anticipated in our last, this is lower at £23 for ordinary brown on the spot and £24 10s. for refined. *Cotton*: Quiet and unchanged, London crude spot £14 10s., refined £16 5s. to £16 15s., according to make. *Olive*: Green oils firm at £33 per ton, eating oils steady at 4s. 6d. to 5s. 9d. per gallon as to quality. *Coco-nut* unchanged at £24 10s. for Ceylon on the spot, and £29 for Cochin, same position. *Palm* again dearer, Lagos on the spot being now quoted £24. *Turpentine* quiet and rather lower at 25s. per cwt. for American on the spot. *Petroleum Oil* steady; Russian, 4¾d. per gallon; American, 5¼d. per gallon; water white, 6¼d. per gallon. *Petroleum Spirit*: American, 5⅝d. per gallon; deodorised, 6d. per gallon.

OPIUM.—Market is extremely quiet and without change from the prices lately reported, viz., *soft shipping*, 11s. to 12s.; druggists', 10s. to 10s. 9d.; *Persian*, 10s. to 11s. per lb.; while for good manufacturing 10s. to 10s. 3d. per lb. is asked on the spot. *Smyrna* is rather weaker at about parity of London prices.

PHENACETIN—Is steady at 3s. 9d. to 4s. 3d. per lb., according to quantity and make for both *crystals* and *powder*.

POTASH COMPOUNDS.—*Chlorate*: Rather firmer at 3¼d. to 3½d. per lb. *Bromide*: Steady at 1s. 10d. per lb. *Iodide*: Firm at 9s. 9d. to 10s. 3d. per lb., according to quantity. *Bicarbonate*: Steady at 30s. per cwt., for both Crystal and powder in large bulk. *Cyanide*: Unchanged at 1s. 2d. per lb. for 98-100 per cent. cake. *Permanganate*: Is improving in value, but a certain quantity can still be obtained at 62s. 6d. per cwt. for small, and 67s. 6d. per cwt. for large crystals. *Prussiate*: Steady at 6¼d. to 7¼d. per lb. for *yellow*, and 1s. 2d. per lb. for *red*.

QUICKSILVER—Is a firm market, importers' price remains at £7 12s. 6d. per bottle, no cheaper offers being available from second hands, as is often the case, which points to the prospect of higher prices in the near future.

QUININE—Is slightly firmer, there being few sellers from second hand at 10½d. per oz. for the brands of *Sulphate* less in favour, 11d. being asked for best brands, in 1000 oz. lots, maker's price remaining unchanged at 1s. per oz.

SHELLAC.—The market is firm in all positions. A small but steady business is being done in *Second Orange* at 63s. per cwt., basis fair *TN*. For arrival there are buyers of *TN*, April to June steamer, at 61s. 6d. per cwt., *c.i.f.* Speculation is quiet but prices are firm. There are buyers of *TN*, August delivery at 67s. per cwt.

SODA COMPOUNDS.—*Crystals* firm at 55s. per ton. *Acetate*, chemically pure 35s. per cwt.; refined 13s. 6d. per cwt. *Hyposulphite* in good demand at 5s. 6d. to 8s. per cwt., according to quality and brand. *Bicarbonate* unchanged at £7 10s. per ton for the commercial 98 per cent. article, and 18s. to 19s. per cwt. for the free from mono-carbonate quality. *Bromide* firm at 2s. 2d. per lb. *Iodide* quiet at 11s. 7d. per lb. *Nitrate*: Ordinary £7 12s. 6d. to £7 15s. per ton, refined £7 17s. 6d. to £8 per ton.

SPICES.—*Pepper*: The market for Singapore is very strong, and prices have advanced. Demand is very active, and sales have been made at 4⅛d. per lb. for fair on the spot, June to August steamer 4⅜d., and July to September 4⅞d. per lb., and further buyers threat. *White Pepper* is also dearer and a very strong market for Penang, for which there is a good demand with business up to 6½d. per lb., and August to October steamer at 7d. per lb. Sellers of Singapore are scarce, and business is therefore limited. There are buyers of May to July steamer at 7⅞d. *Cloves*: Zanzibar are firmer with sales June to August delivery at 3 3/16d. per lb.

SULPHATE OF COPPER — Is easier at £15 10s. to £16 10s. per ton, according to brand.

SULPHONAL.—Price is unchanged at 7s. 3d. per lb. for bulk packing.

TURMERIC—Continues very firm at dearer rates with a small business doing in *Bengal* at 16s. 6d. per cwt., and *Madras* finger at 22s. to 24s. per cwt. according to quality.

LIVERPOOL REPORT.

JUNE 1, 1898.

AMMONIA SALTS—Are unchanged except sulphate which is slightly higher and scarce, £9 7s. 6d. per ton.

BEESWAX.—Sales of Peruvian are reported at £7 per cwt.

BLEACHING POWDER—Is still slow of sale at £5 10s. to £6 per ton.

COPPERAS.—Firm at 36s. to 38s. per ton.

COPPER SULPHATE. — Quiet at £16 to £16 2s. 6d. per ton.

GINGER.—1000 bags of Sierra Leone changed hands at 17s. 6d. per cwt.

HONEY.—15 barrels of pile 2 Chilian brought 23s. per cwt.

OILS (FIXED) AND SPIRITS. — *Castor* is steady in tone with a moderate amount of business doing in Calcutta at 3¼d. to 3⅝d. per lb., and French 1st pressure 3¾d. per lb. *Olive*: In Spanish oils there is a moderate business passing at £30 to £32 per tun on the spot. *Linseed* of Liverpool make is still quoted at 18s. to 18s. 6d. per cwt. *Cotton-seed*: Liverpool refined maintains its recent advance, and is offering at 17s. to 17s. 6d. per cwt. *Spirits of Turpentine* is steady at 27s. per cwt.

POTASH SALTS.—*Cream of Tartar* is offering at 70s. per cwt. *Pot.* and *Pearlashes* are quoted at 20s. 9d. and 37s. 6d. per cwt. respectively, but demand for the latter is very slack. Others unchanged.

SEEDS.—*Canaryseed* is dull at 27s. to 28s. per 464 lbs. for Turkish. *Linseed*: 25 tons of very good River Plate recently sold at 35s. per 416 lbs. ex quay.

NEWCASTLE CHEMICAL REPORT.

JUNE 1, 1898.

Steadiness prevails, if not much extra business is being pushed forward for heavy chemicals. Alkali of the ammonia class is in strong request Prices are firm and makers busy. Prices are:—Bleaching Powder: £6 5s. to £6 10s., Soda Crystals: basis, 45s. to 52s. 6d. Caustic Soda: 70 per cent., basis, £7 5s. to £7 10s. Soda Ash: 52 per cent., £4 5s. Alkali: 52 per cent., £5 5s. Sulphur: £4 15s. to £5 per ton.

MANCHESTER CHEMICAL REPORT.

JUNE 1, 1898.

This great northern centre is for the present week given up to holiday-making, and most of the works and shipping houses close to-night for the remainder of the week. The market closes fairly steady, but there appears to be no prospect of increased values. Indeed, with the large production of Caustic Soda by the new process that article is easy, and may be quoted £8 5s. to £8 10s. for 77 to 78 per cent. Ammonia Alkali, however, is firm at £4 5s. to £4 10s., bags on rails. Glycerin is lower for local makes, and ranges from £51 to £52, according to package, and £47 to £48 naked, large drums. Saltcake has advanced to 25s. per ton, in bulk, on rails. Sulphate of Copper is again somewhat lower, but Green Copperas is steady at late rates. In view of a proposed combine of Acetic Acid makers the article is firmer. Coal Tar Products are improving, especially Benzole, which are quoted 1s. 1d. for 90's., and 1s. 2d. for 50's. Pitch is 16s. 9d. to 17s. *f.a.s.* Manchester Ship Canal. In Sulphate of Ammonia £9 10s. has been reported for October to March delivery. Prussiate of Potash slightly easier at 6¾d. to 7d.

Publications received.

RESPIRATORY EXERCISES IN THE TREATMENT OF DISEASE. By HARRY CAMPBELL M.D., B.S. Lond. Pp. viii. + 200. Demo 8vo. Price 7s. 6d. London: Messrs. Baillière, Tindall & Cox, 20, King William Street, Strand. 1898. From the Publishers.

UEBER SÜDWESTAFRIKANISCHES GUMMI (Kolonialgummisorten aus Angra-Pequena-Hinterland). By Dr. KARL DIETERICH. Sonderabdruck aus dén *Berichten der Deutschen Pharmaceutischen Gesellschaft.* Berlin: Verlag von Gebruder Borntraeger. From the Author.

REVUE DES MÉDICAMENTS NOUVEAUX ET DE QUELQUES MÉDICATIONS NOUVELLES. Par C. CRINON. 5th Edition. Revue et Augmentée. Pp. 404. Price, 4 francs: Paris: Rueff et Cie, Éditeurs, 106, Boulevard Saint-German, 106. 1898. From the Publishers.

E. MERCK, Darmstadt. ANNUAL REPORT ON THE YEAR 1897. Pp. 175. London: 16, Jewry St., E.C. March, 1898. From the publishers.

DIE HEILPFLANZEN DER VERSCHIEDENEN VÖLKER UND ZEITEN. IHRE ANWENDUNG WESENTLICHEN BESTANDTHEILE UND GESCHICHTE. Ein Handbuch für Arzte, apotheker, botaniker, und droguisten, von Dr. med et. phil. GEORG DRAGENDORFF. Lieferung 2, 3, 4. Stuttgart: Verlag von Ferdinand Enke. 1898.

SEMI-ANNUAL REPORT OF SCHIMMEL & Co. (Fritzsche Brothers). Pp. 59. April, 1898. From the Publishers.

INVESTIGATIONS ON THE NATIVE VEGETATION OF ALKALI ISLANDS. By JOSEPH BURTT DAVY. CHEMICAL WORK. By R. H. LOUGHRIDGE. Pp. 24. Being a reprint from the report of the University of California Agricultural Experiment Station for the years 1895-7. Berkeley: University Press. 1898. From the Author.

VIERTELJAHRESSCHRIFT ÜBER DIE FORTSCHRITTE AUF DEM GEBIETE DER CHEMIE DER NAHRUNGS-UND GENUSSMITTEL, DER GEBRAUCHSGEGENSTÄNDE SOWIE DER HIERHER GEHÖRENDEN INDUSTRIEZWEIGE. Zwölfter Jahrgang. Das Jahr, 1897. Berlin: Verlag von Julius Springer. 1898.

BEITRAG ZUR KENNTNISS DER FLECHTEN UND IHRE CHARAKTERISTISCHEN BESTANDTHEILE von. O. HESSE. Pp. 87. Separatabdruck aus dem 'Journal für Praktische Chemie.' Neue Folge. Band 57, 1898. Leipzig: Johann Ambrosius Barth. From the Author.

L'ORGANO-TERAPIA NELLE NEFRITI DELLA INFANZIA. Per il Prof. LUIGI CONCETTI. Pp. 18. Roma: Tipografia Fratelli Centenari, *vid* degli Avignonesi, 32. 1898. From the Author.

OESTERREICHISCHE CHEMIKER-ZEITUNG UND ZEITSCHRIFT FÜR NAHRUNGSMITTEL-UNTERSUCHUNG, HYGIENE UND WARENKUNDE. Officielles Organ des "Vereines Oesterreichischer Chemiker in Wien." Jahrgang I., Nummer I. May 1, 1898. From the Publishers.

EXCHANGE.

OFFERED.

Miscellaneous.

Magic Lanterns, second-hand; triples and biunials; oxyhydrogen microscope; marvellous pamphengos oil; lantern gives 14-ft. picture; 60,000 slides and effects; 4-in. 4-wick lanterns, 18s. 6d. each, bargains; illustrated list post free, 2d. Animated photographs: A splendid machine for £9 9s.—Hughes, Brewster House, 82, Mortimer Road, Kingsland, N.

Whole-plate and stereo camera, square brass-bound, 3 double slides, splendid ½-plate, Iris aplanat lens, 3-fold tripod; new; approval; £6 10s.—D.M., 346, York Road, Wandsworth, London.

Eastman's No. 4 Kodak, leather case and sling; perfect condition. Price £5.—A. Bellamy, Louth, Lincs.

Oleometer (J. L. & Co.) and Hardness of Water Test-Apparatus; good condition; what offers or exchange?—Perkins, Chemist, Devonport.

50 oz. sulphate of quinine, B.P., 11d. per oz., carriage paid.—Wells Wood, Chemist, 8, Albion Parade, Stoke Newington, N.

Soda-water Trolley.—A boy of eight can easily convey 3 dozen syphons and cases any distance; 35s., carriage paid.—Arthur & Co., Cambridge.

6-ft. wall-case; glass doors; 16 ft. run drawers, with lockers underneath and shelving above; offers wanted.—Schofield, Chemist, Brighouse.

2-cwt. thick dark glue, 24s. per cwt.; Field's cattle-oils, 18 2s., 4 5s., for 15s.; Dobson's black-leg drinks, 12 3s., 6 5s. 6d., for 10s.; Jeyes' indispensable toilet-boxes, a few 3s. 6d. walnut, 1s. 3d. each, cardboard ditto 6d. each.—Spyvee, Chemist, Sleaford.

25s., or offer; 2 yards Christia lint; 3 lbs. fol. coca 2000 Morstadt cachets, different sizes; unused filling apparatus C; offers for part.—Sydney, 15, Oxford Road, Wallington.

Books.

Latest Editions.—Squire, 6s. 6d.; Martindale, 4s. 6d.; Gerrard, 4s. 6d.; Bentley's Manual, 5s. 6d.; Pereira, 2s. 9d.; Wills' Pharmacy, 3s.; Advanced Materia, 4s.; Volumetric, 1s. 9d. All excellent condition. Carriage free.—Gower, Publisher, Waterloo, Liverpool.

'Chemist and Druggist,' vols. 32, 34, 44, 45, bound separately in cloth; offers in cash or saleable patents.—Birkbeck, Chemist, Bailgate, Lincoln.

WANTED.

Old Platinum Utensils or Scrap, also Old Electric Lamps wanted for prompt cash by P. Rowsell, 14, Walcot Square, London, S.E.

Offers wanted for 5 5s. 6d., 21 3s., 13 1s. 6d. Dobson's Black-leg Drinks, in good condition; no reasonable offer refused.—Richardson & Co., Chemists, Hexham.

DIARY FOR THE WEEK.

SATURDAY, JUNE 4.

BURROUGHS, WELLCOME & Co.'s EXCURSION to Dover.

REYNOLDS AND BRANSON'S CRICKET CLUB *v.* 'Yorkshire Post.'

MONDAY, JUNE 6.

SOCIETY OF CHEMICAL INDUSTRY, at 8 p.m.
"The Conditions Existing in Acetylene Generators," by Prof. V. B. Lewes.

TUESDAY, JUNE 7.

ROYAL INSTITUTION, at 3 p.m.
"Literary Criticism in Greece" (Lecture II.), by Prof. S. H. Butcher.

WEDNESDAY, JUNE 8.

PHARMACEUTICAL SOCIETY, at 12 noon.
Meeting of Council.

PLYMOUTH, DEVONPORT, STONEHOUSE AND DISTRICT CHEMISTS' ASSOCIATION, at 1 p.m.
Annual outing (Membland Drives).

ROYAL SOCIETY.
Annual Conversazione.

FRIDAY, JUNE 10.

ROYAL BOTANIC SOCIETY, at 4 p.m.
"A Diseased Potato" (with Lantern Illustrations), by Professor W. B. Bottomley.
(Museum, in Gardens.)

SPECIMEN PAGE.

(37)

Tinctura Cinchonæ Composita.—The red cinchona bark is replaced by an equivalent quantity of tincture of cinchona, and the proof spirit by 70 p. c. alcohol. The orange peel should be well bruised and the serpentary in No. 40 powder. Macerate the solid ingredients for 7 days in a quantity of alcohol equal in volume to the tincture of cinchona, and mix the strained and expressed liquids with that tincture, after which add sufficient alcohol to make up the required volume. Filter after standing for 24 hours. Each 100 C.c. of the product should contain about 0·5 Gm. of alkaloids. Dose: ½ to 1 fl. dr. [*Now standardised*—1 *in* 50.]

Tinctura Cinnamomi.—Moisten cinnamon in No. 40 powder, 4, with 70 p. c. alcohol, 4, then percolate with that spirit to produce 20 of tincture. Dose: ½ to 1 fl. dr. [60 *p. c. stronger.*]

Tinctura Cocci.—Macerate powdered cochineal, 2, in 45 p. c. alcohol, 20. Dose: 5 to 15 minims. [20 *p. c. weaker.*]

Tinctura Colchici Seminum.—Moisten colchicum seeds in No. 30 powder, 4, with 45 p. c. alcohol, 2·5, and percolate with that menstruum so as to produce 20 of tincture. Dose: 5 to 15 minims. [60 *p. c. stronger.*]

Tinctura Conii.—Moisten conium fruit, recently reduced to No. 40 powder, 4, with 70 per cent. alcohol, 4, and percolate with that menstruum so as to produce 20 of tincture. Dose: ½ to 1 fl. dr. [60 *p. c. stronger.*]

Tinctura Croci.—Macerate saffron, 1, in 60 p. c. alcohol, 20. Dose: 5 to 15 minims.

Tinctura Cubebæ.—Moisten powdered cubebs, 4, with 90 p. c. alcohol, 2, and percolate with that menstruum so as to produce 20 of tincture. Dose: ½ to 1 fl. dr. [60 *p. c. stronger.*]

Tinctura Digitalis.—Moisten digitalis leaves in No. 20 powder, 2·5, with 60 p. c. alcohol, 2, and percolate with that menstruum so as to produce 20 of tincture. Dose: 5 to 15 minims.

Tinctura Ergotæ.—Omitted.

* **Tinctura Ergotæ Ammoniata.**—Moisten ergot in No. 20 powder, 5, with 2 parts of a mixture consisting of 2 of solution of ammonia, and 18 of 60 p. c. alcohol; then percolate with the rest of the mixture. Press the marc, mix the expressed liquid with the percolate, and add sufficient 60 p. c. alcohol to produce 20 of tincture. Dose: ½ to 1 fl. dr. [*Differs from B.P.C. formula.*]

Tinctura Ferri Acetatis.—Omitted.

Tinctura Ferri Perchloridi.—The rectified spirit is replaced by 90 p. c. alcohol. Dose: 5 to 15 minims.

Tinctura Gallæ.—Omitted.

Tinctura Gelsemii.—Moisten gelsemium root in No. 40 powder, 2, with 60 p. c. alcohol, 1, and percolate with that menstruum to produce 20 of tincture. Dose: 5 to 15 minims. [20 *p. c. weaker.*]

* Signifies new preparation.

News in Brief.

The 'Oesterreichische Chemiker Zeitung' is a new bi-monthly journal, published in Vienna, and edited by Drs. Hans Heger and Stiassny. It is the official organ of the "Verein Oesterreichischer Chemiker in Wien," and in its first number gives evidence of being a useful addition to chemical literature.

Royal Institution.—A general monthly meeting of the members of the Royal Institution was held on the 6th inst., Sir James Crichton-Browne, M.D., F.R.S., Treasurer and Vice-President, presiding. Mr. A. W. Horsburgh was elected a member. The special thanks of the members were returned for the following donations to the fund for the promotion of Experimental Research at Low Temperatures:—Mrs. G. J. Romanes, £5; Sir Frederick Bramwell, £100; Professor Dewar, £100; Dr. Ludwig Mond, £200; Charles Hawksley, Esq., £100; Sir David Salomons, Bart., £21; Dr. Rudolph Messil, £100.

Poison as an Aid to Suicide.—Dr. Whitcombe, medical superintendent at the Winson Green Asylum, Birmingham, has just issued an extremely interesting report on the year's work there, to which he adds particulars of 390 cases of suicides which he has collected during the year. There was much diversity in the death agent employed, the men favouring shooting and hanging and the women drowning and poisoning. No fewer than seventeen different poisons were used. Carbolic acid was responsible for 19 deaths; prussic acid, 9; hydrochloric acid, 4; oxalic acid, 4; laudanum, 3; chloral, 2; strychnine, 2; cyanide of potassium, 2; nitric acid, 2; vermin killer, 2; and sulphonal, paraffin, sulphuric acid, bichromate of potash, binoxalate of potash, ammonia, and arsenic each one, while in 16 cases the poison is not stated. The chief cause of suicide proved to be ill-health. Through bodily or mental ailment existence became unendurable to 53 persons, and the malady at whose door most of these deaths are to be laid is influenza. Drink claimed 29 victims, love disappointments were responsible for 20, domestic troubles accounted for 16, and money matters for 10. Commenting on these figures the *Birmingham Mail* says the indiscriminate sale of poisons is even a greater scandal than the sale of toy pistols. "Multitudes of chemists," it continues, "seem to exercise no discretion whatever, and will sell anyone who enters their shop enough poison to decimate a city. . . . Of course there are difficulties in the way of restricting such sales, but druggists are frequently too lax in the matter and do not thoroughly appreciate the responsibilities resting upon them. More care ought to be exercised and greater prudence shown. . . . When for a few coppers a forlorn and miserable being can purchase a draught which, without noise or prolonged agony, will put an end to earthly suffering it is tempting him to suicide. The chemist claims more victims than the canal."

We have not yet heard of any Birmingham chemists putting the *Mail* right in this matter, but it is to be hoped that some of them will do so.

Limited Companies as Chemists.—The Pharmaceutical Society of Ireland is about to present a petition to the Houses of Parliament on the subject of limited companies being registered as chemists, etc. The Society states that already not only are limited companies registered to transact the business of pharmaceutical chemists and chemists and druggists, but also as apothecaries, and in one case, if not more, to "carry on the business of physicians and surgeons." It is further stated that whether a company is promoted for a "lawful purpose" is not investigated by the Registrar of Joint-Stock Companies, or considered by him to be part of "the requirements of the Act," nor are there means of cancelling registration when it is effected. The petitioners pray that "No company may be registered to do acts for which a course of education and examination are required to qualify, unless each member of the company is qualified."

British Homœopathic Congress.—The annual congress of Homœopathic Practitioners was held at the London Homœopathic Hospital, Great Ormond Street, W.C., on June 3, when the chair was occupied by Dr. Eubulus Williams, of Clifton, the president, and there were present more than eighty medical men who have adopted homœopathic methods in their practice.—The president, in the course of his address, traced the history of medicine among the ancients, singling out the Egyptians for special comment. As early as 4366 B.C. Teta, a king of Egypt, wrote a treatise on anatomy, which showed that an advanced knowledge of the healing art had been attained in that country even at such a remote period. The practice of vivisection was widespread, but surgery was in a backward condition as compared with medicine, doubtless because of the reverence in which the human body was held after death as well as in life, which prevented a sound knowledge of anatomy being gained. Dentists and surgeons, physicians and midwives, were recognised factors in the social life of the ancient Egyptians. Dr. Williams then traced the introduction of medical science into Europe by Arabs from Egypt and India. On one occasion Galen cured a philosopher who had taken an overdose of theriacum by administering the same poison in proper measure. This was homœopathy, but Galen had stumbled on it only by accident, for this solitary instance was opposed to all his principles. He dealt exhaustively with the subject of homœopathy as a scientific law in therapeutics, and claimed that the next century would witness a triumph for the science of healing, as enunciated by Samuel Hahnemann, whose name was worthy of association with those of Hunter, Harvey, and Jenner, and other benefactors of the human race.—A paper was read by Dr. J. H. Clarke on "The Doctrine of Signatures and the Law of Similars," which was characterised by a number of speakers in the subsequent discussion as a relic of the childhood of the science of medicine.—In the afternoon Mr. Clement J. Wilkinson read a paper on "Associated Symptoms in Provings and Disease Without Obvious Pathological Basis."—The members of the Congress afterwards dined together at the Holborn Restaurant.

Photographic Dark Rooms.—Mr. J. Thomas, 26, Victoria Street, Paignton, intimates that there is a well-appointed dark room in connection with this establishment. The vicinity of Paignton affords exceptional opportunities for the photographer, being within easy distance of numerous interesting objects, *e.g.*, ruins, Berry Pomeroy Castle, Compton Castle, Palace of the Bishops. The ancient villages around make good subjects, and the vicinity of the Dart affords great scope for the camera.—Mr. A. Hill, Chemist and Druggist, 98, High Street, Cheltenham, intimates that he keeps a stock of photographic goods and has a dark room.

An Overdose of Antifebrin.—A double dose of medicine is often dangerous, in effect, said Mr. Coroner Robinson at an inquest on Albert Johnston (33), of Darwen, who, while suffering from neuralgia and pains in the head, took two headache powders which contained antifebrin. The two powders proved too much for him and he collapsed. The medical evidence was that an overdose of antifebrin was the cause of death. A juror wished to know if the powders were to be condemned, which called forth the remark mentioned above.

A New Aërated Water Manufactory has been started by Councillor R. B. Carruthers, chemist and druggist, of Dumfries, who has transformed the Old Brewery, Buccleuch Street, Dumfries, into an aërated water-works. The water is supplied by an artesian well in the yard of the Old Brewery, which is said to be 318 feet deep and to store an inexhaustible supply of water of great purity and excellent quality. The various machinery, made by the Riley Manufacturing Company, is driven by one of Crossley's (Manchester) gas engines.

Omniscient Shareholders.—There are companies to do most things, and amongst them to carry on the business of chemists and druggists and physicians and surgeons. Not unnaturally the Pharmaceutical Society of Ireland objects. It is presenting a petition to Parliament praying that no company may be registered to do acts for which a course of education and examination is required to qualify, unless each member of the company is qualified. Will every shareholder in the Civil Service Supply Association, Ltd., have to be a qualified chemist because the Store has a drug department? However, the petitioners have some justification on their side, and we would that every member of every company better understood the business in which he places his money. But it is to be hoped that the principle will not be carried too far. As

railways are not registered companies the stockholders cannot, perhaps, be expected to be able to build an engine or even to drive it. But breweries are registered, and the prospect is awful of shareholders having to be able to brew beer as well as drink it. And what qualifications would be required, or rather what qualifications will not be required, in a shareholder of Whiteley's, when later in the year the great business is floated as a limited liability company?—*Westminster Gazette.*

IMPERIAL COLLEGE OF PHARMACY.—On Monday, June 6, the students of the Imperial College of Pharmacy, under the direction of Mr. Frederick Davis, spent four profitable hours in viewing the materia medica and other specimens of pharmaceutical interest in the London and India Docks by permission of Mr. Braithwaite, the superintendent. Especial mention should be made of three thousand bales of fine cinnamon bark, five thousand pockets of Penang cloves; nutmegs, mace, cinchona barks of every variety; strophanthus, and pale catechu in tabular discs and cubes. Specimens of these drugs were presented to the students. From the drug warehouses a visit to the iodine wharf was made; here eighty thousand kegs were stacked, each keg being valued at about ninety pounds sterling. The mercury warehouse, with its thirty thousand bottles of mercury valued at seven pounds sterling each, will not be forgotten, for here the attendant exhibited a fifty-six pound weight floating on mercury. The museum afforded fine specimens of every drug imported, together with volatile oils of every kind. The gums, gum resins, and resins, including acacia, plum tree, myrrh, benzoin, gamboge, and mastich, were of especial interest. The wine vaults contained some beautiful specimens of the fungi varying in colour from white to black and every shade of colour from cream to bright scarlet.

CARBOLIC ACID was taken in mistake for elderberry wine on Saturday, June 4, by the wife of Isaac Thomas, brake driver of Gyfeillon, Hafod. She died the following day.—An overdose of laudanum was responsible for the death of Colonel W. E. Chambers (56), on Sunday, May 29, in a medical home at 36, Gloucester Gardens, Hyde Park. He had taken it to produce sleep.—Mary Sutherland (60), Grangetown, was more fortunate than the Colonel; she took an overdose of laudanum on June 3, but an emetic was administered and she recovered.—A bottle of poisonous liniment was mistaken for a bottle of medicine for internal use, by a man named King, of Rotherhithe, who took a dose accordingly. He was removed to the hospital, where the doctors are dubious of his recovery.—Another bottle containing poison was mistaken on Tuesday, June 7, for one containing medicine, by Ellen Bush (61), of Brynmawr, and she died as a result of the error.

MR. A. SIDNEY CAMPKIN, J.P., of Cambridge, represented the Cambridge district last week at the A. M. C. of the Manchester Unity at Oxford; over 600 delegates were present. Mr. Campkin, as one of the Board of Directors, moved several resolutions on their behalf, spoke in detail on the question of Women's Lodge, after which a resolution was carried by a large majority. He was also re-elected by a large majority on the first round of voting as one of the 10 members of the Board of Directors, a position he has held since 1884.

MESSRS. T. AND H. SMITH & CO.'S ANNUAL OUTING.—The employés of the warehouse and offices of the Duke Street, Edinburgh, establishment proceeded, on Saturday, June 4, in brakes by way of Swanston, Auchendinny, and Penicuick to the Moorfoot Hills, where sports, which included cricket, football, tug-of-war, etc., took place. The company returned to town *vid* Armiston, Temple, Cockpen, and Gilmerton. The weather was fortunately favourable, and Edinburgh was reached about 10 p.m., everyone having thoroughly enjoyed the day's outing provided by the firm.

CRICKET.—The following cricket match was played on Saturday last at Tooting Bec Common between the Metropolitan College of Pharmacy C.C. and Pharmaceutical C.C., which resulted in a win for the Metropolitan by 45 runs.—Allenburys' C.C. *v.* City Mills C.C.—The match between the employés of Messrs. Allen & Hanburys, Ltd., and Messrs. Howards, of Stratford, played at West Ham Park on Saturday, June 4, resulted in victory for the former, the scoring being 73 runs as against 36.

PROPRIETARY ARTICLES TRADE ASSOCIATION.—A Council Meeting will be held on Wednesday afternoon the 15th inst. at 3 p.m., at the Agricultural Hall, Islington, and the Annual Meeting on Thursday, the 16th inst., at 3 p.m., in the Berners Hall, Agricultural Hall. Any member of the Association can obtain a ticket admitting to the Annual Meeting on applying to the Secretary, 2 and 3, Stonecutter Street, or at the stands of the Association (Nos. 2 and 3), at the Chemists' Exhibition. The Annual Dinner of the Association will be held the same evening at 7 p.m., at the Agricultural Hall. Single tickets, 7s. 6d., double tickets (to admit lady and gentleman), 12s. 6d. Morning dress. As the accommodation is limited, it is requested that an early application for tickets should be made to the Secretary, 2 and 3, Stonecutter Street, London, E.C.

THE RIVERS COMMITTEE of the Manchester Corporation has selected three gentlemen to advise them in the matter of sewage disposal, namely, Dr. W. H. Perkin, Professor of Organic Chemistry at Owens College, Dr. Percy Frankland, Birmingham, and Mr. Baldwin Latham, C.E.

EXETER UNION DISPENSERSHIP.—At the weekly meeting of the Exeter Corporation of the Poor on Tuesday last, it was resolved, on the motion of Mr. Munro, seconded by Mr. Rice, that a vote of condolence be sent to the family of the late Mr. Bulley, for many years dispenser under the Board. The appointment of Mr. Bulley's successor, whose salary is to be £50 per annum, is to be made subject to the approval of the Local Government Board, and to the provisions of the Poor Law Officers' Superannuation Act, 1896. The person to be appointed must be a Licentiate of the Society of Apothecaries of London, or hold a certificate of that Society as to his qualification to act as an assistant in compounding and dispensing medicine, or has been duly registered under the Pharmacy Act, 1868. The hours for his attendance at the Board's dispensary are from 9 to 10 a.m.; 1 to 2 p.m.; and 6 to 7. Applications had to be sent in to the Board on or before Friday, the 10th inst. Under a general order of the Local Government Board, personal discharge of the duties is made imperative.

MIDLAND PHARMACEUTICAL ASSOCIATION.—The first meeting of the recently-elected Council of this Association was held on Tuesday at Mason University College, Birmingham. The retiring President, Mr. F. J. GIBSON, presided over the first part of the proceedings. Mr. Jeffrey Poole (Birmingham) was elected President for the ensuing year, and Mr. J. Barclay and Mr. F. H. Alcock Vice-Presidents. Mr. J. C. Mackenzie was appointed Hon. Treasurer, and at the request of the meeting Mr. J. Barclay undertook the office of Hon. Librarian. The Council received with considerable regret an intimation from Mr. H. S. Shorthouse that he was unable to continue the duties of Hon. Secretary, and several members referred to the highly efficient manner in which Mr. Shorthouse had served the Association during the past year. The appointment of a successor to Mr. Shorthouse was left in the hands of the new president. Messrs. T. L. Reeve and W. S. Bridgewood were elected honorary auditors, and the following were chosen as the Trade Committee:—Messrs. F. Adam, G. H. Brunt, R. D. Gibbs, F. J. Gibson (Wolverhampton), F. T. Gibson (Birmingham), W. Jones, J. Poole, F. H. Prosser, J. Wakefield, A. Southall and Councillor Price. The Hon. Secretary announced the receipt of a letter, written by Mr. W. S. Glyn-Jones, on behalf of the P.A.T.A. (see *ante*, p. 468). It was agreed to refer the letter to the Trade Committee. The retiring President mentioned that he had received a letter from the President of the Pharmaceutical Association (Mr. Hills) containing an expression of thanks to the Midland Pharmaceutical Association for the cordial welcome accorded him on his recent visit to Birmingham. Votes of thanks were afterwards passed to the retiring President and the retiring secretary, reference being made in each case to the value of the services rendered to the Association.

THE BRITISH PHARMACEUTICAL CONFERENCE programme of meetings and entertainments in connection with the Belfast meeting was finally agreed upon at a meeting of the Ulster Executive Committee, held at Belfast a few days ago, when Mr. J. C. C. Payne, J.P., occupied the chair, and there was a good attendance of members. The programme was presented for confirmation at a meeting of the Executive Committee, held at 17, Bloomsbury

Square, London, on Wednesday, which was presided over by Dr. Symes, President of the Conference. The Ulster Executive Committee is anxious that the Belfast meeting should be one of the finest on record, and is desirous that the chemists of England and Scotland should reserve the Conference week in Belfast for their 1898 holiday. With that idea there is little doubt many of the members of the Conference will cordially agree, and they may also be expected to act upon it.

Royal Society Conversazione.—The second conversazione of the year took place on Wednesday, June 8. The President, Lord Lister, F.R.C.S., D.C.L., entertained a large and brilliant company of Fellows and their friends, including many ladies, since this is generally recognised as the Ladies' Night. The exhibits represented the latest discoveries and inventions in nearly every science and application of science, among them being crypton, the very latest surprise in matters chemical.

Brighton Association of Pharmacy.—This Association held a meeting on Thursday, May 26, at 9.15 p.m., at the A.B.C. Rooms, King's Road, Brighton.—The chair was taken by the President, Mr. W. H. Gibson, and there were also present, amongst others, Messrs. W. W. Savage and C. G. Yates (Hon. Secretaries), Messrs. Farr (of London), Martin (of Lewes), J. R. Gwatkin, H. A. Costerton, C. S. Ashton, H. C. Thorne, A. P. Nosworthy, F. Jones, etc. The meeting was called "to receive important communications on future work of the P.A.T.A." and "to consider whether to invite the British Pharmaceutical Conference, 1899."—An animated discussion took place on the first item, in which most of those present participated, and it appeared to be the opinion of the majority that such a prohibitive fee as is required of manufacturers on placing their articles on the P.A.T.A. list is the reason why there is not a longer list than at present.—The following resolution was unanimously agreed to:—

> That this Association offers its moral support to the P.A.T.A., and allows its name to be used.

—The Conference invitation was next considered and freely discussed, and it was resolved to send a circular letter to every pharmacist in Sussex, asking for opinions and support.

Aberdeen Pharmaceutical Association.—At a meeting of this Association on Wednesday, Mr. James Clark, President, in the chair, the Convener (Mr. Giles) of the Education Committee read over the terms of agreement with the Governors of Robert Gordon's College, anent the equipping and carrying on of a School of Pharmacy at the college, a report of which appeared in last week's Journal. The Association unanimously adopted the Committee's report. The first session of the new school will commence in the beginning of September, meanwhile the Committee have been asked to nominate a teacher. It was also resolved to send a circular to the medical men, intimating to them that after July 1 all new prescriptions would be prepared according to the 1898 Pharmacopœia unless otherwise indicated. The Convener of the Social Committee reported that the Annual Drive was to take place on Wednesday, July 6. The route chosen this year being to Aboyne *viâ* Banchory and Forest of Birse. Strangers welcomed. Any such intending to be present should write to the Secretary, Mr. J. Cruickshank, 42, George St.

Personal Notes.

Messrs. Hedges and Son are opening branch premises at Stratford Road, Birmingham.

Mr. T. Cattell's business at Aston Road, which he has recently relinquished, has been acquired by Mr. G. C. James, who has been for some time with Messrs. Phillip Harris and Co., Birmingham.

Mr. R. Eaton, chemist and druggist, has just opened a new shop, the Trafford Bar Pharmacy, 468, Stretford Road, Manchester, which has been fitted throughout by Messrs. Ayrton & Saunders, of Duke Street, Liverpool.

Mr. R. Darton Gibbs has now definitely retired from the business which he has carried on at Oldbury, Birmingham, in partnership with Mr. Cuxson, and intends to carry on business independently as a manufacturer of surgical dressings.

Trade Notes.

Messrs. Southall Bros. & Barclay, Birmingham, are offering a new measure-glass, which has been especially designed by the firm for the easy preparation of the various alcohols of the new Pharmacopœia. It is graduated on one side like an ordinary 20-oz. measure, and on the opposite side as a 500-C.c. measure, whilst midway between the two sets of graduations are special graduations for use in diluting strong alcohol to the desired strength. Thus, to prepare 70 per cent. alcohol, all that is necessary is to fill up to the mark indicated with 90 per cent. alcohol, then add sufficient cold distilled water to make 1 pint of liquid at the ordinary temperature. In like manner it is possible to prepare 60, 45, or 20 per cent. alcohol as desired. The measure, which should prove a great convenience to retail pharmacists, is supplied to the trade at 3s. 6d., and a card of instructions accompanies it.

Mr. Max Schliephak, 90, Victoria Street, S.W., is offering amongst other novelties ointment jars with celluloid covers printed in colours, with any name and address. They can be obtained of various sizes, and printed in seven different colours, at very moderate prices. The Oriental Fumigating Powder is another attractive novelty, intended to supersede the old-fashioned pastilles, and beyond comparison as a substitute for the latter. A small quantity of the powder, when placed on a heated surface, suffices to perfume a large room.

PHARMACEUTICAL SOCIETY.

(NORTH BRITISH BRANCH.)

A meeting of the Members and Associates in Business of the Society, residing in Scotland, will be held in the Society's House, 36, York Place, Edinburgh, on Friday, June 17, at 11 a.m. precisely. The business of the meeting will commence with a statement by the Chairman, after which the Scrutineers' Report will be received, and followed by the election of Executive. The following are the names of persons eligible and willing for election:—

1. Ayre, George Martin, 75, High Street, Perth.
2. Boa, Peter, 119, George Street, Edinburgh.
*3. Bowman, John, 3, Duke Street, Leith.
4. Burley, William, 35, George Street, Edinburgh.
*5. Coull, George, 17, Smith's Place, Leith Walk, Edinburgh.
6. Cumming, Charles, 49, Reform Street, Dundee.
*7. Currie, William Little, 223, Byres Road, Dowanhill, Glasgow.
8. Dow, William, High Street, Kinross.
*9. Ewing, James Laidlaw, 9, Princes Street, Edinburgh.
10. Ferrier, David Hynd, 2, Hilltown, Dundee.
*11. Fisher, John Hutchison, 66, High Street, Dunfermline.
12. Graham, Alexander, 79, Main Street, Lochgelly.
*13. Hardy, James Miller, 68, High Street, Dundee.
14. Harley, Thomas, 21, High Street, Perth.
*15. Henry, Claude Francis, 1, Brandon Terrace, Edinburgh.
*16. Kermath, William Ramsay, Greyfriars Garden, St. Andrews.
*17. Kerr, Charles, 56, Nethergate, Dundee.
*18. M'Adam, Robert, 34, Virginia Street, Glasgow.
*19. M'Laren, David, 42, South Clerk Street, Edinburgh.
20. Macpherson, Collin Allen, 97, Dalry Road, Edinburgh.
*21. Mitchell, Donald, 30, Union Street, Inverness.
*22. Moir, James, 447, Victoria Road, Crosshill, Glasgow.
*23. Russell, James Anderson, 212, New City Road, Glasgow.
*24. Strachan, Alexander, 138, Rosemount Place, Aberdeen.
25. Swan, William, 92, Morninside Road, Edinburgh.
26. Thomson, John Hutchison, 102, High Street, Lochee, Dundee.
27. Watson, David, 558, Cathcart Road, Govanhill, Glasgow.

The names marked with an asterisk are those of members of the retiring Executive, who are eligible for re-election.

Partnerships Dissolved.

(From the London Gazette)

James Law & George F. Law (trading as Law Brothers) Chemical and Produce Brokers, Liverpool. Debts will be received and paid by James Law.

Charles John Bennett and Ernest A. Dent, Surgeons and Medical Practitioners, Cheltenham. Debts will be received and paid by Albert Dent, who will carry on the practice.

BURROUGHS, WELLCOME AND CO.'S ANNUAL OUTING.

WOULD-BE WEATHER PROPHETS had a splendid opportunity for prophetic exercise during last week in the neighbourhood of Snow Hill, Holborn, and at Dartford. Some of them did not fail to take advantage of it, and the various impressions created in the minds of the employés of Messrs. Burroughs, Wellcome and Co. were easily distinguished on Saturday morning, June 4, when a South-Eastern Railway Co.'s engine steamed into Cannon Street Station with a heavy freight of lads and lasses (mostly lasses) from Dartford. Those influenced by the gloomy prophecy were armed with umbrellas, mackintoshes and great coats, while the disciples of the genial prophet were attired in light summer dresses and straw hats. However, fickle as the "Mistress of the Weather" certainly is, she evidently had a warm corner in her heart for the Dartford and Snow Hill contingents, making a party of some 700 odd, which punctually at 8 o'clock, amidst bright sunshine, left Cannon Street, for the white cliffs of Dover. After a good run the engine pulled up at its destination shortly after ten o'clock, the aforesaid young lady continuing to smile upon the party, and although Londoners who stayed at home were threatened by dark thunder-clouds, all rain-clouds were banished from the neighbourhood of Dover, and bright beams of sunshine poured down to gladden the hearts and tan the faces of the happy company during the whole of the day.

DINNER AT THE TOWN HALL at 12 o'clock noon was one of the items on the programme, and as the time drew near the large hall gradually filled with a hungry assembly. A substantial repast had been provided by the caterer, and the stewards, Messrs. Astill, Davies, Francis, Scott, Johnson, and Soloman were indefatigable in their endeavours to see that each one was well supplied with good things. Mr. Henry S. Wellcome, principal of the firm, presided, and Mr. R. Clay Sudlow, general manager, occupied the vice-chair. At the Cross table several representatives of the press, the heads of departments, including Dr. Power, Dr. Jowett, Dr. Schryver, of the Wellcome Research Laboratories, Mr. J. Collett Smith, Mr. C. C. Weld, Mr. Lloyd Williams, and others, and the wives of members of the staff were entertained, but on this occasion no visitors, with the exception of the Press, were invited, owing to the difficulty of providing sufficient accommodation for the increased staff.

AFTER DINNER the usual loyal toast was proposed by Mr. Wellcome in a few choice and appropriate words. This was followed by "The Firm," proposed by Mr. Tindall, of the *Medical Press and Circular*, who, in the course of his remarks, referred to the time when the entire staff of the firm consisted of about a dozen employés, and he thought the large company present that day testified to the business abilities of the principals, who, with efficient helpers, had built up a business which extended its operations to all parts of the world. The number of employés had nearly doubled in the last three years. Although unfortunately Mr. Burroughs was no longer with them, they had in Mr. Wellcome a real live principal to carry on the business in which he threw his whole heart and soul. They were all glad to see Mr. Wellcome amongst them again, and were rejoiced to see him returned in good health.

MR. WELLCOME, in replying to the toast, said the progress made by the firm could not be denied. At their last outing they assembled about 500, whilst that day the company numbered 700. There had not only been an increase in numbers, but also a still greater increase in talent and skill employed in the manufacture of their products. The greatest difficulty during the year had not been to get orders, but to execute them. He hoped, however, when the new additional buildings were completed they would be better able to cope with the ever-increasing business. Mr. Wellcome then proposed the toast of "The Employés." Referring to the happy relations existing between principals and employed, he said how deeply touched he had been by their good wishes for his restoration to health expressed through the managers during his illness.

THE IMPORTANCE OF GOOD TECHNICAL EDUCATION was then touched upon by Mr. Wellcome. His firm, he said, were not only always seeking to secure the services of highly skilled men from outside, but were endeavouring to develop the men within their own ranks by technical education. When they read in the journals that the professions of pharmacy and chemistry were overrun they must not believe it. In their rapidly increasing business there were always positions ready for 100 per cent. men, and they were always willing to pay fair remuneration, and that for life, for their services. But the number of suitable candidates was very small; there was plenty of room for really first-class men who would take the trouble to perfect themselves. Mr. Wellcome's concluding remarks were greeted by appreciative applause, inasmuch as they referred to the establishment at Dartford of a well-arranged club for the mutual benefit of the people employed there, which it is expected will be opened in a few weeks. He coupled with the toast the name of Mr. R. Clay Sudlow the general manager.—That gentleman replied by a speech in which he expressed the satisfaction they all felt at seeing Mr. Wellcome so nearly restored to perfect health.—The Chairman then proposed "The Fair Sex," to which Miss M. Martin Leake, lady superintendent of the women's departments at the works, replied with a clever yet concise and witty speech.—This was followed by "The Press and Visitors," Mr. Peter MacEwan replying.—The stewards were then thanked for their services, and the company dispersed, some to take a two hours' sea trip in the steamer "Britannia," others to visit the numerous places of interest in the surrounding country. At 6.30 p.m. the company again assembled in the Town Hall for tea. Mr. Wellcome's hospitality and thoughtfulness for the comfort of his guests was demonstrated in numerous ways, and Mr. E. Linstead, chief of the literary department, ably seconded his principal's efforts to make the day's outing thoroughly enjoyable to the whole party. At 7.55 the special train was boarded *en route* for Cannon Street Station, which was reached some fifteen minutes before the time specified on the day's programme. Surely a record run for the South-Eastern! The train then proceeded to Dartford. Thus ended a most enjoyable outing, characterised by splendid organisation, generous hospitality, and ideal weather.

PHARMACY IN AUSTRALIA.

[*From our Melbourne Correspondent.*]

IN MATTERS PHARMACEUTICAL Victoria has had a long start of the other Australasian Colonies, not even excepting the parent one of New South Wales, owing no doubt in great measure to the fact that some half century ago several pharmacists of more than usual culture and ability were attracted from the old country to the growing city of Melbourne, who, following with eager interest every movement made in England, devoted themselves heart and soul to the establishment in Victoria of a pharmaceutical organisation recognised by the State in a similar or even more pronounced measure as that for which their old comrades were striving at home. In subsequent letters if your space will permit, I may have an opportunity of recounting a few reminiscences of these pioneers, few of whom, alas, are now left with us; but at present I must content myself by saying that on the foundation laid by them has been built a Society which for professional and social status and educational equipment (*vide* its College of Pharmacy, of which more anon) has perhaps few counterparts in the civilised world—outside Bloomsbury Square, of course. In one of your recent issues I noticed, in an article dealing with the growth of your noble Benevolent Fund, a generous tribute to the indefatigable energy and zeal of your old secretary, Mr. Elias Bremridge. What Mr. Bremridge was to you in the past our Mr. Shillinglaw has been and is to Victorian pharmacy. Not indeed to Victorian pharmacy alone, for being in himself a compendium of information as to pharmaceutical laws, privileges, and disabilities, his opinions and advice are sought from every pharmaceutical centre, and if ever we succeed in securing inter-colonial reciprocity it will be admittedly due in large measure to his untiring efforts in that direction for many years past.

WHEN WRITING TO THE PHARMACEUTICAL SOCIETY OF GREAT BRITAIN in June last, re-opening the old question of recognition of colonial certificates, I scarcely think that either Mr. Shillinglaw or many members of the Board and Society with which he is more especially identified, knowing the enterprise on which you had embarked with the view of consolidating your own ranks, entertained any very sanguine

hopes of success. But any disappointment that could legitimately be entertained at the reply was greatly discounted by the kindly tone in which it was worded and the evident interest displayed by the parent Society in the welfare of her Australasian offshoots. We fully recognise here the force of the paragraph in which the writer points out the difficulty of insuring in the different parts of the Empire "a practical uniformity in the scope and stringency of the technical examination." So far as Victoria particularly is concerned it is contended that the standard is fully equal to that in Great Britain, and that the advantages of reciprocity would lie principally on your side. As the President of the Pharmaceutical Association of Australasia recently expressed it, "Few, if any, Australian pharmacists are likely to exchange their conditions here for those of the old country. On the contrary, the more our free, sunny, and progressive colonies, with their many other advantages, become known, the more will enterprising young pharmacists of Great Britain be attracted to our shores." And in connection with your suggestion that a step in the required direction would be accomplished did the Colonial Pharmacy Board succeed in establishing uniform examinations as a basis of intercolonial reciprocity, it will interest you to note that during the recent negotiations between Victoria and New South Wales, a scheme to this effect met with practical acceptance from both parties. This provided for a future joint preliminary examination, the questions to be arranged and agreed to by two gentlemen, one to be appointed by each colony; that the examination in materia medica, botany, chemistry, and practical chemistry should be on the same basis as that required for the certificate of the Melbourne College of Pharmacy, and that the final qualifying examination should be in accordance with the syllabus in the regulations of the Medical Act of Victoria. It is deeply to be regretted that having successfully arranged this essential matter, other questions of a comparatively unimportant nature should have cropped up upon which neither colony seems inclined to give way, and which for the time at least have brought the negotiations to a standstill. The main points in dispute are (1) Victoria's objection, as an injustice to her own students, to the admission of persons in New South Wales who have served a period of three years' apprenticeship only, but have passed no examination; (2) Victoria's request that the term by apprenticeship in New South Wales should be extended from three to four years; and (3) Victoria's demand for the recognition by New South Wales of all persons now on the Victorian register who have been registered as holders of certificates from the Pharmaceutical Society of Great Britain.

The Pink Pills Case.—Mr. Justice Williams delivered the judgment of the Full Court in the case of Shillinglaw *v.* Taffs on Wednesday, March 9. The following is the full text, as read by His Honour:—"One Taffs was informed against for selling a poison, to wit, an admixture of arsenic called pink pills, contrary to the provisions of the Poisons Act, 1890. The admixture of arsenic, though small, was sufficient to bring the case within the Act, unless defendant could bring himself within the protection of Section 14, which, amongst other exceptions, excepts patent or proprietary medicines. The Bench dismissed the complaint, and it was not contended that their conclusion on the evidence that Pink Pills were a proprietary medicine was erroneous; but an order to review was obtained, on the ground that, assuming the pills to be a proprietary medicine, the proviso at the end of Section 14, requiring entry in a book and labelling as poison, applied to proprietary medicines, and that as there had been no such entry or labelling the decision was wrong. A decision of this Court, Shillinglaw *v.* Roberts, 17, V.L.K., p. 359, was referred to, which assumes that the concluding proviso of Section 14 applies to all the antecedent exceptions in the Section, though the point argued was not as to whether the proviso applied, but as to whether there had been a sufficient compliance with the proviso with regard to entry in a book. Having regard to this decision, the judge before whom the order to review came in the first instance referred it to the Full Court. We have had to consider a point which was not argued in the case referred to, and was not necessarily involved in the decision, as in that case the defendant relied upon the protection afforded to sales by wholesale dealers, to which the concluding proviso of Section 14 indisputably refers. Section 14 enacts that the Act shall not extend to the sale of any poison made up as a medicine, nor to the sale of patent or proprietary medicines, nor to the sale of medicines dispensed by veterinary surgeons, nor to the sale of fly poison or packets of poisonous mixtures for the destruction of vermin when duly marked as such. Then follow the words, 'nor shall it extend to any sales by wholesale dealers in the ordinary course of wholesale dealing if an order in writing, signed by the purchaser, shall be given for the supply of the same. Provided that all such sales shall be entered in a book, and that the bottle or other vessel, wrapper or cover, box or case, immediately containing the poison be labelled as required by this Act.' The question is, do the words 'all such sales' cover every sale before referred to, or only the last-named sales by wholesale dealers? The frame of the section is opposed to the view that the proviso attaches to each exception. The exception of wholesale dealers is introduced by new words of exclusion, 'nor shall it extend to any sales,' etc. The word 'sales' is used for the first time, and the proviso relates to all such 'sales,' not to every such 'sale' as before mentioned. But there are much stronger reasons for considering that the proviso was only intended to apply to sales by wholesale dealers when we see that the proviso requires that the bottle or other vessel, etc., immediately containing the poison shall be labelled as required by this Act. What this Act requires as to labelling is to be found in Section 7, which applies to all persons selling poison, either by wholesale or retail, and uses the same language as the proviso as to the bottle, vessel, wrapper, cover, box, or case, and requires that it shall bear the word 'Poison' printed conspicuously, together with the name of the article, and the name and address of the seller thereof. It could not be intended that a medicine made up from a physician's prescription should be labelled 'Poison,' or that the name of the article, if name could be given to it, should be written upon it. The proviso seems merely to have the effect of saying that the exception of sales by wholesale dealers from the general provisions of the Act shall not exempt them from the obligation of labelling contained in Section 7. We decide that the obligations of the concluding proviso of Section 14 do not attach to the sale of patent or proprietary medicine. The order to review will therefore be discharged with costs."

A chemist named Arthur Singleton Larcombe, said to be a native of England [But not registered there.—Ed. *P. J.*], recently arrived in the colony, committed suicide by prussic acid at Annandale, New South Wales, a few weeks ago. He had just previously been discharged from the position he held as branch manager for a Sydney chemist.

Marriages.

Gardiner—Mackay.—At Veitch Park, Haddington, on the 1st inst., by the Rev. R. L. Walker, M.A., David Gardiner, chemist, Haddington, to Eliza Wright, daughter af the late Bailie Mackay, ironfounder, Haddington.

Athey—Marshall.—At the Wesleyan Chapel, Morpeth, on May 24, by the Rev. W. O. Robinson, George Hedley Athey, Ph.C., Rothbury, third son of T. W. Athey, slater, Morpeth, to Grace Laidler (Daisey), third daughther of Mrs. Marshall and the late G. T. Marshall, chemist, Morpeth.

Walton—Gordon-Saunders.—On the 1st, at Holy Trinity Church, Finchley Road, by the Rev. Bonavia Hunt, Mus.D., assisted by the Rev. Frank Bevan, M.A., Samuel Archibald Walton, eldest son of Joseph Walton, King William Street and Frien Road, Dulwich, to Cecilia Gertrude, third daughter of Gordon-Saunders, Mus.D., of Greencroft Gardens, South Hampstead.

MARKET REPORT and Prices Current

Specially compiled for the Pharmaceutical Journal

The quotations here given are in all cases the lowest cash prices for bulk quantities, and often the articles quoted have to be sorted in order to suit the requirements of the retail pharmacist. The cost of freightage from the chemical and drug works to the various distributing centres must also be considered. It is important that these conditions should be borne in mind in making any comparison between the prices quoted and those of the wholesale drug trade.

LONDON REPORT.

JUNE 9, 1898.

Business has been extremely quiet during past week, and many complaints have been heard at the turn which things have taken. Opium, Morphia, and Codeia are quiet. Quinine dull pending result of to-day's Amsterdam bark sales, result of which had not become known up to time of going to press. Cocaine somewhat unsettled. Quicksilver and Mercurials firm. Glycerin and Cod-liver Oil rather higher. Sulphate of Ammonia weaker. Camphor quiet. Cream of Tartar very dull. Acid Tartaric steady. Acid Oxalic quiet, while Acid Citric remains very firm. Bismuth Salts and Lithia without change, as are also Iodine and Iodides, Bromine, and Bromides. Shellac in good demand at advanced rates. Borax and Acid Boracic very quiet. Acetanilide, Phenacetine, and Sulphonal unchanged. The following are the actual prices ruling:—

ACETANILIDE—Is quiet at 1s. 2d. to 1s. 4d. per lb., according to quantity.

ACID BORACIC—Quiet but steady; *crystals*, 23s. per cwt.; *powder*, 25s. per cwt.

ACID CARBOLIC—Is firm at 7d. per lb. for best make of 35° to 36° ice crystal in large bulk packing, other qualities and packing in proportion. *Crude*: 60° F., 2s. 2d.; 75° F., 2s. 7d. *Liquid*: 95 per cent. of pale straw colour, 1s. 1d. to 1s. 2d. per gallon in 40-gallon casks.

ACID CITRIC—Is very firm at 1s. 1d. per lb. for *English* for spot delivery.

ACID OXALIC—Steady at 3⅝d. per lb. on the spot.

ACID TARTARIC—Is steady at 1s. 1d. per lb. for *English* and 12¾d. per lb for *Foreign*.

AMMONIA COMPOUNDS.—*Sulphate* easier; grey prompt 24 per cent., London, £9 5s. per ton. Hull and Leith 2s. 6d. per ton less. Beckton £9 5s., Beckton terms £9. *Bromide* 2s. 2d. per lb., *Iodide* 14s. 6d., *Oxalate* 6d., *Sulphocyanide* 1s. 1d. to 1s. 2d., *Sal ammoniac*: Sublimed firsts 35s. per cwt, seconds 33s. *Chloride*: commercial 98 per cent,, free from metals, 26s. per cwt.; chemically pure 32s. to 33s.

ANTIMONY.—Market is firm at 24s. per cwt. for crude *Japan* on spot, while to arrive there are few offers at 22s. per cwt., *c.i.f.*, it being stated that quantity available for shipment is extremely limited. *Regulus* is quoted 35s. to 36s. per cwt. on the spot.

ATROPINE—Firm at 15s. 6d. for the *Sulphate P.B.*, and 17s. 10d. per oz. for the *pure*.

BALSAM TOLU—Is easier, good genuine being offered at 1s. 8d. per lb. in large tins.

BISMUTH.—Price of the *metal* remains at 5s. per lb., makers' price for the *Subnitrate*, being 4s. 10d. per lb. for 5-cwt. lots.

BLEACHING POWDER—Firm at £7 to £7 5s. per ton on the spot.

BORAX—Unchanged at 14s. per cwt. for lump and 14s. 6d. per cwt. for powder.

BROMINE and BROMIDES—Without change at 1s. 11d. per lb. for the former, 1s. 10d. per lb. for *Potass. Bromide*, and 2s. 2d. per lb. for *Ammon. Bromide* and *Soda Bromide*.

CAMPHOR.—The market for *crude* is very quiet, and no business is reported. *Japan* quotes 88s. per cwt., and *China* 82s. per cwt., *c.i.f.* terms.

CINCHONA BARK.—The sales taking place to-day in Amsterdam are heavy, but at the time of going to press we have no definite news of how they have gone. The exports of Java during May were 672,000 Amsterdam lbs. against 600,000 last year, and 768,000 in 1896. Total from January to May 3,884,000 Amsterdam lbs. against 2,584,000 in 1897, and 3,260,000 in 1896.

CINNAMON.—The quarterly auctions were held on Monday, the offerings being very small, only 959 bales *Ceylon*, against 1956 bales in April, and 1675 bales at the same time last year. Demand was very slow, about 660 bales finding buyers at a decline of 1d. to 2d. per lb. for good to fine qualities and at previous rates for the lower grades. Of 173 bales worked *Ceylon*, 74 bales First sort, good to fine 1s. to 1s. 4d., superior 1s. 10d.; 43 bales Second sort, medium 10½d., fine 1s. 1d. to 1s. 2d., superior 1s. 6d.; 26 bales Third sort, middling 9d., good 1s., superior 1s. 4d. to 1s. 2d. and 1s. 5d., and 33 bales Fourth sort, common 7½d., good 10½d. Of 786 bales unworked 460 bales sold, First sort, good to fine 1s. to 1s. 3d., medium, 10d., inferior coarse 9d.; Second sort, fair to good 10d. to 11½d., ordinary 8½d. to 9d., inferior coarse 8d. to 8½d.; Third sort, ordinary to good fair 8d. to 9½d., inferior 7d. to 7½d.; Fourth sort, ordinary to fair 7d. to 8d., inferior 6½d.

CLOVES.—Privately *Zanzibar* have been very quiet. June to August delivery quoted $3\frac{25}{32}$d. Small business done October to December delivery at $3\frac{15}{32}$d.

COAL TAR DISTILLATION PRODUCTS.—*Toluol*, commercial 1s. 4d., pure 3s. per gallon. *Benzole*. 50 per cent. 1s. 2d, 90 per cent. 1s. 1d. *Crude Naphtha*, 30 per cent. at 120° C., 6d. *Solvent Naphtha*, 95 per cent. at 160° C., 1s. 8d. per gallon.

COCAINE.—Market is quiet, makers' price for best brands being 9s. 6d. to 9s. 9d. per oz. for 100-oz. lots in 25-oz. tins. There are, however, sellers from second hand at rather lower figures.

COCOA BUTTER.—The monthly sales took place on Tuesday, when 60 tons of *Cadbury's* sold at an average price of 9⅞d. per lb., against 9⅝d. per lb. in May, 10½d. in April, and 9¾d. in March.

CODEIA—Steady at 11s. 3d. to 11s. 6d. per oz. for quantity.

COD-LIVER OIL.—The reports of the *Finmarken* fishery continue to be less and less favourable; the tone of the market is consequently firmer. There is, however, little doing, this being the season of the year when business in the article is usually very slack. Quotation is nominally 82s. 6d. to 85s. per barrel *f.o.b.* for new non-freezing in tin-lined barrels.

CREAM OF TARTAR—Is exceedingly dull. First white *crystals* on the spot are quoted 70s. 6d. to 71s. per cwt., *powder* 72s. 6d. to 73s. per cwt. High grades suitable for the new B.P. requirements are quoted 80s. per cwt.

GALLS.—*China* are quiet, fair quoted 57s. per cwt. In *Persian* blues a fair business is doing at 54s. per cwt.

GINGER.—*Cochin* continues quiet and easy, 2143 bags being offered and only 830 bags sold; low shrivelled pickings 11s., rough small and ends 15s. 6d. to 17s. 6d., fair rough Calicut 24s., small brown rough 26s. to 27s., small native limed part cut 33s. Of 172 cases only 59 sold; Calicut medium cut 56s. to 58s., one case fine bold cut 84s., medium native part cut 45s. to 47s. 100 bags limed *Japan* bought in at 19s. 27 bags ordinary *Liberian* bought in at 17s. 6d., of *Jamaica* a good supply found less demand, about 500 packages being sold at decline of 1s. to 5s. Good ordinary *Rhatoon* 78s. to 79s., low middling small scraped to middling washed, 80s. to 85s., good middling to fine bright 86s. to 92s. 6d., fine selected 95s. to 117s. 6d. 7 bags scraped *St. Lucia* sold at 77s. 6d.

GLYCERIN.—Market is decidedly firmer, the agents for one maker reporting an advance of 5s. per cwt. for *refined*; good *German* makes of *white* double distilled chemically pure 1260° are, however, still obtainable at 53s. 6d. to 62s. 6d. per cwt. in tins and cases, according to quantity and brand. *Crude* is very firm.

GUARANA—Is exceedingly quiet and good can be bought at 1s. 6d. per lb,

IODINE and IODIDES—In good demand at 7½d. per oz. for the former; 9s. 9d. per lb. for *Potass Iodide* in 2 cwt. lots, and 13s 4d. per lb. for *Iodoform*.

IPECACUANHA.—Sales have been made this week at 9s. 1d. per lb. for *Rio* and 4s. 10d. to 5s. per lb. for *Carthagena* according to quality and condition.

LICORICE ROOTS.—*Persian* decorticated selling in a small way at 20s. to 21s. per cwt.; ordinary rough at 8s. per cwt.

LITHIA—Is unchanged at 10s. 8d. per lb. for the *Carbonate* in 2-cwt. lots.

MENTHOL—*Japan* is steady at 7s. to 7s. 6d. per lb. for good dry white crystals in 5-lb. tins for quantity.

MERCURIALS—Are firm at the lately advanced prices, viz., 2s. 9d. for *Calomel*, and 2s. 5d. for *Corrosive Sublimate* in ½-cwt. lots

MORPHIA—Unchanged at 4s. 6d. per oz. for the *Hydrochlorate salt* in powder.

NITRATE OF SODA—Quiet but fairly steady at £7 15s. per ton for the *commercial* and £8 for *refined*.

OILS (ESSENTIAL).—*Star Aniseed* continues in good demand at again dearer rates for forward delivery, 6s. 7d. per lb. having been paid for June to July steamer, whilst on the spot price is firm at from 7s. to 7s. 3d. per lb. *Cassia* is very quiet, and prices are unchanged. *Citronelle* is quiet at 1s. 2d. per lb. in tins or drums. *Lemongrass* lower at 4d. per oz., closing very quiet. *Peppermint* slow of sale; HHG

is quoted 5s. 7½d. to 5s. 9d. per lb.; Wayne County, 3s. 9d. to 4s. per lb. *Japan*: Dementholised, 3s. per lb.; 40 per cent., 4s. per lb.

Oil (Fixed) and Spirits.—*Linseed* dearer at £17 2s. 6d. for pipes on the spot, and £17 10s. for barrels. *Rape* quiet; ordinary brown on the spot, £23; refined, £24 10s. *Cotton* quiet and lower at £14 for London crude, and £15 15s. to £16 10s. for refined, according to make. *Coconut* firm at £24 10s. for Ceylon on the spot, and £29 10s. for Cochin, same position. *Palm*: Lagos on the spot, £24. *Turpentine* lower, but closing steady at 24s. per cwt. for American on the spot. *Petroleum Oil* steady; American, 5⅛d. per gallon; Russian, 4⅝d. per gallon. *Petroleum Spirit*: American, 5⅝d. per gallon; deodorised, 6d. per gallon.

Opium—Very quiet at unchanged prices, values being as quoted in our last, but with practically nothing doing in the article at the moment.

Pilocarpine.—Makers still quote 33s. per oz. in 1-oz. lots.

Potash Compounds.—*Bicarbonate*, 30s. per cwt in bulk for *crystal* or *powder*. *Bichromate* 3½d. to 4d. per lb. *Bromide* 1s. 10d. per lb. *Chlorate* 3½d. per lb. *Cyanide* 1s. 1d. to 1s. 2d. per lb. for 98 per cent. cake, according to quantity and delivery. *Iodide* 9s. 9d. per lb. in 2-cwt. lots. *Permanganate* 65s. per cwt. for small and 70s. per cwt. for large crystals. *Prussiate*: *red* 1s. 2d. to 1s. 3d. per lb.; *yellow*: 6¾d. to 7d. per lb. for English.

Quicksilver.—Very firm at £7 12s. 6d. per bottle from importers and 6d. less from second hand.

Quinine.—Market is quiet and there have been a few sales from second-hand as low as 10d. per oz. for good brands, this price having been accepted in view of the large quantity of bark up in to-day's Amsterdam sales, the result of which had not transpired at the time of going to press. Makers' price remains nominally 1s. per oz. for 1000-oz. lots in 100-oz. tins.

Salicine—Is firm at 10s. to 10s. 6d. per lb. as to quantity.

Senna.—The "Arabia" steamer, due here on the 11th inst., brings a further 169 bales *Tinnevelly*. The stock at the present time is the smallest for many years, and even when the new crop arrives in August it is not anticipated that present high prices will decline, as demand is sure to be good.

Shellac.—After an interval of three weeks the auctions were resumed on Tuesday, when unusually small supplies of *Second Orange* were offered. These met with a good demand, but owing to the higher prices required only about one-half was disposed of, and these realised an advance of 3s. to 4s. per cwt. on last sales' prices. A total of 384 cases offered and 178 cases sold. *Second Orange*: Of 256 cases 154 sold, good strong curly matted at 64s., flat flimsy reddish free at 63s. to 64s., ordinary livery broken at 62s., shivered block worked at 62s., ordinary red blocky at 60s., common livery 57s. to 58s. *Garnet*: Of 25 cases 15 sold, common flat ruby at 56s. *Button*: Of 103 cases 9 sold, fine bold No. 1 at 91s., common weak seconds at 64s.

Spermaceti.—*American* is lower at 1s. 2½d. per lb.; supplies coming forward freely.

Soda Compounds.—*Crystals* steady at 55s. to 57s. 6d. per ton. *Acetate* refined 13s. 6d., chemically pure 35s. per cwt. *Bicarbonate* commercial 90 per cent. £7 10s. per ton, ditto free from mono-carbonate 18s. 6d. to 20s. per cwt. *Bromide* 2s. 2d. per lb. *Hyposulphite* 6s. to 8s. per cwt. *Iodide* 11s. 7d. per lb. *Nitrate* commercial £7 12s. 6d. to £7 15s., refined £7 17s. 6d. to £8 per ton. *Caustic*, white 70 per cent. £7 10s. per ton, 60 per cent. £6 10.

Spices (Various).—*Black Pepper*: Penang and Lampong bought in at 4d., Singapore at 4⅛d., and fine Wynaad at 4¼d.; 132 bags Tellicherry sold at 4⅛d. *White Pepper*: Penang bought in at 6⅞d.; 13 bags fine Ceylon sold at 8⅜d. *Chillies*: 7 bales dull Zanzibar sold at 27s. 6d.; 34 bags Japan sold without reserve at 34s. to 36s. 6d. *Capsicums*: 29 casks, each 220 lb., in brine, from Marseilles, partly sold at 35s. per cask. *Cassia Lignea*: 138 boxes bought in at 50s., 25 cases selected sold at 51s., and 15 cases selected chips at 44s. 115 bales broken bought in at 36s. *Mace*: 56 cases Penang mostly bought in, pickings and common at 1s. 3d. to 1s. 6d. 4 cases low middling slightly wormy sold at 1s. 7d. 1 case ordinary broken Bombay sold at 1s. 4d. 17 packages West India sold; low to middling red, 1s. 4d. to 1s. 7d.; good, 1s. 9d.; two lots good to fine bright pale, 2s. and 2s. 10d. *Nutmegs* dull at about previous rates. *Pimento*: Only 90 bags sold; fair, 4¼d.; one lot ordinary, 4⅛d.

Sulphate of Copper—Is quiet and lower at £15 5s. to £16 per ton on the spot.

Sulphonal—Still unchanged at 7s. 3d. per lb. for bulk packing.

Tonquin Beans.—*Angosturas* are lower at 6s. 6d. per lb. in 3-cwt. casks.

Turmeric—Is very firm, but owing to the long prices asked but little business has been done. *Bengal* quoted at 17s., fair *Malabar* finger 22s., and *Cochin* split bulbs 9s. 6d. per cwt.

To-day's drug sales passed off quietly. Ergot of Rye slightly wormy sold cheaply. Ipecacuanha was slightly easier. Cardamoms down about 6d. per lb. Rhubarb in large supply and dull of sale. The following are the particulars of the principal business done and prices required:—

Agar Agar or Japanese Isinglass.—This is very scarce at the moment. 10 bales of fair quality, slightly brown, were offered in to-day's sales, and held for 1s. 4d. per lb.

Aloes.—Fair *Socotrine* was held for 82s. 6d. per cwt. in kegs, and 75s. in boxes. 1 case *East Indian* bought in at 25s. Of 145 boxes fine livery *Curacoa* part sold at 29s. per cwt. balance being taken out at 40s. per cwt.

Anatto Seeds.—32 bags fair bright held for 5½d. per lb., showing an advanced value for the article.

Antimony.—17 cases crude *Japan* bought in at £24 per ton.

Asafetida.—220 cases were offered, but met with no demand beyond 1 case, which sold at 50s. per cwt. for fair brown block.

Balsam Copaibæ.—24 cases *Carthagena* sold with brisk demand at 1s. 5d. to 1s. 6d. per lb., the cheaper price being subject to approval.

Balsam Tolu.—4 cases of fair quality sold at 1s. 7d. per lb.

Buchu Leaves.—12 bales yellowish-green rounds sold at 4d. per lb., subject to approval.

Camphor.—70 cases *Japan* refined bought in at 1s. 3d. per lb. for 1 oz. tablets, 1s. 3¼d. for ½-oz., and 1s. 4d. per lb. for ¼-oz. tablets.

Camphor Oil.—100 cases white *Japan*, doubts as to the genuineness of which were expressed, all sold at 21s. per cwt, a fairly cheap price if the article is right.

Cardamoms.—167 cases were offered but demand was very slow, and where sales were made it was only by giving way about 6d. per lb. on last sale's rates. Decorticated were firm at 2s. 10d. per lb. for grey seed, and 3s. per lb. for good.

Castor Oil.—15 barrels bought in at £29 per ton, while for 15 cases 4¼d. per lb. was the price required.

Cascarilla Bark.—19 barrels siftings held for 19s. per cwt.

Chiretta.—10 bales brownish held for 4d. per lb., this article being very scarce.

Colocynth.—Small to medium part broken *Turkey* was held for 11d. per lb.

Colombo Root.—219 bags medium quality small to bold, somewhat brownish and stalky were held for 25s. per cwt.; 10 bags washed pickings being bought in at 40s.

Cubebs.—20 bags taken out at 26s. per cwt.

Cummin Seed.—*East Indian* was bought in at 14s. per cwt., while *Malta* of rather inferior quality was held for 20s.

Cuttle Fish.—92 mats fair pale medium size part broken were held for 3½d. per lb.

Dragon's Blood—Was represented by 7 cases, 4 of fair reeds, which are held for £8 15s. per cwt. 2 cases dullish seedy lump was held for £8 per cwt., whilst 1 small box of fair to good bright, picked out of the other 2 cases, realised the long price of £13 per cwt.

Ergot of Rye.—22 bags *Russian*, slightly weevily, sold cheaply at 4¼d. to 5d. per lb.

Fennel Seed.—20 bags of fair quality, but rather chaffy, bought in at 16s. per cwt., 15 bags medium quality selling cheaply at 12s. 6d. per cwt.

Galls.—165 bags blue *Persian* were held for 54s. per cwt.

Gamboge.—24 cases in all were offered, fair bright soft being held for £8 per cwt. 3 cases ricey *Saigon* pipe sold without reserve at the hitherto unheard of price of 50s. per cwt.

Guaza.—53 Robbins fair green but rather dusty tops were held for the Bombay limit of 7d. per lb., the article being reported very scarce and dear.

Gum Ammoniacum.—21 cases were bought in, good pale block part loose tears being held for 45s. per cwt. *Ditto* rather dark colour for 27s. 6d., dark seedy for 20s.

Gum Benjamin.—Ordinary seconds *Sumatra* were held for 100s. to 105s. per cwt., lower ditto for 95s., medium ditto for 130s. to 150s. *Palembang* held for 22s. 6d. per cwt. Of *Siam* 1 case fine marbly glassy block sold at £13 5s. per cwt. 10 cases small bright, pea size, slightly blocky, sold at £8 15s. 39 cases *Penang* offered without reserve sold at from 42s. to 57s. per cwt.

Gum Kino.—8 tins genuine were taken out at the somewhat fancy price of 12s. 6d. per lb.

GUM ARABIC.—10 cases *Karachi* held for 52s. 6d. per cwt.; 25 bags *Persian* for 25s.; 6 bales good sorts for 80s. per cwt.

GUM MYRRH—Fair sorts bought in at 55s. per cwt., good pale *ditto* at 65s.

HONEY.—21 cases *Chilian* bought in at 27s. per cwt. 43 cases *Honolulu* sold at 20s., which was cheap. Medium *Jamaica* held for 22s. to 25s. per cwt., part selling at 19s. 6d. to 20s., and 9 casks without reserve at 19s. per cwt.

IGNATIUS BEANS.—18 bags good sound fairly bold bought in at 3d. per lb.

IPECACUANHA.—Of the 29 bales *Rio* offered only 1 bale sold at 9s. per lb., the rest being bought in at that price. Of *Carthagena* 15 bags very woody sold at 4s. to 4s. 2d. per lb., the better qualities being held for 5s. per lb.

JABORANDI LEAVES.—10 bales fair green held for 6d. per lb.

KAMALA.—Fair bright was held for 10d. to 1s. per lb., while for 1 case dull and dusty 5d. per lb. would probably have been accepted.

KOLA NUTS.—10 bags washed, *African* sold cheaply at 2½d. per lb.

LIQUORICE JUICE.—2 cases fair quality in small sticks were bought in at 60s. per cwt.

LIQUORICE ROOT.—5 bales very rough decorticated. *Russian* bought in at 45s. per cwt.

MUSK.—12 caddies *Tonquin* were bought in at 55s. per tin, old fashioned ditto selling at 57s. 6d. per oz.

NUX VOMICA.—10 bags fair bright *Bombay* sold at 7s. 3d. per cwt.

OILS (ESSENTIAL).—5 bottles, each about 24 ozs. net, *Seville Orange* sold at 6s. 4d. per lb. Good *Cinnamon* bark oil was held for 4s. 6d. per oz., 2 cases *Cinnamon* leaf for 1s. 4d. per oz. 30 cases fair commercial *Eucalyptus* oil for 1s. per lb. 1 case West Indian distilled *Lime* oil sold at 3s. 9d. per oz. 3 casks *Aniseed* oil bought in at 6s. per lb. *Lemon-grass*: 35 cases were sold without reserve at 3d. to 3¼d. per oz., only one lot at latter price, which marks a decline in value.

ORANGE PEEL.—8 cases new thin cut part sold at 7d. per lb., slightly lower quality fetching 6d., which was cheap.

ORRIS ROOT.—Nothing sold. *Verona* being held for 26s. per cwt., and *Florentine* for 38s. to 43s. per cwt. according to quanlity.

QUINCE SEED.—2 bags of fair quality sold at 1s. 6d. per lb., a rather full price, the article appearing to be rather scarce.

RHUBARB—Was in large supply, part of new crop which is said to have come on the market earlier than usual. Demand, however, was exceedingly dull and only by giving way in values could sales be made. *Canton*: Fine bold flat realised the good price of 1s. 8d. per lb., but the second size fell off to 1s. 3d. per lb., whilst good small, part trimming, root sold at 1s. 1d. per lb. Rough pickings sold at 11d. per lb. *Shensi*: Good bold round pale coated greyish fracture sold at 2s. 6d. per lb., rough ditto at 1s. 4d. per lb. Very common rough horny high dried sold at 5¾d. to 6d. per lb.

SARSAPARILLA.—28 bales good fibrous *Jamaica* sold at 1s. 7d. to 1s. 8d. per lb.

SCAMMONY ROOT.—50 bags of fair quality held for 27s. 6d. per cwt.

SENNA.—*Tinnevelly* was offered to the extent of 260 bales, the bulk being in first hands consisting of small spotty leaves, these sold at slightly easier rates at from 1¾d. to 2¼d. per lb. Better qualities from second hands sold in part at 6¾d. per lb. for fair bold green leaves. *Alexandrian*: 2 cases good leaf sold at 6½d. per lb. subject to apprval.

STROPHANTHUS SEED,—4 bags *Kombé*, somewhat brown in colour, were held for 2s. 6d. per lb.

SOY.—20 casks *China* bought in at 1s. 5d. per gallon.

TAMARINDS.—Good *West Indian* sold at 14s. per cwt., fair *ditto* being bought in at 10s.

TONQUIN BEANS.—Good frosted *Angostura* sold at 6s. per lb., showing lower value; good frosted *Para* were held for 2s. per lb.

VERMILION.—4 cases fair *China* bought in at 2s. 2d. per lb.

WAX.—Medium *Zanzibar* held for £6 5s. to £6 7s. 6d. per cwt., part selling £5 15s. to £5 17s. 6d.; fair *East Indian* for £6 5s. to £6 10s.; 4 bags *Morocco* for £6 15s.; good *Jamaica* sold at £7 2s. 6d. to £7 7s. 6d.; 3 cases good *Australian* realised £7 5s. per cwt., which was quite a full price; 7 casks *Mogador* brought in at 90s.; fair *Madagascar* sold at £6 10s. to £6 12s. 6d. per cwt.

NEWCASTLE CHEMICAL REPORT.

The market for heavy goods is little changed in position. Shipments to Baltic and Mediterranean ports continue on a fair scale, but scarcely up to an average. Prices are:—Bleaching Powder, according to market, £6 5s. to £6 10s., Soda Crystals: basis, 45s. to 52s. 6d. Caustic Soda: 70 per cent., basis, £7 5s. to £7 10s. Soda Ash: 52 per cent., £4 5s. Alkali: 52 per cent., £5 5s. Sulphur: £4 15s. to £5 per ton.

MANCHESTER CHEMICAL REPORT.

The Board of Trade Returns are again of a most unsatisfactory character, the exports to the United States having still, so far as Alkali is concerned, almost reached vanishing point. Alkali shows a decrease of 35·9 per cent. in quantity and 32·2 in value, and Bleaching Powder 0·5 in quantity and 17·2 in value, while chemicals and chemical preparations show 10·2 of a decrease. In this market there has been little or no movement, owing to the holidays, but the tone is not by any means active. Caustic Soda for highest strength is quoted from £8 2s. 6d. to £8 7s. 6d. for home consumption, and Bleaching Powder varies from £5 2s. 6d. to £5 7s. 6d. per ton, soft-wood casks on rails. The better aspect of Naphthas and Benzols is well maintained.

LIVERPOOL REPORT.

AMMONIA SALTS.—Carbonate 3d. per lb. *Sal ammoniac* 33s. to 35s. per cwt. *Sulphate* easier in tone, £9 7s. 6d. per cwt.

BEESWAX.—8 packages of Sierra Leone wax found buyers at £6 10s. per cwt.

BLEACHING POWDER—Is dull at £5 10s. to £6 per ton.

COPPER SULPHATE—Still quoted at £16 to £16 2s. 6d. per ton, and quiet at that.

OILS (FIXED) AND SPIRITS.—*Castor* is selling steadily. Castor "good seconds" is quoted at 3¼d. to 3⅝d. per lb., and French 1st pressure at 3¼d. per lb. *Olive* of Spanish origin is easier in price, and may now be had at £29 to £30 per tun, ex-quay. *Linseed* of Liverpool pressure is on the advance, and is priced at 18s. 3d. to 18s. 9d. per cwt. *Cottonseed* has dropped a shade, being quoted now at 16s. 9d. to 17s. 3d. per cwt. *Spirits of Turpentine* has experienced a rapid fall in price, and is now selling in small amount at 25s. 6d. per cwt.

POTASH SALTS.—*Bichromate*: 3¾d. per lb. *Bicarbonate*: 39s. per cwt. *Chlorate*: 3¼d. to 3½d. per lb. *Pearlash* is very slow of sale at 35s. per cwt. *Potashes* are in moderate demand at 20s. 3d. per cwt. *Prussiate*: 6¼d. to 7d. per lb. *Saltpetre*: 21s. 6d. per cwt. *Tartar*: Fine cream is somewhat irregular, and is selling at 70s. to 77s. per cwt., according to assay.

SODA SALTS.—*Bicarbonate*: £6 15s. to £7 per ton. *Borax*: £13 per ton. *Caustic*: 76 per cent. and 77 per cent., £8 5s.; 70 per cent., £7 5s. *Crystals*: £3 per ton. *Nitrate* is in moderate demand at the steady rate of 7s. 6d. to 7s. 9d. per cwt.

EXCHANGE.

OFFERED.

Miscellaneous.

Magic Lanterns, second-hand; triples and biunials; oxyhydrogen microscope; marvellous pamphengos oil; lantern gives 14-ft. picture; 60,000 slides and effects; 4-in. 4-wick lanterns, 18s. 6d. each, bargains; illustrated list post free, 2d. Animated photographs: A splendid machine for £9 9s.—Hughes, Brewster House, 82, Mortimer Road, Kingsland, N.

Overstocked.—Superfine Oil of Lemon, fine quality, 2×10 lb. coppers, 22s. 6d. each; sample pound free anywhere 2s. 9d. Willcox's No. 2 Gun Metal Pump, 25s.—Moss, 34, Avondale Road, Chorley.

New India-rubber Mat, 30 ins. by 24 ins.; cost 27s.; for best offer over 12s. 6d., cash; quantity glass measures, all sizes, about half list prices.—Chemist, 88, East Street, Walworth, S.E.

New ½-plate Camera, best polished mahogany, double-extension leather bellows, reversing back, with 3 double-dark slides, rapid rectilinear lens with Iris diaphragm, 4-fold tripod, complete 50s., a gigantic bargain.—Vincent, 460, Holloway Road, London.

Oil Peppermint Opt., 8 ozs.; oil rosemary, 8 ozs.; acid citric crystals, 7 lbs., 2-40 ozs., graduated glass measures, quart infusion pot (white), 6 pairs near-sight spectacles, 10s. the lot.—Medicus, 88, Sussex Road, Holloway.

'Pharmaceutical Journals' for sale, 1841-89, uniformly bound in half calf, and in first-rate condition. 1st series, 1841-59, 18 vols.; 2nd series, 1859-70, 11 vols.; 3rd series, 1870-89, 19 vols., and Index for 15 vols., 1841-55; Index for 12 vols., 1856-68; Index for 10 vols., 1868-78. **'Year Book of Pharmacy,'** 28 vols., in original cloth, 1864-96 (1864-9 bound in one volume), also General Index, 1864-85. No reasonable offer refused.—Lincoln, 'Pharm. Journal" Office, 5, Serle Street, W.C.

Books.

Proctor's 'Pharmacy,' Kanthack's 'Bacteriology,' B.P. (1885), Southall's E Collection, Official Materia Medica Collection, Osteology. What offers? Morris, Winchmore Hill, N.

Watts' Dictionary of Chemistry.—First edition, 5 vols.; quite new, £3 10s. or offers. 'Vibrating Motion and Sound,' Everitt, 3s. 'Demonstrations in Anatomy,' Ellis, 5s.—Dispenser, 128, Victoria Street, S.W.

WANTED.

Old Platinum Utensils or Scrap, also Old Electric Lamps wanted for prompt cash by P. Rowsell, 14, Walcot Square, London, S.E.

Mahogany Cupboard, 5 ft. 3 in. wide and about 4 ft. 6 in. high, sliding doors preferred, for behind a counter.—Brisley, Bexhill, Sussex.

PHARMACY IN AUSTRALIA.

[*From our Melbourne Correspondent.*]

In his presidential address at the forty-first annual meeting of the Pharmaceutical Society of Australasia, held on March 24, Mr. Wm. Witt, one of the few surviving founders of the Society, felt justified in referring with some complacency to the great progress which had been made by it, more especially during the past twenty years. A very effective illustration of this is afforded by the College of Pharmacy, which is regarded with considerable pride not only by pharmacists but by Victorians generally. Built and arranged specially for the educational objects in view, it is fitted up with every requisite modern appliance, and affords accommodation not only for our pharmaceutical students, but also for those of the Medical School of the Melbourne University in connection with their practical pharmacy course, and for those connected with the recently established Australian College of Dentistry. It also affords very valuable facilities to students desirous of acquiring a knowledge of chemistry in its applications to manufactures, toxicology, brewing, analysis, or original research. The teaching staff is composed of men well known for their high attainments, some of whose names will no doubt meet with ready recognition from your readers, viz.:—Lecturer on Materia Medica, Mr. Sidney Plowman, F.R.C.S., F.I.C.; Lecturer on Botany, Mr. D. McAlpine; Lecturer on Chemistry and Practical Chemistry, and director of the Chemical Laboratory, Mr. W. A. Craig, M.A.; Lecturer on Practical Pharmacy to medical students of the Melbourne University, Mr. F. Hobill Cole, M.B., Ch.M. During the past year the income of the College from students' fee amounted to no less than £937 6*s.*, made up as follows:—Pharmaceutical, £532 7*s.*; Medical, £225 5*s.*; Dental, £42; Examination fees, £137 11*s.*; from all of which it will be seen how important a part the institution fills, and is likely to fill, in the educational economy of the colony. The past session, I may add, was rendered somewhat unique by the attendance of a lady student, Miss Wollen, who proved the capabilities of her sex by winning prizes in materia medica and botany at the terminal examination, and the gold medal in chemistry, materia medica, and botany, at the honour examination, thus securing the enviable position of Dux of the College.

A further proof of the generally satisfactory social and financial position of Victorian pharmacists is afforded by the fact that during the past year not a single application was made for assistance through the Benevolent Fund, which now shows a balance in hand of £408. It is to be regretted, however, that here, as in the old country, a considerable number of pharmacists remain outside the Society's ranks, while most of the practical work is thrown upon the shoulders of a comparatively small number of enthusiastic members. It is to be hoped that the position in which we now find ourselves through the reading of Section 14 of the Poisons Act, 1890, adopted by the Full Court in the "Pink Pills" case, which practically renders the Act inoperative, will serve to rally the craft to the Council's assistance in carrying an amended Act through Parliament. I presume that you have already noted the particulars and bearings of the very important case from your exchanges, but otherwise the text of the judgment delivered by Mr. Justice Williams, copy of which I annex, affords an admirable summary of the various points involved.

During the past year several special meetings of pharmacists were held in Melbourne to consider the "cutting" and other trade questions, and an effort was made to form a company to purchase special lines in large quantities and distribute to members according to their respective requirements, thus securing their supplies at lowest possible rates, and enabling them to defeat the tactics of unqualified competitors. The scheme, however, failed to secure adequate support, and fell through; but I believe that the principlo is acted upon on a smaller scale by a few friendly pharmacists here and there, who arrange among themselves for conjoint purchases, no doubt greatly to their mutual advantage.

In New South Wales the past year has been notable for the passing of a Pharmacy Bill, which, although admittedly not an ideal one, is at least a considerable step in the right direction. The Pharmaceutical Society of New South Wales, which has now been in existence for twenty-two years, has at length secured registration under the Companies Act, "with limited liability without the addition of the word limited to its name," and has entered on a career of growing importance and influence. In his address at the annual meeting on March 15, the President, Mr. L. P. Williams, referred in somewhat envious terms to the generous support afforded to the Melbourne College of Pharmacy by the Victorian Government—£1000 per annum originally, although now reduced by stress of hard times to £500—in comparison with the niggardly treatment they had received from the Government of New South Wales, the Premier of which had even refused to concedo them the use of a certain building considered suitable for the purposes of a college. New South Wales pharmacists are naturally anxious that in the matter of education the rising generation should stand on an equal footing with their neighbours, but the puzzle is how this is to be done unless the Government comes to the rescue. Meanwhile the Pharmacy Board has been kept hard at work dealing with applioations for registration under the new Act. Some of the applications made have been based on very amusing grounds, coming from wives, sisters, daughters, and other relatives of pharmacists who have lent an occasional hand at dispensing. Already somewhere about 600 applicants have been granted registration, and it is estimated that there still remains somewhere about 100 eligible persons to be dealt with.

In South Australia the recently passed Indecent Advertisements Act has found its first victim in the person of a chemist, Mr. A. L. Fry, of Bordertown, who was prosecuted in connection with a handbill advertisement of soluble pessaries, and fined £1 and costs. As an outcome of this case, the Council of the Pharmaceutical Society waited upon the Chief Secretary in order to ascertain the position of chemists selling many of the ordinary patents, the handbills of which might happen to contain some word or words infringing the Act, and were promised that definite information should be supplied on the subject by the Crown Solicitor. I may add that a somewhat similar Bill was introduced into the Victorian Legislature in December last, under the united auspices of the Australian Natives' Association and the Pharmaceutical Society, but had to be abandoned on account of pressure of public business. There is a growing feeling that the publication on our news-sheets or otherwise of advertisements relating to sexual complaints or to drugs openly recommended for purposes of abortion is a scandal to a civilised community, and must sooner or later be rendered illegal.

We have hitherto been remarkably free from fatalities arising out of dispensers' blunders, but a very sad mistake was recently made at Clifton Hill, a suburb of Melbourne, by a young pharmacist named J. W. Christopher, resulting in the death of Dr. S. I. Williams, a well-known medical man, and the almost fatal poisoning of one of his patients, a Mrs. Henry Turner. Dr. Williams was personally in the habit of using hypodermic injections of morphine, and apparently found it advisable to administer them to Mrs. Turner. Calling at Christopher's pharmacy for a supply of the drug, what transpired was thus related at the inquest by Mr. Christopher, sen. "When Dr. Williams called his son was in the shop. He came to the rear of the premises and asked where the sulphate of morphine was. Witness went to the shop and gave his son a box containing 9 or 10 bottles of alkaloid from the poison chest. Witness saw him take up a bottle on which he could only see the word 'sulph.,' and assumed that it was morphine. About half-an-hour later witness saw on the counter an empty bottle with the words 'Sulphate of atropine' on it. He saw that a mistake had been made and telephoned to Dr. Williams." But, alas, the drug had already been used with the results mentioned. Dr. Williams succumbing to the effects of the poison on the following day. The cononer's jury found a verdict of manslaughter against Christopher, who was then committed for trial at the Criminal sessions.

Mr. Ll. P. Williams, the president of the Pharmaceutical Society of New South Wales, is spoken of as a probable candidate for parliamentary honours at the next elections. He has all pharmacists' best wishes for his success.

At Melbourne, on March 29, John Nicholl, herbalist, and W. Moreno, masseur, were sentenced, the former to two years' hard labour and the latter to eighteen months, on a charge of administering noxious drugs for an illegal purpose. In a letter to Mr. Shillinglaw, the Victorian Registrar, the Chief Commissioner of Police tendered the thanks of the Department for the valuable aid afforded by him in the case.

BURGLARS effected an entrance, on April 8, to Messrs. Felton, Grimwade and Co.'s factory in Jeffcott Street, West Melbourne, and succeeded in removing a safe containing 250 ounces of refined silver, £8 in gold, some silver coins and a cheque.

IN A PAPER read at the recent annual meeting of the New Zealand Branch of the British Medical Association, the President, Dr. Fell, stated that cancer now causes 380 deaths annually in New Zealand alone, and is steadily increasing.

MR. R. AICKIN, son of the President of the New Zealand Pharmacy Board, has proceeded to Edinburgh to study for the medical profession.

AT THE last annual meeting of the Pharmaceutical Society of Australasia, a bye-law was adopted providing that any member who for a period of twenty-five years has been a continuous subscribing member of the Society, shall, upon application in writing to the Council, be entitled to have his name placed on an honorary retiring member's list, and shall be exempt from the payment of further subscription.

THE CHEMISTS' EXHIBITION, 1898.

The number of exhibits at the Agricultural Hall, Islington, this week was slightly in advance of last year, and several new features were introduced on this occasion, perhaps the most attractive being a museum of antiquities, curiosities, and other objects of interest organised and skilfully arranged by Mr. A. C. Merrin. Space will not permit of a description of the whole contents of the museum, but to give a general idea of its character and scope we quote from the catalogue descriptions of a few articles lent by one contributor, Mr. William Martindale, of 10, New Cavendish Street, W. :—"Sample of mandrake root from Damascus in form of human body," "Series of six old apothecaries' vases—Delft, Italian, and others," "Silver Egyptian inkstand with pen-case attached," "Three fools' jugs," "Mummy cloth used for embalming," "Egyptian scarabs, and four representative figures, Egyptian, buried with the deceased," "'The Golfers,' two bronzes by F. Taubman," "Autographs of celebrities (Pasteur, Huxley, Darwin, and Lister)," "Old Pewter Pot, found buried in a hole in the wall in Newman Street, W., bearing mark of 'Buffalo's Head'—the sign of a celebrated inn of the last century in Oxford Street, W., then called Oxford Road," "Series of the editions of the 'Extra Pharmacopœia,'" including an advance copy of the new ninth edition about to be published. The museum was an interesting addition to the exhibition, and those who paid their twopence for admission did not afterwards regret it, especially as the proceeds are to be devoted to the Benevolent Fund of the Pharmaceutical Society.

Messrs. **F. Darton & Co.**, opticians, 142, St. John Street, Clerkenwell, E.C., had on view a number of very compact and remarkably cheap small electric motors and batteries, a registering pocket counter, calculator, and a new cylindro-spherometer for measuring or testing lenses.—Messrs. **Maw, Son & Thompson**, 7-12, Aldersgate Street, E.C., had a general assortment of druggists' sundries, surgeon's instruments, and appliances, and exhibited for the first time a sideless belt and a feather-weight truss (3 oz.), said to be lighter than any other truss on the market. A special feature of their exhibit was the brass and glass cases for use in hospitals, and quite a new thing was the stethonoscope, a new instrument for ausculation. It is constructed on the same principle as the microphone, and can be attached to any ordinary binaural stethoscope, and when not in use can be carried in the waistcoat pocket.—**Aerators, Ltd.**, Broad Street Avenue, E.C., exhibited sparklets for the direct and instantaneous aëration by the user of water, milk, still wines, etc.—Messrs. **Allen & Hanburys, Ltd.**, Plough Court, Lombard Street, E.C., had a fine exhibit of the usual pharmaceutical preparations, the principal attraction being a series of put-up goods which chemists can adopt as their own specialties, comprising malt extracts, emulsions, etc.—Messrs. **Barclay & Sons, Ltd.**, 95, Farringdon Street, E.C., exhibited their new pressure filter and percolator, sets of metric weights and measures, hand and stand cameras, lenses and photographic apparatus generally.—Messrs. **Brand & Co., Ltd.**, Mayfair, and Vauxhall, S.W., had an exhibit of their specialties for invalids, and entrées of all descriptions.—One stand devoted to perfumery, toilet soaps, etc., got up in superior style, that of Messrs. **T. F. Bristow & Co.**, St. James's Walk, E.C., was especially attractive.—All kinds of "Tabloids and Soloids," known throughout the world as the products of Messrs. **Burroughs, Wellcome & Co.**, Snow Hill Buildings, E.C., were in evidence at Stand C in the central avenue, "Enile" rectal suppositories were also shown, and prominence was given to "Tabloid" photographic chemicals.

"**Camwal**" Gifford Street, Caledonian Road, N., had three stands, where their numerous aërated waters, ginger beer in stone bottles, and fruit essences were displayed. An enormous syphon was shown, measuring 23 ft. by 8 ft., and weighing a little over a ton.—The stand of Messrs. **Evans, Gadd & Co.**, Fore Street, Exeter, was devoted largely to the new and altered preparations of the 1898 Pharmacopœia, including all the standardised galenicals; copies of Wippell Gadd's Synopsis of the B.P., 1898, were also shown. "Ambrosia," put up in enlarged sizes, Food Preservative, a fine, white, granular preparation, Victoria Violet Soap, perfumery, etc.—Messrs. **Evans, Sons & Co.**, Liverpool, in addition to a model pharmacy, exhibited Savar's druggists' sundries and "Montserrat" lime fruit juice and its preparations.—Messrs. **Ford, Shapland & Co.**, 6, Great Turnstile, High Holborn, W.C., exhibited labels of all descriptions, circulars, prescription books, and all kinds of chemists' stationery, got up in the best styles.—**The Fromms Extract Co., Ltd.**, 5, White Street (Moorfields), E.C., had a fine stand of food specialties in the form of vegetable extracts and soup tablets.—Messrs. **Harrington Bros.**, Oliver's Yard, 53A, City Road, E.C., had a collection of chemicals used in photography and for scientific purposes, also hyposulphite of soda put up in 1 lb. packets, ready for retail.—Messrs. **Hearon, Squire, & Francis**, 38, Southwark Street, S.E., had a large display of select pharmaceutical preparations (B.P. 1898), rare and commercial specimens of drugs and fine chemicals, granular effervescent preparations, essences, perfumes, etc.—Leeds was represented by Messrs. **Hirst, Brook & Hirst., Ltd.**, who exhibited a choice selection of drugs, chemicals, pharmaceutical preparations, medicated wines, perfumes, chemists' specialties, etc.—**Holloway's Wine Co., Ltd.**, 61, New Oxford Street, W.C., in addition to a decorated stand of medicated wines, had a tastefully set out window display.—The stands of Messrs. **Idris & Co., Ltd.**, Pratt Street, Camden Town, N.W., exhibiting their table waters, fruit essences, meat delicacies, etc., were about as attractive as any in the Hall, and were well patronised.—Messrs. **Ingram & Royle, Ltd.**, 26, Upper Thames Street, E.C., had a very pretty exhibit of natural mineral waters, salts, and pastilles.

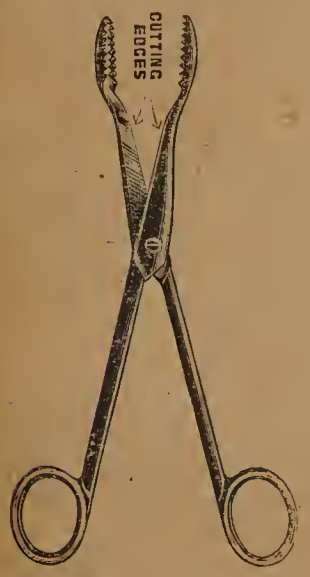
Messrs. **Johnson & Sons, Ltd.**, 23, Cross Street, Finsbury, E.C., exhibited their preparations of gold, silver, and platinum.—Messrs. **W. Kemp & Son**, Horncastle, had a complete exhibit of the new and altered preparations of the Pharmacopœia, 1898, in addition to their numerous laboratory preparations and packed goods, available for chemists' adoption as own specialties.—**Liebig's Extract of Meat Co., Ltd.**, 9, Fenchurch Avenue, E.C., showed their well-known preparations.—Photographic chemicals, developers, accessories, hand cameras, etc., were the principal items exhibited by Mr. **J. E. Lockyer**, 87, Evelyn Street, Deptford, S.E.—**Matto, Ltd.**, 32 and 34, Clerkenwell Road, E.C., displayed the "Matto Chain" for massage at home.—Messrs. **S. Myer & Co.**, 2, New North Road, City Road, N., had a cheap series of perfumes put up in an entirely new style, viz., single fancy boxes, floral cups, and a 6*d.* line, three in box. They also exhibited Cooper's liquors, L. Vigis's Fuller's earth, etc.—**Henri Nestlé**, 48, Cannon Street, E.C., was in evidence with the noted Nestlé's Swiss milk, a specialty being an unsweetened condensed milk.—Messrs. **Newball & Mason**, Nottingham, attracted many visitors with their dried herbs, extracts, and wine and coffee essences.—Messrs. **F. Newbery & Sons**, 1 and 3, King Edward Street, E.C., made a good show with their St. Paul's perfumes, soaps, etc., and also had an exhibit of their agency preparations, those of Messrs. W. R. Warner & Co., Philadelphia, being especially noticeable.—"Izal" preparations formed the principal exhibit of Messrs. **Newton, Chambers & Co.**, Thorncliffe, Sheffield.—Messrs. **Parke, Davis & Co.**, 21, North Audley Street, W., kept up their reputation as exhibitors of the first rank with their numerous pharmaceutical preparations and chemists' specialties.—A new and very pleasing exhibit was that of **Peacock's Ovaline Soap Co., Ltd.**, 203, High Holborn W.C., whose specialties are claimed to contain a large percentage of yolk of egg, a natural emollient for the skin.—Messrs. **Potter & Clarke**, 62 and 64, Artillery Lane, E.C., in addition to a large assortment

of packed goods, including many special lines, exhibited a complete set from A to Z of the new B.P. preparations.

The **Sanitas Co., Ltd.**, Bethnal Green, E., had a fine collection of their disinfecting fluids, soaps, powders, etc. — **Andreas Saxlehner**, Budapest, and Trafalgar Buildings, Charing Cross, W.C., exhibited the well-known "Hunyadi Janos" natural aperient waters.—The latest and every style of chemist's labels and general stationery was in evidence at the stall of **H. Silverlock**, 92, Blackfriars Road, S.E.—Birmingham was well represented by Messrs. **Southall Bros. & Barclay**, whose specialties and preparations are so universally known as to need no mention here.—The proprietors of Hall's wine, Messrs. **Stephen Smith & Co.**, Malmesbury Road, Bow, E., made a very neat and pretty exhibit of their medicated wines and wines for pharmaceutical purposes.—The Leicester firm of **A. de St. Dalmas & Co.**, exhibited their noted bandages, plasters, and sick-room requisites.—Messrs. **James Townsend & Son**, medical label printers, 2 and 3, Stonecutter Street, E.C., had a representative exhibit of the usual chemists' specialties in printing, making a special feature of bottle cartons.—**The Valentine Extract Co., Ltd.**, St. George's House, Eastcheap, E.C., exhibited their food preparations, as did also **Vimbos, Limited**, 130, Queen Victoria Street, E.C.; the Vimbos lozenges and fluid beef being largely patronised by visitors.—**The Vinolia Co., Ltd.**, Malden Crescent, N.W., had one of the finest exhibits in the Hall, their latest additions to the Vinolia toilet requisites are toilet vinegar and toilet water, while a very pretty line in perfumes is now put up in fancy Japanese caskets of 1, 2, and 3 bottles; Vinolia shaving cream for use without brush and water is one of their latest ideas.—Mr. **S. B. White**, chemist, Leicester, exhibited specimens of his medicated wines and sulphur tablets.—Messrs. **Wyleys, Limited**, Coventry, had a large display of pharmaceutical preparations, packed specialties, floral "Tropels," ophthalmic ointment, tubes, etc.

Trade Notes.

Messrs. Reynolds & Branson, Leeds, are manufacturing a new form of "scissors forceps," devised by Mr. H. de Paiva Veale, late House Surgeon, Leeds General Infirmary. As will be seen from the accompanying woodcut, the instrument combines in one the functions of surgical scissors and dressing forceps, whilst it may also be used as an emergency "clip" and sinus dilator. The blades of a medium-sized pair of dressing forceps (Spencer Wells' pattern) have been made broader and furnished with scissor edges between the terminals and the axis. At the same time a rib has been left on the unsharpened edges, which renders the instrument useable as a small sinus dilator. It can be obtained with or without detachable blades, is easily cleaned and sterilised, and is a convenient size for the pocket, being exactly 5 inches in length. The fact that the number of instruments on a chatelaine may now be reduced will recommend it to nurses, and house-surgeons and dressers will recognise the advantage of using a single instrument that can replace, without inconvenience, the necessity for carrying two.



Messrs. F. Newbery & Sons, 1 and 3, King Edward Street, Newgate Street, E.C., send a copy of their eighteenth annual catalogue. The entire list has been set in new type and in other ways improved, and it is as complete and correct a repertory of the goods it enumerates as any similar compilation extant. It forms a reliable and comprehensive price-book of druggists' sundries, proprietary medicines, perfumes, etc., and in addition gives legal information concerning the medical and poisons laws, lists of wines for the sale of which an Excise licence is required and of those not so affected, fixed selling prices established by proprietors, and regulations as to the free carriage of certain goods when sent direct. Altogether it is a most useful and convenient work for reference.

Messrs. R. and J. Beck, Ltd., 68, Cornhill, E.C., send a copy of their illustrated catalogue of microscopes, object glasses, and accessory apparatus. The microscopes specified in the catalogue are suitable for work in botany, chemistry, bacteriology, zoology, physiology, pathology, biology, etc. Included are also lists of staining solutions and mounting fluids, microtomes, object cabinets, etc. Copies will be sent free on application.

Messrs. Taylor, Taylor, & Hobson, Leicester, are planning a new factory which they hope to occupy before the end of this year. To meet their growing business, ground has been secured for a factory four times the size of their present works, and the portion to be built will have capacity for four hundred yards of benching and machinery. It will comprise glass-working, metal-working, and machine shops and stores; together with cloak-room and lavatories for the workpeople, and stores for cycles. The office building, separated from the factory by a fireproof staircase and elevator, will contain private offices, counting-house, drawing-office, experimental-room, testing-room, photographic studio, and stock-room. The buildings will be lighted electrically, and warmed and ventilated by a special plant in the basement, which will blow fresh air through flues to the various rooms, freeing it from dust, moistening it when too dry, automatically warming it to 60° Fahrenheit, and finally discharging through special turrets above the buildings. There will be in the factory a service of gas for heating, compressed air for blowing and cooling, and electricity for motors and other purposes. Power will be supplied by a 35 horse power gas motor.

Messrs. Lorimer and Moyes, Glasgow, the oldest druggists' sundriesmen in Scotland, announce that they have sold their business to Mr. William Dykes, on whose behalf they solicit the continuance of the support so cordially extended to them, and Mr. William Dykes intimates that all business transacted will be under his direct personal supervision. The entire stock has been carefully examined, and some necessary alterations in prices effected. Novelties have been added to stock and arrangements made to manufacture various articles on the premises. The firm will in future be represented in Ireland.

Ferru-Cocoa, as may be gathered from its name, is a preparation of cocoa in which iron constitutes one of the ingredients. It is stated to contain 0·3 per cent. of iron in the form of an organic compound, together with kola in such proportion that the amount of caffeine present corresponds to what is usually found in coffee, and a small proportion of malt. The preparation is highly spoken of as a food beverage, and the presence of iron in a readily assimilable form is doubtless advantageous.

Partnerships Dissolved.

(From the London Gazette)

H. B. Gill and Irwin B. Street, Dental Surgeons, Chester Villa, Belvedere Road, Upper Norwood, and 53, Harley Street, W. Debts will be received and paid by H. B. Gill.

H. Stiles and J. C. Coath, Aërated Water Manufacturers, North Street, Bridgend, Glam. Debts will be received and paid by H. Stiles.

Robert D. Gibbs, John Cuxson, and A. W. Gerrard (trading as Gibbs, Cuxson and Co.), Manufacturers of Surgical Dressings and Appliances and Druggists' Sundriesmen, Fountain Lane, Oldbury, Worcester, so far as concerns Robert D. Gibbs. Debts will be received and paid by the remaining partners, who will continue the business under the style of Cuxson, Gerrard and Co.

Receiving Orders in Bankruptcy.

(From the London Gazette.)

John Day, Chemist, 9, Chapeltown Road, Leeds.

Thomas R. McPhail (carrying on business as T. R. McPhail and Co.), Chemical Broker, City Buildings, Old Hall Street, Liverpool.

News in Brief.

PHARMACY ACT CASE.—At Lambeth County Court, on Thursday, June 16, before His Honour, Judge Emden, John Langford, an unqualified assistant at 30, Lucas Road, Kennington, was sued for a penalty of £5 for selling laudanum. Judgment was given for the full penalty and costs.

CRICKET.—Metropolitan College of Pharmacy C.C. and South London School of Pharmacy C.C.: This game was played at Nunhead on Saturday last, and resulted in an easy win for the former by an innings and 7 runs. The following were the scores: M.C.P. 76 and South London 16 and 53.——A match was played on Thursday, June 9, between the Northern College of Pharmacy and the Manchester College of Pharmacy, resulting in a decisive victory for the Northerns, who won by 6 wickets (twelve aside) and 29 runs, there being two innings.——"Davy, Hills" C.C. *v.* "Allenburys'" C.C.: This match, played at Wadham Lodge, Walthamstow, on Saturday, June 11, resulted in a draw. "Davy, Hills" scoring 143 runs and "Allenburys" 62 for four wickets. The return match will be played at Brockley on September 10.

THE ASSISTANTS AND EMPLOYÉS of Messrs. Raimes & Co., wholesale druggists, York, held their annual "Stock-taking" excursion and dinner, provided by the firm, on Saturday last, in perfect weather. The party, which included the two partners, Messrs. Samuel Scruton and W. C. Berks, after being photographed on the premises, left Micklegate House in char-a-bancs for Buttercrambe Woods and Stamford Bridge, returning at 6.30 to an excellent dinner at the White Swan Hotel, York. After dinner a smoking concert was held under the presidency of Mr. Scruton, at which the greatest conviviality and good humour prevailed. A lengthy programme was carried through in first-class style, some of the songs being most artistically rendered. The toasts of "The Queen," "The Firm," and "The Employés" were duly honoured, and a most enjoyable afternoon and evening was closed by the singing of "God Save the Queen" and "Auld Lang Syne."

UNQUALIFIED ASSISTANTS AND DISPENSING.—At the weekly meeting of the Exeter Corporation of the Poor on Tuesday afternoon last the Clerk, Mr. A. Foote, reported that he had received two applications for the post of dispenser of the Union, rendered vacant by the death of Mr. W. H. Bulley, who had held the office for over twenty years. The applicants were Mr. Lemmon and Mr. Wynne Tighe, both in business in Exeter, and both had sent in their qualifications.—Before the Board proceeded with the appointment, Mr. F. G. Hodson commented adversely on the Board's present system of dispensing at the workhouse. It was necessary that some alteration should be made in the system. The dispensing and mixing was done by Mr. Forbes, an assistant, but the system had been condemned, and now was the proper time to make any alteration.—The Governor (Mr. H. P. O. Hamlin) remarked that the medical officer was responsible for the dispensing at the House.—Mr. Hodgson replied that the doctor was responsible in one sense of the word, but Mr. Forbes did a great deal of the dispensing.—The Governor pointed out that what Mr. Forbes did was with the doctor's approval.—Mr. W. Easton observed that the Board were there that day to elect a successor to Mr. Bulley; to make any alteration in the dispensing system. Any desirable alteration could be made afterwards.—Mr. Hodson replied that if any alteration was desirable, it should be made at the present time. That was his object in bringing the matter forward.—The Governor remarked that it was a pity the suggestion was not made before a successor to Mr. Bulley was advertised for.—Mr. Hodson stated that Mr. Forbes was not qualified to dispense, and he therefore ought not to dispense at all.—Mr. Easton: There is no one poisoned yet.—Mr. Chorley expressed the opinion that he did not think the doctor would let him dispense unless he was qualified.—Mr. Hodson: He is not qualified unless he holds a certificate from the Pharmaceutical Society.—The matter then dropped, and the Board proceeded to the election of the dispenser.—On a division, Mr. Lemmon received 14 votes and Mr. Wynne Tighe 12, the former being declared elected.—On the motion of Mr. Kelland, it was decided that the newly-appointed dispenser commence his duties at Midsummer.

BOTANY AT EXETER.—At the ninth summer assembly of the members of the National Home Reading Union, to be held in Exeter from July 23 to August 1 (inclusive), Sir George Kekewich, K.C.B., D.C.L., Secretary of the Education Department, will deliver the inaugural address. The programme of the lectures to be delivered includes a series of four by Mr. F. E. Weiss, B.Sc., Professor of Botany at Owens College, Manchester, on "Elementary Botany," with lantern illustrations; whilst Mr. Alan H. Ware, pharmaceutical chemist, in charge of tne pharmacy classes and Lecturer in Botany at the Exeter Technical and University Extension College, will also give four demonstrations in botany. Mr. Clayden, M.A., F.G.S., Principal of the Exeter Technical and University Extension College, is one of the local Hon. Secretaries.

'MEDICAL WORKS OF THE FOURTEENTH CENTURY' is to be the title of a transcript from four manuscripts contemporary with the works of Wiclif and Chaucer, by the Rev. Professor Henslow. The volume will be furnished with introduction and notes by the Rev. Professor W. W. Skeat, and be published shortly by Chapman and Hall. It will contain an alphabetical list of more than seven hundred medical and other plants mentioned in works of the fourteenth century compiled, and identified with their modern English and Latin equivalent names by Professor Henslow. These transcripts will be found to give excellent illustrations of the crude and quaint conceptions of the value of plants and drugs prevailing in the Middle Ages.

FIRE AT A CHEMIST'S.—A fire broke out on Tuesday morning, June 14, in a store-room belonging to Mr. William Lee, chemist and druggist, Castle Street, Northwich. The building was of wood, standing in a garden in the rear of the shop, and contained oils, drysaltery, etc. The store-house and contents, whioh were partially insured, were entirely destroyed.

DEWSBURY AND DISTRICT CHEMISTS' ASSOCIATION.—A meeting of the above Association was held in the Town Hall, Dewsbury, on Monday, June 6, Mr. A. Foster (President) in the chair. It was resolved that the Secretary should write to "Camwal," asking the firm to put its name on all syphons and bottles sent out. It was also resolved to suspend the monthly meetings until September.

Accidental Poisoning Cases.

AN OVERDOSE OF LAUDANUM taken accidentally on Tuesday, June 7, caused the death of Joseph Messenger (57), an inmate of Worcester Union, who was troubled with sleeplessness and had been in the habit of taking laudanum to obtain relief.

SOME PERCHLORIDE OF MERCURY TABLETS were found in a box labelled "poison" on a mantelpiece by Mary Hart (2½), daughter of an engineer at Chelmsford, whose wife was using them medicinally. The child swallowed one of the tablets, and on June 7 succumbed to the effects of the poison.

A BOTTLE OF CARBOLIC ACID stood side by side with one containing medicine. As a result, on June 7, the wife of William Walker (81), of Middlesbrough, picked up the wrong bottle and gave him a dessertspoonful of the poison instead of a dose of the medicine. He died shortly afterwards, and a verdict of "Accidental death" was arrived at in due course.—Another bottle containing liquid ammonia stood on a shelf in a scullery at Newington Butts, and on Tuesday, June 7, as the lady of the house, Mrs. Langridge, was moving the bottle it burst and burnt her face. She was taken to Guy's Hospital, where she died, the cause of death being attributed to bronchitis caused by inhaling the vapour of the ammonia. It was thought that probably the heat of a copper fire caused the ammonia to burst the bottle.

Personal Notes.

Mr. Donald Fowler, chemist and druggist, Tain, Local Secretary of the Pharmaceutical Society, has been unanimously elected Provost of the burgh.

The Ninth Wrangler in the Cambridge Mathematical Tripos is Mr. Stanley de Jersey Lenfestey, third son of Mr. W. Giffard Lenfestey, of The Central Pharmacy, Piccadilly Circus. He was educated at Kelly College, Tavistock, and the City of London School, and entered Peterhouse, of which he is a scholar and prizeman, in October, 1895. Mr. Lenfestey is to be congratulated upon this further proof of the ability of the members of his gifted family.

Mr. G. T. W. Newsholme, Chairman of the Sheffield Board of Guardians, has been unseated, together with two other members for St. Peter's Ward, because of an informality at the election in April last. A gentleman was then nominated as a candidate for St. Peter's Ward without his knowledge or consent, but on hearing that a nomination paper had been lodged on his behalf with the returning officer, he decided to go on with his candidature. When, however, the list of nominations was made public, two days after the time for nomination had closed, he found that his name had been omitted from the list. He therefore petitioned the High Court, Queen's Bench Division, to have the unopposed election of the other three candidates declared void, and on Saturday, June 11, Mr. Justice Lawrance granted the petition. This will necessitate a new election.

DENTAL NOTES.

Arkansas Stone.

This stone can be ground or cut to almost any desired shape with a carborundum wheel run quite dry, but it will grind or cut the carborundum if the wheel is fed with oil.—*Ash's Quarterly Circular.*

Carborundum Wheels.

These wheels can be trued with black diamond if saturated with oil; there is no fear of the diamond being injured if it be good and well set.—*Ash's Quarterly Circular.*

A New Local Anæsthetic.

Dr. Pize has found that by injecting guaiacol under the skin in small doses operations can be performed without pain.—*Dental Practitioner.*

Dead Teeth.

To force medicaments through dead teeth with fistulous openings place a pellet of soft unvulcanised rubber in the tooth cavity; thrust the needle of a hypodermic syringe through the pellet, holding the latter in place. This is cheaper and superior to an abscess syringe.—*Ohio Dental Journal.*

Red Rubber Plates.

Red rubber plates can be lined with black by coating the cast three or four times with black rubber dissolved in chloroform, allowing each coat to harden before the next is put on.

Oxyphosphate.

For some operations it is desirable to have oxyphosphate set more slowly than usual; the least sprinkling of finely powdered borax will do it. If it be desired to set rapidly, use a very small quantity of hydrochloric acid.

Air Chambers.

Drive common tacks into plaster models to make air chambers. Use them for some lower set. Do not leave them on your laboratory stool.—*Dominion Dent. Journal.*

Carbolic Acid and Similar Fluids.

Carbolic acid, etc., can be kept conveniently and safely by filling a wide-mouthed flat-bottomed bottle with cotton wool. Saturate it with any preparation you use, dip in a pellet, and you can get all you want without fear of spilling. If the bottle upsets nothing runs out.—"M. A.," *Dominion Dental Journal.*

PHOTOGRAPHIC NOTES.

Water-tight Preparation for Wooden Dishes.—Common brown resin, half pound; beeswax, two ounces. Melt together in tin pan (preserved meat tin will do); when quite fluid, run solution rapidly all over where required. Wood must be perfectly dry and warm.—*Photogram.*

Pyro-Acetone Developer for X-Ray Work.—For one purpose the pyro-acetone developer seems peculiarly well adapted, and that is for developing Röntgen ray negatives. To get the best possible results I have always preferred pyro-soda, but have generally used metol and hydroquinone, as, owing to the prolonged development necessary, I have found that pyro-soda produced negatives of such an extremely non-actinic character that printing became a very tedious operation. Pyro-acetone, however, produces negatives with all the good qualities of pyro-soda, *i.e.*, utmost detail with great density, yet at the same time rapidly printing negatives. One feature of this developer is that it produces a deposit right through the film, even with the thickly coated X-ray plates manufactured by Messrs. Lumieres, with which alone I have tried it. I generally use the developer as made up by Messrs. Fuerst Bros., diluting the normal developer with an equal quantity of water, and using no bromide. I used to be troubled with frilling, but since adopting acetone I have not had a symptom of it. If any of your readers will give it a trial I feel confident they will be pleased with the results. Only one caution is necessary—develop until the image is quite invisible by transmitted light in the dark room, and shows strongly on the back of the plate. With these plates and this developer I have been able to obtain much more contrast between the bones and flesh in the thickest parts of the body than hitherto.—Wilson Noble in *Amateur Photographer.*

Frequencies of Ether and Air Vibrations (Isenthal).

Complete Vibrations per Second.	Kind of Radiation.
288,224,000,000,000,000	Röntgen rays (Voller).
3,000,000,000,000,000	Photographic limit of ultra-violet light *in vacuo*.
1,053,000,000,000,000	Photographic limit of solar spectrum.
281,475,000,000,000	Photographic limit of infra-red light (Abney).
70,369,000,000,000	Heat rays, lowest part of solar spectrum.
8,590,000,000	Electric oscillation in small spheres (Righi).
32,768	Upper limit of sound.
4,096	Highest note of music.
32	Lowest note of music.

Waterproof Glue for Wooden Dishes.—Soak half-pound of best glue in cold water until quite soft, melt in the glue kettle. When quite dissolved, pour in one ounce of hot saturated solution of bichromate of potash, and stir well. It is now ready for use; apply with brush. Put the article so treated to dry in full daylight for a day or two, and then apply strong alum solution. The vessel is now ready for use, but must be washed first.—*Photogram.*

Colouring Brass.—To colour brass a blue-black steel colour, the articles should be well cleaned and immersed in a boiling solution of chloride of arsenic. If very carefully cleaned, the articles may be coloured azure blue by immersion in a concentrated solution of sulphite of soda. A deep blue-black may be produced by immersion in a solution of carbonate of copper and ammonia, and subsequent exposure to air. But hyposulphite of lead and soda will give many variations of colour. To 100 C.c. of a 10 per cent. solution of hyposulphite of soda 5 to 6 grammes of sugar of lead are added. Dissolve by heat, filter, and heat again to 70° C. When first plunged in this solution, brass assumes a golden colour, and then passes through various shades of orange, vermilion, scarlet, and violet, at last to azure blue. Further action will change the blue to a silver-grey colour. A matt black may be produced by immersing brass in a weak solution of chloride of platinum and nitrate of tin; bronze colour, by immersion in a boiling solution of sulphate of copper and alum. A golden colour may also be given by treatment with 4 parts of caustic soda, 4 parts of milk sugar, and 100 parts of water. In all cases, as soon as the requisite colour is attained, the articles are at once transferred to clean water and rinsed, After drying, they should be coated with celluloid varnish.—*Photographische Chronik.*

MARKET REPORT and Prices Current

Specially compiled for the Pharmaceutical Journal

The quotations here given are in all cases the lowest cash prices for bulk quantities, and often the articles quoted have to be sorted in order to suit the requirements of the retail pharmacist. The cost of freightage from the chemical and drug works to the various distributing centres must also be considered. It is important that these conditions should be borne in mind in making any comparison between the prices quoted and those of the wholesale drug trade.

LONDON REPORT.

JUNE 16, 1898.

Business has been quiet during the past week and many complaints have been heard that there was so little doing. Chief event of the week has been a reduction of 2d per oz. in makers' price of Sulphate of Quinine, the result of the lower prices realised at last week's Amsterdam bark sales. Sulphate of Ammonia is weak and lower. Quicksilver and Mercurials, Iodine and Iodides, Bromine and Bromides are without change. Cocaine, Acetanilide, Phenacetin, and Sulphonal steady. Acid Citric not quite so firm a market in consequence of the dull weather causing a check in the demand. Acid Tartaric firm. Cream of Tartar higher. Opium dearer and very firm. Morphia and Codeia unchanged Cod-Liver Oil nominally dearer, with, however, practically nothing doing in the article. Glycerin again the turn harder. Acid Carbolic steady, Acid Boracic dull, and Borax rather lower for crystals. Cascara Sagrada expected to be dearer in consequence of probable shortage in the gathering in America this spring. Ipecacuanha quiet but steady. Rhubarb, a good business doing at lower prices than holders had hitherto been willing to accept. The following are actual prices ruling for articles of chief interest.

ACETANILIDE.—Market is quiet, with sellers from second hand at 1s. 2d. to 1s. 3d. per lb., according to quantity.

ACID ACETIC—Is in fair demand at 40s. per cwt. for the *glacial*, down to 15s. per cwt. for the 30 per cent. strength.

ACID BORACIC—Unchanged at 23s. per cwt. for *crystals*, and 25s. per cwt. for *powder*.

ACID CARBOLIC.—Market quiet at 7d. per lb. for best make of 35 to 36° C. *ice crystal* in 2½ cwt. drums and over casks; price of 39 to 40° C. ditto being 7¾d., and 39 to 40° C detached crystals 8¾d. per lb. *Crude* steady at 2s. 1d. per gallon for the 60° F. and 2s. 6d. per gallon for the 75° F. *Liquid* 95 per cent. of pale straw colour is quoted 1s. 3d. to 1s. 4d. per gallon in 40-gallon casks and for quantity.

ACID CITRIC—Is fairly steady at 1s. 1d. per lb. on the spot for English crystals.

ACID LACTIC.—Makers' price for the *concentrated* 1210 quality is 2s. 4d. to 2s. 6d. per lb. for bulk quantities.

ACID OXALIC.—Firm at 3⅝d. to 3¾d. per lb. on the spot.

ACID TARTARIC—Is firm at 1s. 1d. per lb. for English crystals, whilst Foreign can be obtained at 12¾d. per lb.

AMMONIA COMPOUNDS.—*Sulphate* weaker at £9 for grey prompt 24 per cent., London. *Bromide* steady at 2s. 2d. per lb. *Iodide* quiet at 14s. 6d. per lb. *Oxalate*: 6d. per lb. *Sulphocyanide* steady at 1s. 1d. to 1s. 2d. per lb. *Sal ammoniac*: Firsts sublimed 35s. per cwt., seconds 33s. per cwt. *Chloride*: Commercial 98 per cent., free from metals 26s. per cwt., chemically pure 32s. to 33s. per cwt.

ATROPINE—Firm at 17s. per oz. for the *pure*, and 15s. 6d. per oz. for the *sulphate P.B.*

BELLADONNA ROOT.—Somewhat inferior quality is offering at rather easier rates, say down to 36s., *c.i.f.* Good root is, however, scarce, and firmly held at 42s. 6d. per cwt. to arrive and 45s. on the spot, very little being, however, available.

BLEACHING POWDER—Steady at £7 5s. per ton in large bulk.

BORAX.—*Crystals* are a shade lower for large lots at 13s. 6d. per cwt., *powder* being unchanged at 14s. 6d. per cwt.

BROMIDES — Are in good demand at steady prices, say 1s. 10d. for *Potass. Bromide* and 2s. 2d. per lb. for *Ammon.* and *Soda Bromide*, the price of *Bromine* being also unchanged at 1s. 11d. per lb. for 20-case lots.

CAMPHOR—Continues very dull without any important business passing. *Crude* is slightly easier at 80s. per cwt. for China and 87s. 6d. per cwt. for Japan, both *c.i.f.* terms. *Refined* is unchanged.

CANTHARIDES. — *Russian* are firm at 1s. 10d. per lb. on the spot for good sifted.

CASCARA SAGRADA. — There is more inquiry for this article, which is quoted 20s. to 22s 6d. for new bark and 25s. to 26s. per. cwt. for old bark. Bearing in mind that, as is believed, very little has been collected in America this spring, it would appear probable that an important rise in price of the article is more than possible, especially in view of the fact that prices are now still at a very low level compared with that which formerly ruled for the article.

CINNAMON.—4 bales Ceylon sold, first sort 1s., third to fifth, 7d. to 9d. 76 bags Ceylon chips sold, fair 3¾d, with quillings, etc., 7½d to 8¾d. *Mace*: 3 cases Penang sold, ordinary red 1s. 5d. to 1s. 6d., good bold 2s. 36 packages West India sold, low to fair 1s. 3d. to 1s. 6d., good 1s. 9d. to 1s. 10d. *Nutmegs*: Rather dull, at about previous rates. *Pimento*: Flat, only 20 bags sold at 4⅛d. to 4¼d.

CLOVES.—Privately a dull market for *Zanzibar*, and prices lower. Quotations: June to August delivery, 3⅛d.; August to October, 3¾d.; and October to December, $3\frac{25}{32}$d., but practically no business doing. At auction of 97 bales *Zanzibar* 27 bales fair sold at 3¾d., 2 bags dark *Seychelles* sold at 3¼d., and 1 box *Ceylon* at 4⅝d. 40 bags *Amboyna* sold at 4d. to 5d.; 4 cases picked *Penang* bought in at 9d.

COAL TAR DISTILLATION PRODUCTS.—*Toluol*: Commercial, 1s. 5d. per gallon; pure, 3s. *Benzole*: 50 per cent. 1s. 2d. per gallon; 90 per cent., 1s. 1d. *Crude Naphtha*: 30 per cent. at 160° C., 6d. per gallon. *Solvent Naphtha*: 95 per cent. at 160° C., 1s. 8d. per gallon; 90 per cent. at 160° C., 1s. 4d. per gallon; 90 per cent. at 190 C., 1s. 3d. per gallon.

COCAINE.—Market is quiet but steady, makers of the brands most in favour holding out for 9s. 6d. to 9s. 9d. per oz, whilst from second-hand it is possible to buy a little below these figures; it is also possible to buy brands less in favour at rather less money.

CODEIA—Is fairly steady at 11s. 3d. to 11s. 6d. per oz. for quantity.

COD LIVER OIL—Is quiet, there being but little doing; best new non-congealing *Norwegian* oil in tin-lined barrels is quoted 82s. 6d. to 85s. per barrel.

CREAM OF TARTAR—Has been rather firmer this week at 71s. to 72s. per cwt. for first white *crystals* on the spot, and *powder* 74s. to 75s. per cwt. High strengths are inquired for and are worth 80s. to 82s. per cwt.

ESERINE (PHYSOSTIGMINE).—Makers' price for the *Sulphate* and *Salicylate* is 3s. per gramme, and 4s. per gramme for the *other salts* and for the *pure*.

GENTIAN ROOT—Is firm at 22s. 6d. to 25s. per cwt., according to quality and quantity.

GINGER.—*Cochin* is flat and again rather lower; 246 bags rough sold, good ordinary dull 21s. 6d.; fair to good 24s. to 25s.; 87 cases cut kinds bought in, A 85s., B 65s., medium limed native part cut 50s. Of limed *Japan* 95 bags sold, without reserve, at 17s. 6d. *Jamaica* easier, only 51 barrels sold, middling to good middling washed at 80s. to 85s. 10 barrels washed rough *Barbadoes* sold at 73s. to 73s. 6d.

GLYCERIN.—The market for *crude* is firm, and the *refined* article continues to harden in sympathy, and the more so in that buyers will probably soon be looking round with a view of laying in their autumn and winter stock. The best *German* white double-distilled, chemically pure, 1260° quality, in tins and cases, is quoted 55s. to 62s. 6d. per cwt., while *English* is obtainable at rather less money.

HYPOPHOSPHITES—In fair demand at steady prices, say 3s. 6d. per lb. for the *Lime*, *Soda*, and *Potash* salts.

INSECT FLOWERS.—Closed flowers are scarce and 140s. per cwt. is asked; open are firm at 45s. per cwt.

IODIDES.—A good business is doing at unaltered prices, viz., 9s. 9d. to 10s. 3d. per lb. for *Potass. Iodide*, and 13s. 4d. to 13s. 7d. for *Iodoform cryst.*, *powder*, and *precipitate*. *Iodine* is unaltered at 7½d. per oz.

IPECACUANHA—Market is quiet at 9s. to 9s. 3d for fair *Rio*. and 5s. to 5s. 6d. for *Cartagena*. There is, however, but little doing in the article at the moment.

JAPAN WAX—Is dull of sale. Good squares quoted 35s. per cwt. on the spot.

MENTHOL—Quiet at 7s. per lb. on the spot.

MERCURIALS—Are firm at the late advance, say 2s. 9d. for *Calomel* and 2s. 5d. for *Corrosive sublimate* in 56-lb. lots. Other quicksilver preparations being quoted in proportion.

MORPHIA.—In spite of the firmness of *Opium* there is no change in price of *Morphia*, makers still quoting 4s. 6d. per oz. for the *Hydrochlorate salt* in powder, for quantity and in bulk packing. The price of the other salts and of the pure being in proportion. Taking actual present cost of raw material the price of *Morphia* should certainly be higher than figure given above.

NITRATE OF SODA—Steady at £7 12s. 6d. to £7 15s. per ton for the commercial quality and £8 per ton for *refined*.

OILS (ESSENTIAL.—*Star Aniseed* is firm at 7s. per lb. on the spot and 6s. 10d. *c.i.f. Cassia* is quoted at from 4s. to 5s. per lb., according to quality. *Lemongrass*: Since the cheap sales at last week's drug auctions the nominal price has fallen to 4d. per oz. *Citronelle* 1s. 1d. to 1s. 2d., as to packing. *Peppermint*: H. G. H. continues firm at 5s. 9d. per lb. on the spot. *Wayne County*: steady at 3s. 10d. to 4s. per lb. *Japanese*: quiet at 3s. for dementholised and 4s. for 40 per cent.

OILS (FIXED) AND SPIRITS.—*Linseed* is lower on the week at £17 for spot pipes, London; barrels, £17 5s. *Rape* lower, closing flat; ordinary brown on the spot, £22; refined, £23 10s. *Cotton* again lower at £13 12s. 6d. for London crude; refined spot, £15 10s. to £16 5s., according to make. *Olive* unchanged at last week's quotations. *Coconut* quiet but steady; Ceylon on the spot, £24 10s.; Cochin spot, £29 10s., but no business passing. *Palm*: £24 for Lagos on the spot. *Turpentine* dull and lower at 23s. 4½d. per cwt. for spot American, June 22s. 6d., and July to December 20s. 10½d. per cwt. *Petroleum Oil* steady. Russian spot 4⅝d. per gallon, American 5⅛d., and Water White 6¼d. per gallon. *Petroleum Spirit*: American 5⅝d. per gallon, deodorised 6d. per gallon.

OPIUM.—Market is very firm, it being reported from Smyrna that a good business has been done at 9s. 9d. to 9s. 10d. for current *tale quale*, at which prices about 100 cases are said to have changed hands for American. Here a fair business has been done in *Druggists'*, prices being about 3d. up, same being *soft shipping*, 10s. 9d, to 12s. 3d. per lb. *Druggists'* 10s. to 10s. 9d. *Persian* 10s. 3d. to 11s. 3d. Good *manufacture* not being available on the spot.

PERMANGANATE OF POTASH.—The expectation of a good demand during the summer months has so far hardly been realised, and makers are pressing sales at rather lower prices, although quotations remain nominally 62s. 6d. per cwt. for *small crystals*, and 67s. 6d. per cwt. for *large crystals* in 1-cwt. kegs.

PHENACETIN—Is steady at 3s. 9d. to 4s. 3d. per lb., according to quantity and brand.

POTASH COMPOUNDS.—*Bicarbonate* steady at 30s. per cwt. for both *crystal* and *powder*. *Bromide* firm at 1s. 10d. per lb. *Bichromate* unchanged at 3⅞d. to 4d. per lb. *Chlorate* very dull at 3¼d. per lb. *Cyanide*: 1s. 1d. to 1s. 2d. per lb. for 98 per cent. cake, according to quantity. *Iodide* steady at 9s. 9d. to 10s. 3d. per lb., according to quantity. *Permanganate* quiet at 62s. 6d. per cwt. for small, and 67s. 6d. per cwt. for large crystals. *Prussiate*: *Red*, 1s. 2d. to 1s. 3d. per lb.; *yellow*, 6¾d. to 7d. per lb. for English.

QUICKSILVER.—Steady from importers at £7 12s. 6d. per bottle, whilst second hands are sellers at £7 12s.

QUININE.—In consequence of the lower prices realised in last week's Amsterdam Bark auction, which were from 20 to 25 per cent. lower than those paid at the previous sale, makers reduced their prices for *Sulphate of Quinine* 2d. per oz. Agents for the best *German* brands now quoting 10d. per oz. for 1000 oz. lots in 100 oz. tins, while, from second hand, sales have been made at 9½d. per oz. The market remains quiet, with a somewhat uncertain tendency.

RHUBARB.—Since the auctions a considerable business has been done in the article privately in *Shensi* at 1s. 6d. to 3s. per lb., *Canton* at 1s. 2d. per lb., *High dried* at 1s. to 1s. 2d. per lb., and *Rough round* at 7½d. per lb. One broker stating that he had had orders for more than 100 cases. This will no doubt be the result of more willingness on part of holders to meet the views of buyers as to price, the prices paid being more moderate than those required not long since in public sale.

SANTONINE—Is very quiet at unchanged price, viz., 4s. 5¼d. per lb. for 3-cwt. lots.

SENNA.—Of the new arrival of *Tinnevelly* advised in our last week's report, 46 bales are pods, the whole will probably appear in the next auctions. No advice has so far been received as to the new crop. *Alexandrian*: There have been a few small transactions, but except for really fine leaf, which is nominally worth 7d. per lb., there is very little demand.

SHELLAC—Is a quiet market with unimportant business in all positions. Prices on the spot are steady, cakey *TN Orange* selling at 62s. for fair, but for arrival prices are barely steady. A weaker tone is observable also in arrival prices, there being sellers of *TN Orange* near at hand at 62s. per cwt. *c.i.f.* terms.

SODA COMPOUNDS.—*Crystals* unchanged at 55s. per ton. *Acetate*: Refined, 13s. 6d. per cwt.; chemically pure, 35s. per cwt. *Bicarbonate*: Commercial, 98 per cent., £7 10s. per ton; free from mono-carbonate, 18s. 6d. per cwt. *Bromide*: 2s. 2d. per lb. *Iodide*: 11s. 7d. per lb. *Nitrate*: Commercial, £7 15s. per ton; refined, £8 per ton. *Hyposulphite* firm at 6s to 8s. per cwt., as to quality. *Caustic*: White, 70 per cent., £7 10s. per ton; 60 per cent., £6 10s.

SPICES (VARIOUS).—*Black Pepper*: 20 bags Singapore sold at 4d.; 325 bags Wynaad sold at 4d. to 4⅛d.; 32 bags Aleppy sold at 4⅛d.; 21 bags Coorg bought in at 4⅜d. *White Pepper*: 61 bags Penang bought in at 6⅞d.; 7 bags mixed Ceylon sold at 7⅝d. *Chillies*: 134 bales Zanzibar sold without reserve at 26s. 6d.; 40 bags good red Japan sold without reserve at 35s. 37s.

SULPHATE OF COPPER—Fairly steady at £15 5s. to £16s. 10s. per. ton, according to brand and package.

SULPHONAL.—There is no change, makers still accepting orders for limited quantity at 7s. 3d. per lb. in bulk for both *crystal* and *powder*.

TURMERIC—Is very firm, with sales of *Bengal* finger at 17s. 6d. cwt., and fair bright *Madras* finger at 23s. cwt.; *Cochin* split bulbs quoted 10s. cwt.

NEWCASTLE CHEMICAL REPORT.

June 15, 1898.

Shipments of heavy goods from this district are rather on the increase, but still below an average for the season. Prices are practically unchanged, and are quoted as follows:—Bleaching Powder: according to market, £6 5s. to £6 10s. Soda Crystals: basis, 45s. to 52s. 6d. Caustic Soda, 70 per cent., basis, £7 5s. to £7 10s. Soda Ash: 52 per cent., £4 5s. Alkali: 52 per cent. £5 5s. Sulphur £5 per ton.

MANCHESTER CHEMICAL REPORT.

JUNE 15, 1898.

The market remains somewhat depressed, and does not seem to have recovered its wonted elasticity after the holidays. There is some inquiry for Alkalies, but buyers do not at all fall in with sellers' ideas of price, and business is of "a hand to mouth" character. American freights have fallen, and consequently there is a corresponding reduction in Brown Acetate, which is now quoted £5 12s. 6d. per ton, *c.i.f.*, though for small quantities £5 15s. to £6 is asked. Sulphate of Copper varies from £16 5s. to £16 12s. 6d. per ton for best brands, delivered Manchester. Coal Tar products do not appear to have justified the hopes of a few weeks ago. Pitch is dull at 16s. 9d. per ton, *f.a.s.*, Ship Canal, and Benzols have dropped about a penny per gallon on last week. Naphthas are scarce and unchanged. Green Copperas is dull, and local-made Glycerine is in slow request. Yellow Prussiate is firm at 6¾d. to 7d. for best Lancashire make.

LIVERPOOL REPORT.

JUNE 15, 1898.

With the exception of a slight drop in the price of Spirits of Turpentine, quotations remain practically unchanged, both as regards drugs and heavy chemicals.

AMMONIA SALTS.—*Sulphate* per ton £9 2s. 6d. to £9 3s. 9d. Others unchanged.

COPPER SULPHATE.—Lower and very slow of sale, £16 per ton.

CARNAUBA WAX.—2 tons of yellow sold at 70s. per cwt.

CANARYSEED.—Turkish is only selling in retail quantities at 26s. to 27s. per 464 lbs.

KOLA NUTS.—Dried have been sold at auction for 1d. per lb.

LINSEED—Is dull and inactive. 250 tons of River Plate seed offered at auction received no bids.

OILS (FIXED) AND SPIRITS.—*Castor* commands a moderate amount of attention, selling fairly well at 3¼d. to 3⅜d. per lb. for "good seconds" Calcutta, and 3¼d. per lb. for French 1st pressure. *Olive*: Spanish is quiet at the unaltered quotation of £29 to £30 per tun. *Linseed* of Liverpool make is priced as last week, 18s. 3d. to 18s. 9d. per cwt. *Cottonseed*: Liverpool refined is dull at 16s. 6d. to 17s. per cwt. *Spirits of Turpentine* is easier by 3d. per cwt., and is quoted at 25s. to 25s. 3d. per cwt.

QUILLAYA BARK.—£18 10s. per ton ex quay.

TURMERIC.—Cochin bulb has been selling for 8s. 6d. per cwt.

Publications received.

TECHNICAL MYCOLOGY: The Utilisation of Micro-Organisms in the Arts and Manufactures. By Dr. FRANZ LAFAR. Introduction by Dr. Emil Chr. Hansen. Translated by Charles T. C. Salter. In two volumes. Vol. I.—Schizomycetic Fermentation. Pp. ix. + 405. Price 15s. London: Charles Griffin & Company, Limited, Exeter Street, Strand. 1898. From the Publishers.

THE BOTANIST'S VADE-MECUM: being a synopsis of the divisions and sub-divisions of the vegetable kingdom. Compiled by JOHN WISHART. Pp. 143. Price 2s. net. Edinburgh: E. & S. Livingstone. 1898. From the Author.

LA ICTALBINA (KNOLL) NELLA ODIERNA TERAPIA. Estratto dal *Giornale Internazionale di Medicina Pratica.* N. 3-4 (Napoli, Marzo-Aprile, 1898). Pp. 16. Napoli: Tipografia Pontieri and Velardi, Largo Tarsia 9. From the Publishers.

PRACTICAL PICTORIAL PHOTOGRAPHY (Part I.). By A. HORSLEY HINTON. Being No. 17 of 'The Amateur Photographer' Library. Pp. 108. Price 1s. London: Hazell, Watson, and Viney, Ltd., 1, Creed Lane, Ludgate Hill. 1898. From the Publishers.

A TEXT-BOOK OF BOTANY, by Dr. E. STRASBURGER, Dr. FRITZ NOLL, Dr. H. SCHENCK, and Dr. A. F. W. SCHIMPER. Translated from the German by H. C. Porter, Ph.D. 632 pp., with 594 illustrations, in part coloured. Price 18s. net. London; Macmillan & Co. 1898.

CINQUANTENAIRE DE L'ASSOCIATION GÉNÉRALE PHARMACEUTIQUE DE BELGIQUE, VIIIme. Congrès International de Pharmacie et des Sciences qui s'y Rattachent, tenu à Bruxelles les 14, 15, 16, 17, 18 et 19 Août 1898. Compte Rendu par M. Duyk, Secrétaire général. Pp. 578. Bruxelles: Imprimerie Charles Van de Weghe, 12, place de la Vieille-Halle-aux-Blés, 12, 1898. From the Secretary.

New Books New Editions.

"Scientific Method in Biology," by Dr. Elizabeth Blackwell. Pp. 84. 12mo., leather. Price 2s. Stock, 1898.

"British Orchids," by A. D. Webster. Illustrated. Second enlarged edition. 8vo. Price 5s. Virtue, 1898.

"The Flora of Perthshire," by F. B. W. White. Edited by J. W. H. Trail. Crown 8vo. Price 7s. 6d. net. Blackwood, 1898.

"Botanists' Vade Mecum," being a synopsis of the divisions and sub-divisions of the vegetable kingdom, compiled by J. Wishart. Pp. 144. 18mo. Price 2s net. Livingstone, 1898.

"Spectrum Analysis," by J. Landauer. Royal 8vo. Price 12s. 6d. Chapman, 1898.

"On the Occlusion of Hydrogen and Oxygen," by Palladium, by Ludwig Mund, Wm. Ramsay and John Shields. Phil. Trans. A., 1898. Vol. cxci. Pp. 105-126. Price 1s. Dulau, 1898.

Advertisements.

(Received too late for Classification).

WANTED, by June 10th, a reliable ASSISTANT. In-doors or out-doors. Accustomed to dispensing, prescribing, and retail counter, and capable of taking charge Apply, with full particulars, stating salary, and enclosing photo, to A. WORTS, Chemist, Harwich, Essex.

LONDON, S.W.—Wanted, immediately, JUNIOR, for light retail and dispensing business. Apply, giving full particulars, A. W. BARKER, 112, Wandsworth Bridge Rd., Fulham, S.W.

Diary for the Week.

SATURDAY, JUNE 18.

REYNOLDS AND BRANSON'S CRICKET CLUB *v.* Taylor's Ltd., Cricket Club.

MONDAY, JUNE 20.

SOCIETY OF CHEMICAL INDUSTRY, at 8 p.m.
"Aluminium as a Heating and Reducing Agent (in the Production of Chromium and Other Metals)," by Dr. Hans Goldschmidt and Claude Vautin.

THURSDAY, JUNE 23.

CHEMISTS' ASSISTANTS' UNION.
Meeting at the Horseshoe Hotel, Tottenham Court Road, W., at 8 p.m.

Exchange Offers & Wants

Prepaid Notices not exceeding thirty words, including name and address, are inserted at a fee of Sixpence each, if they do not partake of the nature of ordinary advertisements. For every twelve words (or less) extra, the charge is Sixpence. A price, or two initials, will count as one word. The fee for uso of the Serle Street address, including re-directio of replies, is Sixpence. The right is reserved to omit any notice if considered necessary. All communications should be addressed "PHARMACEUTICAL JOURNAL," 5, Serle Street, Lincoln's Inn, London, W.C., where notices can be received until 10 a.m. on Thursdays.

OFFERED.

Books.

'Chemical Receipts,' by Atlas Chemical Company; quite new. Offers to—Kirkpatrick, Chemist Taunton

Offers wanted for Martindale's 'Extra Pharmacopœia,' 6th edition; Squire s 'Companion,' 14th and 16th editions; *C. & D.* Diaries, 1885, 1888, 1889, and 1891 to 1897; 'U.S.A. Dispensatory,' 11th edition; Thomson's 'London Dispensatory,' 10th edition; Garrod's 'Materia Medica'; Lindley's 'School Botany,' 14th edition; B.P., 1885, additions 1890.—Lees, Chemist, Oldham.

Latest Editions.—Squire, nearly new, 6s. 6d.; Bentley's 'Manual,' nearly new, 7s. 6d.; Bentley's 'Systematic,' 2s. 3d.; Bentley's 'Materia,' 4s.; Gerrard's 'Materia and Pharmacy,' 4s.; Wills' 'Pharmacy,' 3s. Post free. Gower, Waterloo, Liverpool.

Miscellaneous.

Magic Lanterns, second-hand; triples and biunials; oxyhydrogen microscope; marvellous pamphengos oil; lantern gives 14-ft. picture; 60,000 slides and effects; 4-in. 4-wick lanterns, 18s. 6d. each, bargains; illustrated list post free, 2d. Animated photographs: A splendid machine for £9 9s.—Hughes, Brewster House, 82, Mortimer Road, Kingsland N.

To Dispose of Cheap.—About 6 lbs. Mercury; 2-quart size Bichromate Battery; set of 6 Twaddels in case; Woolley's Medical Microscope with accessories.—Bromide, *Pharmaceutical Journal* Office, 5, Serle Street, W.C.

Surplus Stock.—12 William's, Carter's, Beecham's 1s. 1½d., 6 Holloway's, Steedman's powders 1s. 1½d. and 2s. 9d. Free for £3 3s. 6d. Cash with order, or London reference if fresh customer.—Eastman, Forest Lane, Stratford.

Overstocked.—Superfine Oil of Lemon, fine quality, 2×10 lb. coppers, 22s. 6d. each; sample pound free anywhere 2s. 9d. Willcox's No. 2 Gun Metal Pump, 25s.—Moss, 34, Avondale Road, Chorley.

WANTED.

Old Platinum Utensils or Scrap, also Old Electric Lamps wanted for prompt cash by P. Rowsell, 14, Walcot Square, London, S.E.

Acetylene Apparatus Exhibition at the Imperial Institute.

ON Wednesday, June 15, an exhibition of apparatus for the manufacture of acetylene gas was opened at the Imperial Institute. The exhibits consisted mainly of generators and lamps of various devices. In view of the great possibilities in store for acetylene as an illuminant, we shall briefly draw attention to the principal forms of generators and lamps which have been invented in the hope that the information may be of use to our country readers. There are so many useful, safe, and comparatively cheap forms of apparatus on the market that a ready demand already exists for this form of illumination in country districts where coal-gas is expensive or unobtainable. Besides, no skill is required in the working of the apparatus, indeed, a gardener or porter can do all that is necessary. The price of calcium carbide is about £20 per ton, and the average price of the gas produced is 35s. per 1000 cubic feet. The advantages claimed for acetylene gas over ordinary coal-gas are numerous; among others we may mention that (1) the illuminating power of acetylene is so much in excess of ordinary coal-gas that the smallest burners, with a consumption of less than half a cubic foot per hour, give a greater light than is derived from burners generally used for coal-gas, and consuming about seven cubic feet per hour; (2) acetylene gas contains practically no sulphur, thus the injurious effects of ordinary coal-gas on ceilings, works of art, etc., are almost entirely avoided; (3) much less oxygen is taken from the air; (4) the acetylene light is steady

Fig. I.

and not the least flickering, burning with a pure white light, resembling in this respect the electric light, although softer and without the harmful effects of the latter on the eyesight; and (5) its rays are similar to those of the sun, so that all colours and shades appear as they do in daylight, hence its great use in picture galleries, etc. It may be added that ordinary gaspipes and fittings may be used, though pipes of smaller dimensions only are necessary.

Passing to the exhibits, we may notice the Fourchette's apparatus, made by the Acetylene Gas Corporation, Ltd., 100c, Queen Victoria Street, E.C. This form of apparatus is favourably reported on by Sir William Crookes and Professor Tichborne. The calcium carbide is divided over a number of separate, vertically-arranged trays, and the water, rising from below, floods only one compartment at a time. The acetylene is evolved in a cylinder surrounded by water, and on its way to the reservoir gets cooled by passing through water. The gas holder consists of a bell-shaped cover, arranged so as to rise and all when the volume of gas is increased or diminished. By a special device, similar to that in the well-known Kipp's apparatus, the water is put out of reach of the carbide compartments when a sufficient quantity of gas is generated. Under the Government regulations controlling the manufacture of acetylene gas, the limit of safety is fixed at slightly over 100 inches' pressure; with the Fourchette apparatus the pressure is only about 5 inches. The same firm showed the acetylene "Glow" cycle lamp, consisting of three parts: (1) The water reservoir with regulator tap, (2) the carbide chamber, (3) a perforated metal disc with spiral spring separating the water reservoir from the carbide cup. This lamp is compact, and is retailed at a guinea.

The Thornton-Scarth Automatic Lighting Syndicate, Ltd., Vittoria Street, Birmingham, turns out apparatus suitable for dwellings of all sizes, from the humblest cottage to a country mansion, having the great advantage of simplicity. The gas is automatically cooled and purified. The same main principle, that of the Kipp's apparatus, is applied, with slight modifications, in this and most other forms of generator. An ordinary household lighting apparatus of this make costs about 8 guineas. This firm compares the cost of acetylene gas with coal-gas and the electric light; thus, acetylene is on a par, light for light, with coal-gas at 2*s.* 4*d.* per 1000 cubic feet, and is much cheaper than electricity, in the ratio of 2*s.* 6*d.* to 6*s.* for equal amounts of light. The cost of an acetylene generating plant may be taken roughly to be 20*s.* for each 50 c.-p. light, and the cost of management and maintenance is almost *nil*. The theoretical yield from pure carbide is 5·58 cubic feet of gas per pound, inferior qualities, chiefly of Continental manufacture, producing

Fig. II.

barely 4 cubic feet per pound. To intending purchasers we can commend the 'Notes on Acetylene Lighting,' price 2*d.*, brought out by this firm.

Messrs. Thorn and Hoddle, New Tothill Street, Victoria Street, S.W., exhibited generators and fittings suitable for photographic and general lighting purposes.

A glance at Figs. I. and II. will explain the mechanism of the household "Incanto" generator (Pattern B); the makers guarantee the safety of this machine. Their "Incanto" Lantern Fitting, giving a light of 200 candle-power, is a useful appliance, and is sold at 7*s.* 6*d.* The "Incanto" generator is specially suited for use with the magic lantern, either for photographic enlargements or for lecture purposes. A cycle lamp and generator, weighing two pounds when charged, is cheap and gives a powerful light.

Messrs. Falk, Stadelmann and Co., Ltd., 85, Farringdon Road, London, E.C., displayed a varied assortment of lamps, suitable for street lighting, carriages, cycles, household and other uses.

The British Acetylene Gas Generator Company, 70, Chiswell Street, E.C., claims that their apparatus will produce a 50 c.-p. light at a cost of a little over one farthing per hour. Their generator is recommended by Professor Vivian Lewes on account of the arrangement by which the gas is effectually cooled. The Company recommends that the apparatus be kept in a wooden shed specially constructed to exclude frost, outside the main building, in order to comply with the regulations of some Insurance Companies; it is further pointed out that the addition of 3 oz. of glycerin to the water in the tank is an effectual preventive against freezing. The exhibit included apparatus specially designed for the use of photographers, thereby enabling them to use the light in conjunction with weak daylight or during the night in ball-rooms, etc., as well as for enlarging, copying, and even for printing on the ordinary papers. It is needless to describe these various generators in detail, inasmuch as few offer special points of difference.

Sardi's Patent Gas Generator Syndicate, Ltd., 25, New Broad Street, E.C., was showing generators in various sizes, ranging in price from £6 to £40.

The Manchester Acetylene Gas and Carbide Co., St. Simon Street, Salford, Manchester, had a stand which deserves special mention on account of the simplicity, safety, and durability of their generators; the cylinders being made of cast-iron, and the tanks and holders of heavy steel plates. By an ingenious arrangement the supply of gas is continuous, one part of the apparatus producing the gas while another part is being recharged with carbide. Their "Portable Lights," from 20 to 2000 c.-p., are useful for all underground work. A Patent Acetylene Photographic Outfit is made by this firm, by means of which photographs may be taken at any time independent of daylight. The generator is used in conjunction with a 4-ft. diam. special reflector and diffuser, adjustable to any angle or position. The total illumination of this apparatus is 1000 c.-p. This reflector diffuses the acetylene light, which is strongly actinic, to the best advantage.

On passing through the gallery in which this exhibition is held, one cannot fail to notice the enterprise which British firms are showing in this important departure in artificial lighting. The Safety Acetylene Gas Generator Co., Halifax, offers a large selection of apparatus, and sends skilled workmen to all parts of the country to fit up the same and leave it in good working order.

Messrs. Strode and Co., 188, Piccadilly, W., are bringing out a new patent "Sunburner," which is said to combine maximum illuminating power with minimum consumption of gas. By a special arrangement of cones heated air is introduced to support the combustion of the gas, thus ensuring an additional advantage, *i.e.*, complete ventilation, as the whole of the products of combustion are carried off through the perforations which surround the cones, and are discharged into the outer air by means of a flue. In their apparatus gas is generated by means of a wheel set in motion by water running upon it, which actuates a vessel containing carbide; the latter falls into water as the vessel revolves.

The apparatus shown by Messrs. Exley and Co., Byram Street, Huddersfield, deserves special praise. Their automatic generator is probably one of the simplest and most efficient automatic machines in existence. A double generator is provided, so that the working is continuous. They supply special portable machines suitable for magic lanterns, carriages, yachts, photographers, etc., and cater for medical men and hospitals. Pharmacists interested in the subject of acetylene illumination will do well to apply to this firm for one of their well-illustrated catalogues. One form of apparatus for use in hospitals consists of a generator, and portable stand for carrying burners, reflectors, etc. It is of great value to medical men in taking photographs at the bedside during night or day, as is necessary in the study of certain diseases in their several stages, as well as before and after operations. The firm sends out calcium carbide in iron drums at £20 per ton.

Most of the firms represented at the exhibition are remarkable for the length of their name; this is the case with the Calcium Carbide Company, Ltd., 53, Cheapside, E.C. Their generating apparatus is a marvel of simplicity, there being no valves, cog-wheels, etc., to get out of order. Another firm showing a well-made form of acetylene apparatus is the Midland Acetylene (Parent) Syndicate, Ltd., Cradley Heath, Staffs. The pressure of the gas is regulated by a syphon device and the carbide chamber is kept cool by a water jacket. By arranging several generating chambers at different levels in connection with the same holder, a machine may be kept running for a long time, and many lights kept burning.

One of the best stands was that of the International Industrial Syndicate, Ltd., 84, Bishopsgate Street Within, E.C. The "Buffington" generator made by this firm consists of a carbide holder (the carbide being packed in a telescopic cartridge), above which is the water tank with an automatic water valve in its lower part. The gas is stored in a separate holder. This firm has brought out several lamps, known as the "Buffington" lamps, which are well spoken of by Professor Silvanus Thompson, among them being useful students' and cycle lamps. All are charged with carbide cartridges, and are very cleanly. It is claimed that the cycle lamp cannot be blown or jolted out. Professor Thompson has purposely overturned these lamps, and tossed them through the air without risk of explosion or extinction. The reading lamp burns for eight hours, and is recharged by replacing the spent cartridge by a full one.

The Ideal Gas Co., Ltd., Blackburn, turns out an apparatus for which there is much to be said. It has the advantages of cleanliness, simplicity, strength and safety, and is recommended by Professor V. Lewes. The Abingdon Acetylene Illuminating Co., Ltd., 97, Great Hampton Street, Birmingham, manufactures a form of apparatus that is exceedingly simple and useful. Generally speaking, acetylene gas may be produced in two ways, either by submerging a quantity of carbide in water, and producing a quantity of gas, or by automatically generating the gas as it is required. The former method requires a larger and more expensive plant than the latter, and in addition is less safe. The Abingdon Safety Generator is of the latter type, and works on the float gasometer principle—that is to say, a rising and falling gas holder regulates the supply of gas by raising or lowering the generator, which contains the carbide. Various forms of apparatus were shown by this firm, adapted for domestic, lantern, and other uses. They supply a small generator for microscopic work 14 inches by 5 inches, at 25*s*.

Perhaps one of the simplest forms of apparatus shown was that of the British Pure Acetylene Gas Syndicate, Ltd, 19, Castle Street, Liverpool, as devised by Professor Raoul Pictet. There is nothing in it to get out of order. The following firms had attractive stands, showing various forms of generators, differing only slightly from the foregoing:—Messrs. Read, Holliday and Sons, Ltd., Huddersfield; the Sunlight Gas Co., Ltd., 18, Wellington Quay, Dublin; Messrs. Ehrich and Graetz, Berlin; the Acetylene Beacon Light Co., 59, Colmore Row, Birmingham; Messrs. Bailey and Clapham, Keighley, Yorks; and lastly, the Liver Acetylene Gas Co., Ltd., 14, Dale Street, Liverpool. The last-mentioned firm showed some ingenious forms of apparatus all containing the carbide in shallow trays, with perforated sides, placed vertically over each other. Their cycle-lamp apparatus is compact, and should prove a boon to cyclists. On leaving the exhibition one cannot fail to carry away the impression, that the ingenuity of man is surprising. Though all the generators mentioned are adapted for the preparation of acetylene by one method, viz., the action of water on calcium carbide, yet no two forms are nearly alike. Pharmacists who are looking out for side-lines may possibly do well to turn their attention, if they have not already done so, to calcium carbide and the various forms of apparatus employed in obtaining acetylene therefrom.

Partnerships Dissolved.

(*From the London Gazette*)

Arthur Lancaster Stobbs, William Alfred Wilson, and James William Pollard, Chemical and Colour Merchants, Billiter Buildings, Billiter Street, London, E.C. Debts will be received and paid by A. L. Stobbs and J. W. Pollard.

Karl Robert Schramm and Richard John Volz, Surgical Instrument Makers, 24, Great Castle Street, Regent's Circus, and 47 and 49, Belmont Street, Chalk Farm Road, London, N.W. Debts will be received and paid by Karl Robert Schramm.

Receiving Orders in Bankruptcy.

(*From the London Gazette.*)

Harry George Albert Nash, Mineral Water Manufacturer (trading as the Star Mineral Water Company), 7, Newick Road, Clapton, and 125, 126, and 127, High Street, Shadwell, London.

Charles Arthur Roe (also trading as Michael Royals), Mineral Water Manufacturer, Beacon Hill Road, Halifax.

Proprietary Articles Trade Association.

Council Meeting.

THE first meeting of the new Council of the P.A.T.A. was held at the Agricultural Hall on Wednesday, June 15. The following members were present:—Messrs. Charles Sanger (Lambert and Co.), E. Sanger (Sanger and Sons), W. F. Powell (Thomas Powell, Ltd.), B. Hirst (Hirst, Brooke and Hirst), H. J. Hall (Stephen Smith and Co.), A. Tebbutt (W. Sutton and Co.), G. R. Barclay (Barclay and Sons), Albert Cooper (South Kensington), F. Rowsell (Exeter), S. N. Pickard (Bradford), T. P. Garrett (Newport), W. R. Barnes (Upton Manor), and C. J. G. Bunker (Great Dover Street).—Mr. TEBBUTT, in the absence of the President, took the chair, and the election of the new President was then proceeded with.—In proposing the election of Mr. H. J. Hall, Mr. CHARLES SANGER explained that it had been decided at a former meeting of the Association that the manufacturers, wholesalers, and retailers of the Association should be represented in the presidential chair in rotation. This year it was the turn of the Manufacturers' Section, and he had pleasure in proposing that Mr. H. J. Hall be elected President for the forthcoming year.—This was seconded by Mr. G. R. BARCLAY, and unanimously carried.—Mr. HALL thereupon took the chair, and the remaining officers were then elected as follows: Vice-Presidents, Mr. Charles Sanger (Manufacturer), Mr. B. Hirst (Wholesaler), Mr. Albert Cooper (Retailer).—The SECRETARY explained that the Executive Committee consisted of the officers of the Association, to which were added two members of each section. The following gentlemen were elected to serve upon the Executive Committee:—Manufacturers, Messrs. Garratt and Gilligan; wholesalers, Messrs. Tebbutt and Edwards; retailers, Messrs. Barnes and Bunker.—The Council then fully considered the draft annual report to be submitted to the annual meeting, and upon the motion of the PRESIDENT, it was unanimously adopted.—The report from the meeting of the Retail Section of the Council, which had been held immediately before this meeting, was then fully discussed. Amongst other matters the report dealt with the action of the Guy's Tonic Co. and of the Charles A. Vogeler Co., the retailers recommending that the various local chemists' associations should be asked to consider what action, if any, should be taken in regard to these articles. In the report it was pointed out that recent changes had been made by the proprietors in the terms of supply which were exceedingly disadvantageous to the trade, and the Retail Committee thought that it would be well that the retail members should discuss as to whether the time had come for refusing to stock preparations which leave such ridiculous profits, and to ask the wholesale houses to take the same course. The meeting agreed that the matter should be referred to the various local associations affiliated with the P.A.T.A.—A recommendation was also made by the Retail Section that the Council should organise a Defence Fund confined to the drug trade. Briefly put, the suggestion was that the P.A.T.A. organisation might be made use of in administering the fund, but that provision should be made that the ordinary funds of the P.A.T.A. would not be available for the purposes of defence. The majority of the retail members spoke as to the need for some such fund, which would protect retail chemists from frivolous prosecutions under various trade Acts. The unanimous opinion of the Retail Committee was that numberless convictions were obtained by the authorities which would never have been obtained if the cases had been properly contested. The recommendation of the Retail Committee was that the Council meeting should approve of the proposal, and should ask the members at the annual meeting to consider the question and to decide by vote whether some such step should be taken.—Upon the motion of Mr. CHARLES SANGER, seconded by Mr. BARCLAY, the following resolution was unanimously agreed to:—

> That the Council sympathises with the suggestion from the Retail Committee that a Chemists' Defence Association be formed, and before further action requests the Annual Meeting to express its opinion by vote thereon.

—Mr. ROWSELL stated that at a meeting of the Exeter Association held a short time ago the members thought that it would be a good plan if the Protected List was printed now and again on a sheet handy for reference, and he had been instructed to bring the subject before the notice of the P.A.T.A. Council.—The SECRETARY explained that the Protected List would be published in pamphlet form as part of the Annual Report, and several members of the Council thought that this would meet the objection of the Exeter Association, and Mr. Rowsell thought that for the time being that arrangement would be satisfactory.—A vote of thanks to the Chairman brought the meeting to a close.

Annual Meeting.

The annual meeting was held at Berners' Hall, Islington, on Thursday, June 16, about one hundred members being present. The chair was taken by the new President of the Association, Mr. H. J. HALL. After a few congratulatory remarks by the Chairman, the annual report, which was taken as read, was explained by Mr. GLYN-JONES. He pointed out *inter alia* that the financial year had been made to terminate at the end of March instead of at the end of December, so as to correspond with the retirement of the Council. During the fifteen months covered by the report the income had been £1468, and the expenditure £25 less. It was pointed out that in return for that expenditure the whole trade had gained an increase of profit to the extent of something like £25,000, and substantial progress had been made with the work of the Association, both with relation to the control of cutting and to the increase of membership in the Retail and Manufacturers' Sections. About 1000 new retail members had been put on since the previous annual meeting, making a total of about 3000 at the present time. The increase of members in the Manufacturers' Section during the same period was 29, making a total of over 60. A small increase in the Wholesale Section was also reported, making a total of 2 0. Amongst the new articles placed upon the list had been several of much commercial importance, such as C. B. Chlorodyne, Izal, Sanitas, etc. Mr. Glyn-Jones referred to the ruses adopted by certain firms on the stop-list in order to try to obtain stocks of P.A.T.A. goods, and showed that the organisation of the Association was becoming more and more able, every month, to handle such cases. The portion of the report dealing with the Grocery and Photographic Sections was also commented on. With regard to the former, it was noted that the Grocery Council of Management had been formed, and that a preliminary list of protected articles in which grocers were interested was being published in a separate edition of the *Anti-Cutting Record*. He admitted that the Photographic Section had not yet come up to expectations. He reminded his hearers that a list of protected photographic articles was now published in the *Record*, and that possibly two-thirds of the retail members of the Association were interested in such goods. He advocated concerted action on the part of local associations with regard to trade improvement. He then read a letter received that morning from the Hon. Secretary of the P.A.T.A. in Blackpool, stating that a memorial had been signed by nearly every chemist in that town setting forth the reasonable expectations of the trade with regard to profits on advertised proprietaries. Copies of that letter had been sent from Blackpool to a number of proprietors. The speaker suggested that this example might very profitably be emulated by friends in other towns. After discussion by various members the report was unanimously adopted.—The PRESIDENT brought forward as a remit from the Council Meeting, held the previous day, a matter of great importance to the trade. He asked those present to discuss the advisability of forming a section of the Association dealing with the defence of chemists who might be prosecuted under the Food and Drugs Act.—Mr. GLYN-JONES suggested that if sufficient funds were raised, it might be the means of saving many chemists from unfortunate convictions, such as those in the Lime-Cream and Glycerin and other cases. He remarked that it would be well to keep the fund entirely separate from that devoted to the anti-cutting work, but thought that the work might very well be done by the P.A.T.A. staff, with, of course, the necessary legal assistance.—Mr. JONES, of Birmingham, recommended caution in proceeding with this recommendation. He stated that he had been intimately connected with the manage

ment of a similar defence fund on a national scale a number of years ago, and that the work and expense involved were both very considerable. He thought that nothing short of an annual subscription of £1 1s. would be of any practical use to those who were to share the benefits of the fund. He moved that the recommendation be sent back to the Council for further consideration, and suggested that the matter be ventilated between now and the next Council meeting, and this resolution was eventually carried after an interesting discussion.—A vote of thanks was passed to the Chairman for presiding, and a similar compliment was paid to Mr. Jones, the past President of the Association.

The Annual Dinner.

This function was held in the Grand Saloon of the Agricultural Hall on Thursday evening, June 16, there being between eighty and ninety persons present. Messrs. A. Probyn and Co., had charge of the menu, which was well served and heartily enjoyed. The usual loyal toast was duly honoured, and the PRESIDENT, Mr. H. J. Hall, took the opportunity while proposing "The Proprietary Articles Trade Association" to express his sense of the honour conferred upon him in electing him to the chair, and stated that he intended to do his best during his year of office to extend the membership and usefulness of the Association. He referred to the power which such an Association was capable of exerting if the members could but realise their combined strength. Speaking of those manufacturers and wholesalers who held aloft from the P.A.T.A. he mentioned that an adequate supply of show-cards and advertising matter to distribute amongst the 3000 chemists who are members of the Association would cost something like £4000, and pointed out that if the members were to refuse to do anything with that £4000 worth of show-cards, etc., unless the goods they referred to bore an adequate profit, the loss to such advertisers would very quickly bring them to their senses. He concluded his remarks by expressing a hope that during his year of office the number of members would increase from 3000 to 4500.—Mr. GLYN-JONES, in responding to the toast, pointed out that there was a time when the P.A.T.A. was not so much needed as at present. Then retail chemists got a fair profit on proprietaries, but in many instances such was not the case now, and they themselves were largely to blame for it. However, about 99 per cent. of the proprietary trade passed through the hands of members of the P.A.T.A., and that being so, it lay in the power of proprietors to help them to secure better profits. As an Association they were very much indebted to the two or three hundred active local secretaries throughout the country; in fact, they were the secret of the success of the Association, but the rank and file of the trade must back them up and endeavour to secure more of their retail friends as members. Although they had 3000 members, that number only represented about one-third of the chemists in business. It was easier to get sympathy than subscriptions, but if the members would act together they would carry the movement to a successful issue. Already there was a better spirit manifested in the retail trade, and he sincerely hoped that the future would show that "they builded better than they knew."—Mr. HARRY KEMP proposed "The Chemists' Exhibition," and spoke of the friendly spirit it, together with the P.A.T.A., had helped to create amongst members of the craft from all parts of the kingdom.—Mr. J. F. CANTWELL, one of the organisers of the Exhibition, replied.—Various other toasts were proposed, including "The Ladies," "The Trade Press," and "The President and Officers."—An excellent musical programme had been arranged, and under the direction of Mr. Arthur Weston, pleasantly occupied the time during the intervals between the toasts.

Manchester Chemical Report.

JUNE 22, 1898.

Great dullness prevails both in heavy chemicals and drysalteries, and there is a general complaint of a paucity of orders. The late hot weather has interfered with the production of Soda Crystals and Glauber Salts, and there has been some difficulty in effecting deliveries by local makers. Arsenic has dropped to £17 per ton, ex-ship Garston, and remains nominal at that figure. Yellow Prussiate is somewhat dearer owingto the scarcity of the article, and it is now 7d. per lb., although, of course, foreign can be had at about a halfpenny under. Reductions are to be noted in Brown Acetate of Lime, which ranges from £5 7s. 6d. to £5 10s. delivered Manchester.

PHOTOGRAPHIC NOTES.

MOUNTING PHOTOGRAPHS.—Put a dessert-spoonful of arrowroot in a breakfast cup with a little cold water, and rub it up well with a spoon until it is well mixed, then fill up the cup with hot water, well stirring, so as to keep it from getting lumpy, then put the cup (an iron enamelled cup for choice) on a slow fire, and stir well until the arrowroot clears, then let it stand to cool, after which strain through a piece of calico to free it from any lumps (squeeze it through). Now place the print, face down, on a clean sheet of paper, and with a good stiff hog's-bristle brush plaster the back of the print with the cold arrowroot until evenly covered, then rub the back.—J. S. H., in *Photographic News*.

MICRO-PHOTOGRAPHIC DEVELOPER.—As a developer for diapositives of micro-photographic negatives, Maid recommends rodinal, 5 C.c., water, 40 C.c., solution of potassium bromide, 1:10, 3 C.c.—*Intern. Photog. Monatschr.*, 1898, ii., 25.

PLATES FOR MICRO-PHOTOGRAPHY.—These plates are prepared in the following manner:—Ether, 400, alcohol, 400, soluble cotton, 3, ammonium iodide, 40, ammonium bromide, 10. The collodion must be used a little thinner than ordinary. The photographic plate is covered with the collodion and sensitised in a nitrate silver bath of 7 to 8 per cent. The plate is now washed and coated with the following solution:—Albumin, 150, water, 15, potassium iodide, 3, ammonium chloride, 5·0, sugar, 2, and a small crystal of iodine. It is now put into a bath prepared with water, 100, nitrate of silver, 10, acetic acid, 10, and then washed and dried. The developer is prepared as follows: Water, 100, gallic acid, 0·3, pyrogallic acid, 0·1, alcohol, 2·5. After remaining 10 to 20 seconds in this developer, 1 to 2 drops of a 2 per cent. solution of nitrate silver are added.—*Intern. Photog. Monatschr.*, 1898, ii., 34, after *Phot. Mitterl.*, 1897-8, 343.

PHOTOGRAPHIC ACTION OF GLOW-WORM'S LIGHT. — Muraska imprisoned 300 to a 1000 glow-worms in a box covered with a net and containing photographic dry plates, which were exposed either covered with a metal plate, cardboard or thin boards or unprotected. The dry plates were wrapped in several black papers and exposed for two nights in the box to the light of the glow-worms. When developed, they invariably proved to have been more or less affected. The author arrives at the following conclusions:—The behaviour of the light of glow-worms in its original state is the same as that of ordinary light. The light contains rays which penetrate cardboard and metal plates, the properties of which are similar to the Röntgen rays or analogous to Beccuerel's fluorescent rays. The dry plate when covered with cardboard discs presented an appearance resembling figures demonstrating the impenetrability of iron to the lines of magnetic force. The properties of these filtered rays appeared to be influenced by the materials through which they were passed. Refractive interference and polarisation could not be determined, but the author thinks it probable that they exist. The filtered rays appeared to resemble Beccuerel's fluorescent rays, their properties lying between the ultra-violet rays and Röntgen rays—*Chem. Zeit. Rept.*, xxii., 31, after *Anthony's Photo. Bull.*, 28, 350.

ALUMINIUM TO REPLACE MAGNESIUM.—M. E. Demole, in a communication to the Société Française, recommends aluminium as much superior to magnesium for flash-light work. He found that the reds and yellows in a bouquet of flowers came out in almost ortho-chromatic relation when aluminium was used as the illuminant—a much superior result to that with magnesium being secured. Although a mixture of potassium chlorate and magnesium or aluminium serves very well, M. Demole finds the following to be superior, the mixture burning with a rapidity which leaves nothing to be desired. If less permanganate be employed than the proportion recommended, the speed of combustion is less, and the smoke very much greater:—

Potassium Permanganate	2 parts
Aluminium	1 ,,

—*Photogram.*

GLOSSING PRINTS.—I find the following process satisfactory: A piece of beeswax rubbed a few times over the surface of a piece of plate-glass just as if marked with a slate pencil, then a few drops of turpentine applied by tow or cotton wool and the wax rubbed off.—"AMATEUR."

News in Brief.

Mr. W. Elborne has resigned his post as pharmacist at the University College Hospital, W.C. On the 16th inst. he took his M.A. degree (Trinity College, Cambridge).

Messrs. C. J. Hewlett & Son ask us to state that their warehouse and laboratories in Charlotte Street, E.C., will be closed on Saturday, June 25, on the occasion of the annual outing of the staff and employés.

Leicester Chemists' Social Union.—A half-day excursion to London to visit the Chemists' Exhibition was arranged for Thursday, June 16. The saloon engaged proved inadequate to accommodate all the party, so an extra compartment was reserved. Besides ladies, the party included the following chemists, managers, and assistants:—E. H. Butler, jun., Richardson, Goodess (Hon. Sec.), Biggs, Ellis, Hearnshaw, Hampden, Furnival, Dr. Gardiner, Wright, Jackson, Elmitt, Dunmur, Ward, Hodgson, Elliott, Brice, Thirlby, Cleaver, Dobson, Berry, Fisher, etc., thirty-five persons in all.

Cricket.—At a match played at Tooting Bec Common on Saturday June 18, between "Allenburys" C. C. *v.* "Metropolitan College of Pharmacy" C. C., the former team scored 88 as against 54. At a match played earlier in the season at Wadham Lodge, Walthamstow, between the same teams, "Allenburys" scored 61 against 24.

The Sale of Poisons.—George Frederick Handel Bartlett, chemist, Battersea Park Road, London, was charged at the South-Western Police Court on June 18 with selling potassium cyanide without recording the fact in a book kept for the purpose. Mr. Nichols defended. The prosecution was undertaken by the police at the instigation of Frederick Davis, photographer, St. Philip Street, Queen's Road, Battersea, who deposed that on Whit Monday he went to the defendant's place of business and was served by his manager with half an ounce of cyanide of potassium, which he used for the purposes of his trade. The manager made no entry in the book, and witness informed the police of the circumstance. No question was asked and he saw no entry made in a book.—Mr. Nichols said that the business was left in the hands of a qualified assistant, who forgot to make the entry, but the magistrate said the defendant could not relieve himself of responsibility by employing an assistant. He imposed a penalty of 20s., with 2s. costs. The witness Davis applied for his expenses, but the magistrate refused to grant any.

Photo Dark Room.—Mr. David Watson, chemist and druggist, 558, Cathcart Road, Glasgow, intimates that he has a well-equipped dark room, also a large stock of photographic goods.

Mr. G. J. Blore has opened a branch establishment at Langworthy Road, Seedley, Manchester, which has been fitted up by Messrs. Ayrton & Saunders, of Liverpool.

The Glasgow School of Pharmacy, under the guidance of Mr. Lothian, Principal, had a botanical excursion to Garelochead last Saturday. The outing proved most enjoyable and profitable, and the spot visited was a rich mine for the field-botanist.

Newcastle Chemical Report.

June 22, 1898.

The trade, although not brisk, is a shade more regular, shipment to the Baltic and Mediterranean ports being pushed more about. Prices, however, are unchanged andquoted as follow:—Bleaching Powder, according to market, £6 5s. to £6 10s. Soda Crystals: basis, 45s. to 52s. 6d. Caustic Soda: 70 per cent. basis, £7 5s. to £7 10s. Soda Ash: 52 per cent., £4 5s. Alkali; 52 per cent., £5 5s. Sulphur: £5 per ton.

Trade Notes.

Extract of Meat is now offered to the public in a variety of forms, for which many more or less supportable claims are entered, but few persons will be found to deny the undoubted convenience of the "Valtine" Meat Globules, prepared by the Valentine Extract Company, Limited. They consist essentially of gelatin capsules prepared by special treatment so as to contain fluid extract of meat, without any impairment of appearance or efficiency. The extract is manufactured by an improved process based on that of Liebig, and all that is necessary to prepare beef tea is to drop one of the globules into a cupful of boiling water and stir quickly. The liquid may be flavoured to taste by adding one of the "Valtine" Flavour Peloids, which are about the size of ordinary compressed tablets. The idea of thus presenting the flavouring agents is very ingenious, and in practice it works admirably. An excellent soup may be made in a few minutes by dissolving the globules in hot water, adding some stock, and flavouring with the peloids, which consist of vegetable extracts and can be obtained of greater or less piquancy as desired. A smaller size of the Meat Globules is specially prepared for the use of cyclists and other travellers. One or two, taken with a biscuit, will serve to keep off the pangs of hunger and maintain strength until a proper meal can be obtained. They are easily swallowed, and should be found useful as a stimulating agent. Both sizes of the globules are daintily packed in ornamental tin boxes which ought to sell readily.

Messrs. Cuxson, Gerrard & Co. intimate that the partnership lately subsisting between Robert Darton Gibbs, John Cuxson, and Alfred William Gerrard, in the business of surgical dressings and appliance manufacturers, and manufacturers, importers, and dealers of and in druggists' sundries, carried on by them at Fountain Lane, Oldbury, in the county of Worcester, and Holyhead Road, Wednesbury, in the county of Stafford, under the style of Gibbs, Cuxson & Co., was dissolved and determined by effluxion of time, on December 31 last, when the said Robert Darton Gibbs retired therefrom. All debts due to and from the said late partnership will be received and paid by the said John Cuxson and Alfred William Gerrard, by whom the said business has since been carried on, and who will continue to carry on the same as heretofore under the style of Cuxson, Gerrard & Co.

Messrs. Southall Brothers & Barclay, of Birmingham, have formed their business into a limited company with a capital of £200,000, divided into 70,000 five per cent. preference shares of £1 each and 130,000 ordinary shares of £1 each. The present issue is 70,000 preference shares of £1 each, which are cumulative as to interest and preferential as to capital, of which 23,333 are taken by the vendors and 80,000 ordinary shares of £1 each (none of the ordinary shares are offered to the public). The business was established seventy-eight years ago at Bull Street, Birmingham, and is now transferred for family reasons, and on account of extension and development, to the limited company as a going concern from January 1, 1898. The purchase will include freehold and leasehold properties, plant, machinery, fixtures, furniture and trade appliances, book debts (guaranteed), stock-in-trade, goodwill, patent rights, and trade marks. All the directors in the company are members of the old firm. The vendors take the whole of the ordinary shares and as many of the preference shares as possible after offering to the public a sufficient quantity to get a quotation on the Stock Exchange.

Marriage.

Jackson—Poole.—On June 22, at Kirkgate Wesleyan Chapel, Bradford, by the Rev. W. Scott-Page, William Kendall Jackson, chemist and druggist, youngest son of Mr. John Jackson (of the firm of Harrison, Parkinson & Co., chemists, Bradford), to Edith Mary, daughter of Mr. R. Poole, Bradford.

MARKET REPORT and Prices Current

Specially compiled for the Pharmaceutical Journal

The quotations here given are in all cases the lowest cash prices for bulk quantities, and often the articles quoted have to be sorted in order to suit the requirements of the retail pharmacist. The cost of freightage from the chemical and drug works to the various distributing centres must also be considered. It is important that these conditions should be borne in mind in making any comparison between the prices quoted and those of the wholesale drug trade.

LONDON REPORT.

JUNE 23, 1898.

Business has been extremely quiet during past week, while the changes in value which have taken place, either in an upward or downward direction, have been comparatively of little importance. Quinine is quiet. Quicksilver and Mercurials firm. Acid Citric, Acid Tartaric, and Cream of Tartar firm. Glycerin rather harder. Cod-liver Oil steady. Ipecacuanha firm. Cocaine, Phenacetin, and Sulphonal unchanged. Acetanilide weak. Opium firm and rather dearer in Smyrna. Morphia and Codeia without change. Borax and Acid Boracic quiet. Bromides and Iodides in good demand. Acid Carbolic firm and reported likely to be dearer. Same applies also to Permanganate of Potash and Santonine. The following are actual prices ruling for articles of chief interest:—

ACETANILIDE—Is weak, there being sellers from second hand at 1s. 1d. per lb. for half ton lots.

ACID BORACIC—Unchanged at 23s. per cwt. for *crystals*, and 25s. per cwt. for *powder*.

ACID CARBOLIC—Market is firm at 7d. per lb. for 35 to 36° C. acid in bulk; other qualities and packing in proportion. *Crude* 60° F. 2s. 1d., 75 F. 2s. 7d. per gallon. *Liquid* 95 per cent. of pale straw colour 1s. 2d. to 1s. 3d. per gallon, according to quantity, in 40-gallon casks.

ACID CITRIC—Is steady with more business doing at 1s. 1d. per lb. for *crystals*.

ACID TARTARIC—Is firm at 1s. 1d. per lb. for *English* and 12¾d. per lb. for *Foreign crystals*.

AMMONIA COMPOUNDS.—*Muriate*, chemically pure B.P. 30s. per cwt. pure white 98 per cent. 26s. per cwt., ditto large crystals for batteries 27s. 6d. per cwt. *Sulphate* quiet at last week's prices, £9 for gray prompt 24 per cent., London. *Bromide* unchanged at 2s. 2d. per lb. *Iodide*: 14s. 6d. per lb. *Oxalate*: 6d. per lb. *Sulphocyanide* in good demand at 1s. 1d. to 1s. 2d. per lb. *Sal ammoniac* unchanged at 35s. per cwt. for "firsts," and 33s. per cwt. for "seconds" lump.

ARSENIC.—*Red* 26s. 6d. per cwt. for lump and 27s. per cwt. for powder. *Yellow*, lump 27s. 6d. per cwt., powder 28s. per cwt.

BLEACHING POWDER.—Steady at £7 per ton on the spot.

BROMIDES—Are a firm market at 1s. 10d. per lb. for *Potass. Bromide*, and 2s. 2d. per lb. for *Ammon.* and *Soda Bromide*. *Bromine* is unchanged at 1s. 11d. per lb. in 20 case lots.

CAMPHOR.—*Crude* is somewhat firmer and a moderate business has been done in Japan at 88s. cwt. and in China at 82s. per cwt., both *c.i.f.*

CASCARA SAGRADA.—Holders are firm in their ideas, and prices have an upward tendency, old bark being quoted 27s. 6d. per cwt., while last year's crop can be bought at 22s. 6d. to 25s. per cwt., according to quantity.

CINCHONA BARK.—At the monthly London sales, held on Tuesday, fair supplies were offered, amounting to 2700 packages of all descriptions, as compared with 4000 at the preceding sales. The greater part found buyers at steady prices, rather better than the Amsterdam auctions realised. In the case of cinchonidine-yielding barks very full prices were paid. *Calisaya*: 349 packages offered, and 126 sold (mostly damages); quills, 4¼d. to 4⅝d. per lb. *African*: 27 packages sold: medium quills, 3d. *Ceylon*: 224 packages offered, and 143 sold; red, chips 2d. to 4¼d.; Ledgeriana, broken quills and chips 2¾d., stem and chips 3½d., root 5d. *East Indian*: 1858 packages offered and 1736 sold: Crown, chips 3d., ditto renewed 2⅝d. to 3d.; Red, chips 1⅝d. to 3¼d., ditto renewed 2d. to 3¼d., broken quill and chips 2⅛d. to 3⅛d., root 2⅛d. to 3d.; Ledgerianal chips 3d. to 4½d., ditto renewed 1⅞d. to 4⅜d., broken quill and chips 2⅜d. to 2¾d., stem and chips 2¼d., chips and shavings 3½d. to 5d. *Java*: 223 packages offered and sold at 3¼d. to 4⅝d. for small chips.

CLOVES.—Privately the market for *Zanzibar* is flat with a declining tendency. Quotations are: Spot 3 7/32d., August to October delivery 3⅝d., October to December delivery 3⅝d. At auction 107 bales middling dark *Zanzibar* sold at 3½d.

COCAINE.—In view of the result of the late discussion as to the validity of the Maclagan test of the purity of this article, buyers are coming to the conclusion that it is preferable to buy only cocaine which fully answers above test, the consequence being that the well-known *B. & S.* brand, already so favourably known, is coming into even more exclusive demand. Makers' price of same is 9s. 6d. to 9s. 9d. per oz. for bulk packing, according to quantity, other makes being obtainable for rather less money.

CODEIA—Unchanged at 11s. 3d. to 11s. 9d. per oz., according to quantity.

COD-LIVER OIL—Remains very quiet. A better demand is, however, anticipated before long. The nominal quotation for best new non-freezing *Norwegian* oil, in tin-lined barrels, varies from 82s. 6d. to 90s. per barrel, according to quantity and brand. *Newfoundland* oil is practically a dead letter.

COAL TAR DISTILLATION PRODUCTS.—*Toluol*, commercial, 1s. 4d., pure, 3s. per gallon. *Benzole*, 50 per cent., 1s. 1d., 90 per cent., 1s. per gallon. *Crude Naphtha* 30 per cent. at 120° C. 6d. per gallon. *Solvent Naphtha* 95 per cent. at 160° C. 1s. 8d. per gallon.

CREAM OF TARTAR.—Higher prices are asked by manufacturers which, at the moment prevent business, but the consumptive demand is slow. First White Crystals on the spot are quoted 71s. per cwt., powder 73s. to 74s. per cwt. For the higher strengths as now required by the B.P. 82s. per cwt. is asked for Crystals and 85s. per cwt. for powder.

GAMBOGE.—Privately this gum has been in better demand with sales of good bright pipe at £8 15s.

GINGER.—*Cochin* remains dull. Of 1304 bags rough kinds only 300 bags sold, chiefly without reserve, small and ends 16s. 6d., fair medium and small washed 23s. 6d., fair brown rough Calicut 24s. 6d. to 25s.; cut kinds also mostly bought in, bold A 85s.; 8 cases sold, bold and medium 70s. 100 bags limed *Japan* bought in at 18s. 27 bags *Liberian* bought in at 16s. Of *Jamaica* about 350 packages sold, low middling to middling at 77s. to 80s., good middling to good bright and plump 81s. to 90s.

GLYCERIN.—Market is firm both for *crude* and also for *refined*, the lowest price at which good *German* white double distilled chemically pure 1260 quality in 56 lb. tins, 4 in a case, can be bought being 53s. per cwt., while the agents for some of the best *German* brands ask as much as 62s. 6d. per cwt., *English* being obtainable at about the lower figure. The market looks very much like going dearer both in view of a possible increased demand for the manufacture of explosives, as also of the fact that the season when buyers will be laying in their stocks of *refined* for the winter consumption is gradually drawing nearer.

GUM MASTIC.—The demand is slow, and only small sales of good pale have been made at 1s. 11d. per lb.

INSECT POWDER.—Genuine Dalmation is quoted at from 1s. to 1s. 2d. per lb., with lower qualities at 7d. to 10d. per lb.

ISINGLASS.—The monthly auctions took place on Tuesday, when 576 packages were offered, as against 700 in May and 550 in April. Demand was generally slow, and a quiet tone prevailed, with irregular and, on the whole, rather lower prices. Nearly one-half consisted of *Bombay*, which was partly sold at steady rates. A good supply of *Penang* was chiefly sold at a decline of 1d. for *leaf*, and about 3d. for *tongue*. *Saigon* leaf met a decidedly slow demand, and only a small part sold at cheaper rates. The moderate supply of *Brazil* went off slowly at easier prices.

IODIDES—In good demand at unchanged prices, viz., 9s. 9d. per lb. for *Potass Iodide* in 2 cwt. lots, and 13s. 4d. per lb. for *Iodoform*. *Iodine* remains at 7½d. per oz.

JAPAN WAX—Very quiet; good squares quoted 34s. per cwt., but no business of importance has been reported.

MERCURIALS.—Makers' price is unchanged at 2s. 9d. per lb. for *Calomel*, and 2s. 5d. per lb. for *Corrosive Sublimate* in ½-cwt. lots.

MENTHOL—Steady at 7s. per lb. on the spot. For forward delivery the Japanese, after seeking low bids, decline to sell.

MORPHIA.—There is so far no change in makers' price, which remains at 4s. 6d. per oz. for the *Hydrochlorate* powder.

NITRATE OF SODA.—Market is quiet at £7 12s. 6d. to £7 15s. per ton for *commercial* and £8 to £8 2s. 6d. for *refined*.

OILS (ESSENTIAL).—*Peppermint*: American HGH is quiet at 5s. 7½d. per lb.; Wayne County steady at 3s. 9d. to 4s. per lb. *Japanese*; Dementholised, 3s. per lb.;

40 per cent., 4s. 6d. per lb. *Star Aniseed* quiet at 6s. 10½d. per lb. on the spot. *Citronelle* very dull at 12⅝d. per lb. in drums, and 1s. 1½d. per lb. in tins. *Lemongrass*: Business has been done at 4¾d. per oz., being firmer. *Cinnamon*: Fine sold at 2s. 4d.; middling, 11d.; leaf oil dull, with sellers at 2½d.

Oils (Fixed) and Spirits.—*Linseed* is again lower on the week at £16 10s. for spot pipes, and £16 17s. 6d. for barrels, *Rape*: Ordinary brown on spot, £22 5s.; refined, £23 10s. *Cotton* quiet but unchanged; London crude spot, £13 12s. 6d.; refined spot, £15 10s. to £16, according to package. *Olive* oils remain quiet and unchanged at last week's prices. *Coconut* very dull and a shade easier; Ceylon on the spot, pipes, £24 10s., hogsheads, £25 10s.; Cochin nominally £29 10s. *Palm* lower at £23 10s. for Lagos on the spot. *Turpentine* lower and very quiet, American spot 22s. 3d. per cwt. *Petroleum Oil* slightly easier at 4½d. to 4⅝d. for Russian on the spot, and 5d. to 5⅛d. per gallon for American. *Petroleum Spirit*: American 5⅝d. per gallon, deodorised 6d. per gallon.

Opium.—An advance is reported from Smyrna of about 2d. per lb. for good current *tale quale*, for which the price over there is now 10s. to 10s. 2d. per lb. Here the market is decidedly firm at 10s. 6d. to 10s. 9d. for fair to good *druggists*, 11s. to 13s. for *soft shipping*, and 10s. 9d. to 11s. 6d. for *Persian*.

Permanganate of Potash—Is in better demand in consequence of the advent of warmer weather, and we shall probably see higher values shortly. Price remains, however, at 62s. 6d. and 67s. 6d. per cwt. for small and large crystals respectively.

Phenacetin—Is quiet at 3s. 9d. to 4s. 3d. per lb., according to quantity.

Potash Compounds.—*Bichromate*, 4d. per lb.; *Bicarbonate* steady at 30s. per cwt. for both *crystals* and *powder*. *Carbonate*: Pure *B.P.* 55s. to 60s. per cwt., refined 80 to 82 per cent. 17s. per cwt. *Cyanide*: 98 to 100 per cent. 1s. 2d. per lb. *Bromide* steady at 1s. 10d. per lb. *Iodide* quiet at 9s. 9d. to 10s. 3d. per lb., according to quantity. *Permanganate* steady at 62s. 6d. to 67s. 6d. per cwt. for small and large crystals respectively. *Prussiate*: *Red* steady at 1s. 2d. per lb.; *yellow* quiet at 6¾d. to 7d. per lb., for English. *Chlorate* unchanged at 3½d. per lb.

Quinine.—Market is very quiet, good German makes of *Sulphate* being obtainable at 9½d. per oz. for 1000-oz. lots in 100-oz. tins, the maker's price remaining unchanged at 10d. per oz. So far the good prices realised at Tuesday's bark sales have had little or no effect on the quinine market, the future of which remains somewhat of a puzzle, even to the best informed.

Santonin—Has been in more demand during the past few days, and the idea appears to be gaining ground that an advance in price, which is exceedingly low, viz., 4s. 5¼d. per lb. for 3-cwt. lots, is not improbable.

Scammony.—Fair sales of "seconds" have been made at 19s. to 21s. per lb. Demand for "firsts" is restricted owing to firmness of holders.

Shellac.—Privately prices are steady, but a quiet tone continues to prevail, business in all positions being unimportant. At the fortnightly auctions on Tuesday, there was good competition notwithstanding the larger supply, and about one-half found buyers at barely last sales' rates. We call the value of *TN Second Orange* about 64s. per cwt. A total of 1232 cases offered and 590 cases sold. *Fine Orange*: 1 case Octagon B offered and bought in, good pale of the mark at 93s. *Second Orange*: Of 1044 cases 424 sold, partly without reserve, good bright cakey at 70s., fair bright reddish at 63s. to 64s., dull palish flimsy part broken at 63s. to 64s., middling curly reddish at 62s., ordinary dark red at 60s. to 61s., weak livery at 59s. to 60s. *Garnet*: Of 12 cases 7 cases sold, fine blocky *OCC* at 62s. *Button*: Of 175 cases 159 sold, fine bold genuine 1sts at 91s. to 93s., fine pale coloury 1sts at 83s., ordinary to fair ditto at 73s. to 78s., good seconds 74s. to 75s., ordinary to fair circle 2's 64s. to 68s., ordinary glassy 3rds at 59s. to 60s., common glassy 4ths at 50s. to 53s., low dark at 25s. to 31s.

Soda Compounds.—*Crystals*: 55s. per ton. *Acetate*: 13s. per cwt. for refined; 35s. per cwt. for chemically pure. *Hyposulphite* steady at £6 to £8 per ton, according to brand. *Sulphide*, for tanners, £7 5s. per ton. *Bicarbonate*: Commercial, 98 per cent., £7 5s. per ton; full bicarbonated, 18s. 6d. per cwt. *Bromide*: 2s. 2d. per lb. *Iodide*: 11s. 7d. per lb.

Spices (Various).—*Black Pepper*: 300 bags Tellicherry bought in at 4¼d. *White Pepper*: 80 bags limed Penang bought in at 7d., also 30 bags fine Singapore at 9d. *Chillies*: 20 bales Zanzibar bought in at 35s., also 55 packages Japan at 40s. to 44s. *Cassia Lignea*: 12 boxes bought in at 50s. *Cinnamon Chips*: 80 bags Ceylon bought in at 3¼d. *Mace*: Of 47 cases Penang 4 cases good red sold at 2s. 2d., 19 packages West India sold at 1s. 4d. to 1s. 7d. *Nutmegs* remain dull at about previous rates. *Pimento*: Only 61 bags sold at 4d. to 4¼d.

Sulphate of Copper.—Fairly steady at £15 5s. to £16 10s. per ton according to brand.

Turmeric.—The high prices asked somewhat check business. A few parcels have been sold, including fair bright *Madras* finger, at 22s. per cwt. *Bengal* quoted 17s. 6d. per cwt.

To-day's drug auctions passed off quietly, a considerable number of the lots offered being bought in, while prices realised show no very important changes in either an upward or downward direction. The following are the particulars as far as same were available up to time of going to press:—

Aconite Root.—3 bags fair *Japan* bought in at 27s. 6d. per cwt.

Aloes.—1 case strained *Mocha* sold very cheaply at 17s. 6d. per cwt. *Socotrine*: Further arrivals have taken place in kegs, and holders are now not quite so firm in their ideas, and would probably accept 75s. per cwt. *Cape* are again somewhat dearer, fair bright hard selling at 26s. per cwt., down to 18s. to 20s. for drossy and inferior.

Arraroba.—36 cases brown woody were offered without reserve, subject to price realised paying the charges. There was, however, no bid, and the lot was withdrawn.

Balsam Peru.—1 case of good quality was held for 9s. 3d. per lb.

Balsam Copaibæ.—5 cases *Carthagena* fetched 1s. 4d. to 1s. 5d. per lb. 10 cases *Maracaibo*, which is now the B.P. quality, held for 1s. 8d. per lb.

Balsam Tolu.—25 cases of fair quality were bought in at 1s. 7d. to 1s. 8d. per lb.

Buchu Leaves.—9 bales fair green rounds realised 4½d. per lb.

Cardamoms.—In large supply, about 420 cases selling at irregular but on an average fairly steady prices. Very fine bold pale *Mysore* sold at 3s. 11d. per lb., other qualities down to 2s. 8d. per lb. 2 cases small brown *Ceylon* sold at 1s. 8d. per lb. Brown *Malabar* held 2s. 2d. per lb., and poor wild ditto for 1s. 9d. *Seeds* were cheaper at 2s. 8d. to 2s. 10d. per lb.

Castoreum.—1 keg bought in at 36s. per lb. for low pickings.

Cinchona Bark.—4 packages *red bark* bought in at 6d. to 1s. per lb. 11 packages *yellow bark* held for 1s. 3d. per lb. 27 bales *Carthagena* bought in at 5d. per lb.

Coca Leaves.—Fair green *Ceylon* sold at 7d. to 7½d. per lb.

Colombo Root.—64 bags fair sorts bought in at 20s. per cwt.

Colocynth.—4 cases small to boldish rather brown *Turkey* taken out at 1s. per lb.

Croton Seeds.—4 bags sold at 71s. for fair and 65s. per cwt. for rather dark. 23 bags good bright reeds were held for a very long price, say 90s. to 95s. per cwt., a bid of 85s. per cwt. for the lot being refused.

Cummin Seed.—15 bags *Malta*, of medium quality, were bought in at 22s. 6d. per cwt.

Cus Cus.—94 bales of exceedingly weighted root was bought in, sellers' idea of 5s. per cwt. being unobtainable.

Cuttlefish.—18 packages, part sold at 8d. for good bold, 3½d. per lb. for medium, and 1¼d. per lb. for small.

Elaterium.—1 box *Malta* of rather dark and irregular appearance bought in at 1s. per oz.

Ergot of Rye.—12 bags slightly weevily *Spanish* sold at 6¼d. per lb., which shows a decided drop in value. 1 case very weevily ditto sold at 5¼d. per lb., it being stated that the parcel originally cost 2s. 6d. per lb., so that the holder can hardly congratulate himself on the result of his venture.

Essential Oils.—30 cases fair commercial *Eucalyptus Oil* were held for 10d. per lb. 2 cases *Cinnamon Bark Oil* of good quality were bought in, price required being 7s. per oz. 26 cases *Lemongrass Oil* of fair quality held for 4½d. per oz. 1 case *Oil of Lemon* of rather doubtful quality was taken out at 1s. 6d. per lb. 1 case Dodge and Olcott's *Oil Wintergreen* bought in at 5s. 3d. per lb. 1 case *Cassia Oil* (76 per cent. *Cinnamic Aldehyde*) held for 4s. 9d. per lb. 20 cases *Cinnamon Oil* for 4d. per oz. 5 cases China *Star aniseed Oil* for 7s. per lb.

Gamboge.—17 cases fair, bright, softish sold well at £8 per cwt.

Golden Seal Root.—1 bale sold without reserve at 1s. 3d. per lb.

Gum Ammoniacum.—1 case dark blocky bought in at 17s. 6d. per cwt. 2 cases very fine small clean drop sold at 55s. per cwt.

Gum Arabic.—4 cases picked were

bought in at £6 15s. for grains, and £14 per cwt. for fair small to bold white gum.

GUM ELEMI.—8 cases fair pale held for 26s. per cwt.

GUM GUAIACUM.—For 10 cases drossy broken block there was no bid.

GUM MYRRH.—Fair sorts were held for 60s. per cwt., pickings and siftings selling at 10s. per cwt.

GUM BENJAMIN.—Fair seconds *Sumatra* sold at £6 per cwt., rather better quality being held for £7 to £7 10s.

GUARANA.—1 case of fair quality was bought in at 1s. 6d. per lb.

HONEY.—Fair pale *Jamaica* was held for 25s. to 26s. per cwt. 14 packages of not quite so good quality sold very cheaply at 20s. 6d. to 22s. 1 case inferior selling without reserve at 10s. per cwt.

IPECACUANHA.—*Rio* continues to be firmly held at 9s. to 9s. 1d. per lb., whilst *Carthagena* of fair quality was held for 4s. 6d. per lb.

JALAP.—20 bales small heavy tubers were mostly bought in at 6½d. to 7d. per lb., which shows a higher range of value. 3 bales slightly greasy and part slightly damaged by fire sold at 5d. per lb.

KOLA NUTS.—1 case *Ceylon* of fair quality sold cheaply at 2½d. per lb. 8 bags dull *West Indian* sold at same price.

LIQUORICE ROOT.—19 bales good *Syrian* root sold cheaply at 2s. 6d. to 3s. 6d. per cwt., this quality is selling privately at from 9s. 6d. to 10s. per cwt.

MANDRAKE ROOT.—1 bag sold at 17s. per cwt.

MUSK.—13 caddies *Tonquin* all bought in at 37s. 6d. to 50s. per oz., being price required for middling to fair quality, and 21s. per oz. for low inferior.

ORANGE PEEL.—23 packages thin cut were taken out at 8d. per lb. for good new, and 5½d. per lb. for the inferior old thin cut being held for 6½d. per lb.

ORRIS ROOT.—1 bale *Verona* bought in at 25s. per cwt. 15 cases *East Indian* sold at 5s. per cwt.

PODOPHYLLIN RESIN.—36 tins, each containing 5 lbs. nett, bearing the mark McKesson and Robbins, New York, were bought in at 8s. per lb.

RHUBARB.—Bold flat *high dried* of good colour was bought in at 1s. 2d. per lb.; ditto second size, not so good colour, held for 1s. 1d.; rough horny flat ditto selling at 6d. to 6¼d. per lb. 1 case *Canton* mixed round and flat sold at 1s. per lb. *Shensi*: Rather rough horny round of good colour held for 2s. 6d. per lb., rather boldish trimming root realising 2s. 4d. per lb., ordinary flat *Shensi* held for 2s. 6d.

SARSAPARILLA.—33 bales *Jamaica* sold readily at 1s. 8d. to 1s. 9d. per lb. for sound, and at 1s. 4d. to 1s. 7d. per lb. for damaged. 1 bale red and grey native country damaged sold very cheaply at 9½d. per lb., subject to approval, same price being offered for 14 bags sound red, grey, and yellow ditto, which were, however, taken out at 1s. 2d. per lb. 10 bales *Lima* sold at 1s. 1d. to 1s. 2d. per lb., down to 10d. per lb. for *ICSD*.

SENNA.—*Tinnevelly* in small supply and of low quality, which sold at 1½d. to 2d. per lb. for small spotty leaves, and pods at 1¼d. to 1½d. per lb. for dark to fair. *Alexandria* siftings sold at 2¾d. per lb. Other qualities bought in.

TAMARINDS.—32 barrels *West Indian* sold readily at 10s. 6d. per cwt.

VANILLA.—Over 300 tins were offered, quality being medium only, these sold well at about last sale's prices.

WAHOOS BARK.—1 bag sold without reserve at 2d. per lb.

WAX.—Fair to good *Jamaica* was bought in at £7 5s. to £7 10s. per cwt.

LIVERPOOL REPORT.

JUNE 22, 1898.

The quiet tone which has pervaded the market for some time still continues, and whilst the amount of business done is quite up to the average, there are no particularly noteworthy transactions to report. The only alterations in quotations are in oils, Linseed Oil and Cottonseed Oil having receded a little and Castor Oil, Calcutta variety, having advanced.

AMMONIA SALTS.—*Carbonate*: 3d. per lb. *Sal ammoniac*: 35s. and 33s. per cwt. *Sulphate*: Still quiet at £9 3s. 9d. per ton.

BEESWAX.—7 packages of Conatury sold at auction for £6 13s. 9d. per cwt.

BLEACHING POWDER.—£5 10s to £6 per ton.

CANARYSEED.—At present this is merely nominal at 25s. to 27s. 6d. per 464 lbs. for Turkish seed. The latter price applies to fine samples of old-crop seed, of which small amounts have changed hands. 150 bags of fair Turkish sold at 25s. 6d. per 464 lbs.

COPPERAS—Continues firm and in good demand at 38s. per ton for Lancashire, and 36s. for Welsh.

COPPER SULPHATE—Evinces a tendency to rise £16 per ton.

GINGER.—26 bags of Sierra Leone found buyers at 17s. 6d. per cwt.

HONEY.—Chilian Pile X has been selling at 24s. 6d. per cwt.

LINSEED—Is still dull; the only sales reported have been of River Plate at 34s. per 416 lbs.

OILS (FIXED) AND SPIRITS.—*Castor*: Calcutta "good seconds" is in good demand, all offering at 3¼d. per lb. having been bought up; 3⅜d. is now the price for the small amount in stock; French 1st pressure sells freely at 3¼d. per lb. *Olive* is steady at £28 10s. to £29 10s. for Seville and Malaga per tun. *Linseed* of Liverpool make is lower in price (18s. to 18s. 6d. per cwt.) *Cottonseed* of Liverpool refining offers at the easier rate of 16s. to 16s. 6d. per cwt. *Spirits of Turpentine* on the spot, 24s. 9d. is asked, and for one cargo near port 22s. 6d. per cwt. is wanted.

POTASH SALTS.—*Bichromate*: 3¾d. per lb. *Chlorate* firm at 3¼d. per lb. *Cream of Tartar* has risen to 78s. 6d. per cwt. on the spot, and a good amount of business has been concluded in Cream "to arrive" at better rates than those obtainable of late. *Pearlashes* continue only nominal at 35s. per cwt. *Potashes*: Demand limited at 20s. to 20s. 3d. per cwt. *Saltpetre*: 21s. 6d. per cwt.

SODA SALTS.—*Bicarbonate*: £6 15s. per ton. *Borax*: 13s. per cwt. *Chlorate*: 3⅝d. per lb. *Caustic*: 76 to 77 per cent., £8 5s. per ton; 70 per cent., £7 5s. per ton. *Crystals*: £3 per ton. *Nitrate* still quoted at 7s. 6d. to 7s. 9d., but business is of small amount.